SLR-QH-1

Seat No.	

Set P

F.Y. (B.Tech.) (Sem - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mathematics – I
(BTCE0103) /(BTCSE0103)/(BTETE0103)/ (BTEE0103)/(BTME0103)/(BTECE0103)/(BTMRE103)/(BTAI0103)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of Non programable Calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative. **14**

1) If $y = x^{60}$, then $y_{60} =$ _____.

a) 60 b) $60!$
c) 0 d) $0!$

2) If $f(x)$ is continuous function and has derivative of any order then the Maclaurin's Theorem states that $f(x) =$ _____.

a) $f(a) + h.f'(a) + \frac{h^2}{2!}f''(a) +$ _____.

b) $f(0) + x.f'(0) + \frac{x^2}{2!}f''(0) +$ _____.

c) $1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} +$ _____.

d) $x + \frac{x^3}{3} + \frac{2}{15}x^5 +$ _____.

3) The rank of unit matrix of order m is _____.

a) 1 b) 0
c) m d) $\neq m$

4) If $y = \cos 4x$, then $y_n =$ _____.

a) $4^n \cos(4nx)$ b) $\sin(4nx)$

c) $(-1)^n \cos 4nx$ d) $4^n \cos(4x + \frac{n\pi}{2})$

5) $\lim_{x\to 0}\left(\frac{x-\sin x}{x^3}\right) =$_____.

a) 6 b) $1/6$

c) 3 d) $1/3$

6) If A is square matrix of order n and $AX = 0$ where X is a $n \times 1$ matrix of unknowns and if $r = n$ then the system has _____.

a) Has only a trivial solution
b) Has one independent solution
c) Has n independent solution
d) Has $m - n$ independent solutions

7) If $X1, X2, X3$ are linearly independent and $k1X1 + k2X2 + k3X3 = 0$, then _____.

a) $k1, k2, k3$ all are equal to 1 b) $k1 = 0$ but $k2, k3 \neq 0$

c) $k1, k2 = 0$ but $k3 \neq 0$ d) All $k1, k2, k3$ are zero

8) If $z = x^y$ then $\frac{\partial z}{\partial y} =$ _____.

a) yx^{y-1} b) xy^{x-1}

c) $y^x \log x$ d) $x^y \log x$

9) If $x = r\cos\theta, y = r\sin\theta$ then $\left(\frac{\partial r}{\partial x}\right)_y =$ _____.

a) r/x b) x/r

c) r/y d) y/r

10) If $u = xy\tan^{-1}\left(\frac{y}{x}\right)$, then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} =$ _____.

a) 0 b) u

c) $2\mathrm{u}$ d) $-2\mathrm{u}$

11) If δx is an error in x, then $\frac{\delta x}{x}$ is called _____.

a) Absolute error in x b) Relative error in x

c) Approximate error in x d) Percentage error in x

12) A vector function $\bar{F}$ is called irrotational if _____.

a) $Curl\ \bar{F} = \bar{0}$ b) $div\ \bar{F} = 0$

c) $grad\ \bar{F} = 0$ d) $div\ \bar{F} \neq 0$

13) If $\vec{r} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ and $\bar{a}$ is a constant vector then $\nabla(\bar{a}.\vec{r}) =$ _____.

a) $2\bar{a}$ b) $\bar{r}$

c) $2\bar{r}$ d) $\bar{a}$

14) If $\bar{F} = (y + z)i + (z + x)j + (x + y)k$, then $div\bar{F} =$ _____.

a) 3 b) 2

c) 1 d) 0

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SECTION – I

Q.2 Attempt Any Three questions from the following. **09**

a) Change the given matrix into normal form and hence find its rank.
$A = \begin{bmatrix} 1 & -1 & 2 & -1 \\ 4 & 2 & -1 & 2 \\ 2 & 2 & -2 & 0 \end{bmatrix}$

b) If $y = \frac{x+1}{(x+2)(x-2)}$ then find y_n.

c) Evaluate $\lim_{x\to\infty} x^2 . e^{-x}$

d) Verify Cayley Hamilton theorem for the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 1 & 1 \\ 0 & 1 & 2 \end{bmatrix}$

e) Expand $x^5 - x^4 + x^3 - x^2 + x - 1$ in powers of $(x-1)$ and hence find $f(0.99)$.

Q.3 Attempt Any Three questions from the following. **09**

a) Find n[th] derivative of $y = \sin 2x . \cos 6x$

b) Show that $\sin^{-1}\left(\frac{2x}{1+x^2}\right) = 2\left(x - \frac{x^3}{3} + \frac{x^5}{5} - \frac{x^7}{7} + \cdots\right)$

c) Investigate for what values of λ and μ the equations $x + 2y + 3z = 4, x + 3y + 4z = 5, x + 3y + \lambda z = \mu$ have
i) No solution
ii) Unique solution
iii) Infinite number of solutions

d) Show that $\sec x = 1 + \frac{x^2}{2} + \frac{5x^4}{24} + \cdots$

e) Examine whether the vectors $X1 = [3\ \ 1\ \ 1], X2 = [2\ \ 0\ \ -1], X3 = [4\ \ 2\ \ 1]$ are linearly dependent or independent

Q.4 Attempt Any Two questions from the following. **10**

a) If $\cos^{-1}\left(\frac{y}{b}\right) = \log\left(\frac{x}{n}\right)^n$ then show that $x^2y_{n+2} + (2n+1)xy_{n+1} + 2n^2y_n = 0$

b) Calculate the values of a, b, c such that $\lim_{x\to 0} \frac{ae^x - be^{-x} - cx}{x - \sin x} = 4$

c) Determine the eigen values and eigen vector corresponding to largest eigen value of the matrix $A = \begin{bmatrix} 2 & 1 & 1 \\ 2 & 3 & 2 \\ 3 & 3 & 4 \end{bmatrix}$

SECTION – II

Q.5 Attempt Any Three questions from the following. **09**

a) Determine the directional derivative of $\Phi = xy^2 + yz^2$ at the point $(2, -1, 1)$ in the direction of vector $i + 2j + 2k$.

b) Calculate approximately the maximum possible errors in the volume and lateral surface area, if the diameter and altitude of a right circular cylinder are measured as 24 cms. And 30 cms. respectively. The maximum possible error in each measurement is 0.1 cm.

c) Calculate $\frac{\partial^3 u}{\partial x \partial y \partial z'}$ if $u = e^{xyz}$.

d) Show that $\nabla(r^n) = nr^{n-2}\bar{r}$

e) Show that $\frac{dz}{dt} = \frac{3}{\sqrt{1-t^2}}$, if $z = \sin^{-1}(x - y)$ and $x = 3t, y = 4t^3$

Q.6 Attempt Any Three questions from the following. **09**

a) Show that:

i) $\left(\frac{\partial u}{\partial x}\right)_y . \left(\frac{\partial x}{\partial u}\right)_y = \frac{l^2}{l^2 + m^2}$

ii) $\left(\frac{\partial y}{\partial v}\right)_x . \left(\frac{\partial v}{\partial y}\right)_u = \frac{l^2+m^2}{l^2}$, if $u = lx + my, v = mx - ly$

b) Determine the maximum value of their product, if the sum of three positive numbers is 1.

c) Calculate the velocity & acceleration vectors and magnitude of velocity and acceleration at $t = 0$, if a particle moves along the curve $x = t^3 + 2t, y = -3e^{-2t}, z = 2\sin 5t$.

d) If $u = f(e^{x-y}, e^{y-z}, e^{z-x})$ then show that $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} = 0$

e) If $x = uv, y = u/v$ then prove that $JJ' = 1$

Q.7 Attempt Any Two questions from the following. **10**

a) Show that the vector $\bar{f} = (6xy + z^3)i + (3x^2 - z)j + (3xz^2 - y)k$ is irrotational and hence find scalar potential Φ such that $\bar{f} = \nabla\Phi$.

b) If $u = \sin^{-1}\left(\frac{x^{1/4}+y^{1/4}}{x^{1/5}+y^{1/5}}\right)$ then show that

$$x^2\frac{\partial^2 u}{\partial x^2} + 2xy\frac{\partial^2 u}{\partial x \partial y} + y^2\frac{\partial^2 u}{\partial y^2} = \frac{1}{400}(\tan^2 u - 19)$$

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SECTION – II

Q.5 Attempt Any Three questions from the following. **09**

a) Determine the directional derivative of $\Phi = xy^2 + yz^2$ at the point $(2, -1, 1)$ in the direction of vector $i + 2j + 2k$.

b) Calculate approximately the maximum possible errors in the volume and lateral surface area, if the diameter and altitude of a right circular cylinder are measured as 24 cms. And 30 cms. respectively. The maximum possible error in each measurement is 0.1 cm.

c) Calculate $\frac{\partial^3 u}{\partial x \partial y \partial z'}$ if $u = e^{xyz}$.

d) Show that $\nabla(r^n) = nr^{n-2}\bar{r}$

e) Show that $\frac{dz}{dt} = \frac{3}{\sqrt{1-t^2}}$, if $z = \sin^{-1}(x - y)$ and $x = 3t, y = 4t^3$

Q.6 Attempt Any Three questions from the following. **09**

a) Show that:

i) $\left(\frac{\partial u}{\partial x}\right)_y . \left(\frac{\partial x}{\partial u}\right)_y = \frac{l^2}{l^2 + m^2}$

ii) $\left(\frac{\partial y}{\partial v}\right)_x . \left(\frac{\partial v}{\partial y}\right)_u = \frac{l^2+m^2}{l^2}$, if $u = lx + my, v = mx - ly$

b) Determine the maximum value of their product, if the sum of three positive numbers is 1.

c) Calculate the velocity & acceleration vectors and magnitude of velocity and acceleration at $t = 0$, if a particle moves along the curve $x = t^3 + 2t, y = -3e^{-2t}, z = 2\sin 5t$.

d) If $u = f(e^{x-y}, e^{y-z}, e^{z-x})$ then show that $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} = 0$

e) If $x = uv, y = u/v$ then prove that $JJ' = 1$

Q.7 Attempt Any Two questions from the following. **10**

a) Show that the vector $\bar{f} = (6xy + z^3)i + (3x^2 - z)j + (3xz^2 - y)k$ is irrotational and hence find scalar potential Φ such that $\bar{f} = \nabla\Phi$.

b) If $u = \sin^{-1}\left(\frac{x^{1/4}+y^{1/4}}{x^{1/5}+y^{1/5}}\right)$ then show that

$$x^2\frac{\partial^2 u}{\partial x^2} + 2xy\frac{\partial^2 u}{\partial x \partial y} + y^2\frac{\partial^2 u}{\partial y^2} = \frac{1}{400}(\tan^2 u - 19)$$

c) Examine for maxima and minima $x^4 + y^4 - 4a^2xy$.

SLR-QH-1

Seat No.		Set	S

F.Y. (B.Tech.) (Sem - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mathematics – I
(BTCE0103) /(BTCSE0103)/(BTETE0103)/ (BTEE0103)/(BTME0103)/(BTECE0103)/(BTMRE103)/(BTAI0103)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of Non programable Calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative. **14**

1) If A is square matrix of order n and $AX = 0$ where X is a $n \times 1$ matrix of unknowns and if $r = n$ then the system has _____.

a) Has only a trivial solution
b) Has one independent solution
c) Has n independent solution
d) Has $m - n$ independent solutions

2) If $X1, X2, X3$ are linearly independent and $k1X1 + k2X2 + k3X3 = 0$, then _____.

a) $k1, k2, k3$ all are equal to 1
b) $k1 = 0$ but $k2, k3 \neq 0$
c) $k1, k2 = 0$ but $k3 \neq 0$
d) All $k1, k2, k3$ are zero

3) If $z = x^y$ then $\frac{\partial z}{\partial y} =$ _____.

a) yx^{y-1}
b) xy^{x-1}
c) $y^x \log x$
d) $x^y \log x$

4) If $x = r\cos\theta, y = r\sin\theta$ then $\left(\frac{\partial r}{\partial x}\right)_y =$ _____.

a) r/x
b) x/r
c) r/y
d) y/r

5) If $u = xy\tan^{-1}\left(\frac{y}{x}\right)$, then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} =$ _____.

a) 0 b) u

c) $2\mathrm{u}$ d) $-2\mathrm{u}$

6) If δx is an error in x, then $\frac{\delta x}{x}$ is called _____.

a) Absolute error in x b) Relative error in x

c) Approximate error in x d) Percentage error in x

7) A vector function $\bar{F}$ is called irrotational if _____.

a) $Curl\ \bar{F} = \bar{0}$ b) $div\ \bar{F} = 0$

c) $grad\ \bar{F} = 0$ d) $div\ \bar{F} \neq 0$

8) If $\vec{r} = x\hat{\imath} + y\hat{\jmath} + z\hat{k}$ and $\bar{a}$ is a constant vector then $\nabla(\bar{a}.\bar{r}) =$ _____.

a) $2\bar{a}$ b) $\bar{r}$

c) $2\bar{r}$ d) $\bar{a}$

9) If $\bar{F} = (y+z)i + (z+x)j + (x+y)k$, then $div\bar{F} =$ _____.

a) 3 b) 2

c) 1 d) 0

10) If $y = x^{60}$, then $y_{60} =$ _____.

a) 60 b) $60!$

c) 0 d) $0!$

11) If $f(x)$ is continuous function and has derivative of any order then the Maclaurin's Theorem states that $f(x) =$ _____.

a) $f(a) + h.f'(a) + \frac{h^2}{2!}f''(a) +$ _____.

b) $f(0) + x.f'(0) + \frac{x^2}{2!}f''(0) +$ _____.

c) $1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} +$ _____.

d) $x + \frac{x^3}{3} + \frac{2}{15}x^5 +$ _____.

12) The rank of unit matrix of order m is _____.

a) 1 b) 0

c) m d) $\neq m$

13) If $y = \cos 4x$, then $y_n =$ _____.

a) $4^n \cos(4nx)$ b) $\sin(4nx)$

c) $(-1)^n \cos 4nx$ d) $4^n \cos(4x + \frac{n\pi}{2})$

14) $\lim_{x \to 0} \left(\frac{x - \sin x}{x^3}\right) =$_____.

a) 6 b) $1/6$

c) 3 d) $1/3$

SLR-QH-1

Seat No.	

Set S

F.Y. (B.Tech.) (Sem - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mathematics – I
(BTCE0103) /(BTCSE0103)/(BTETE0103)/ (BTEE0103)/(BTME0103)/(BTECE0103)/(BTMRE103)/(BTAI0103)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three questions from the following. **09**

a) Change the given matrix into normal form and hence find its rank.
$A = \begin{bmatrix} 1 & -1 & 2 & -1 \\ 4 & 2 & -1 & 2 \\ 2 & 2 & -2 & 0 \end{bmatrix}$

b) If $y = \frac{x+1}{(x+2)(x-2)}$ then find y_n.

c) Evaluate $\lim_{x\to\infty} x^2 . e^{-x}$

d) Verify Cayley Hamilton theorem for the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 1 & 1 \\ 0 & 1 & 2 \end{bmatrix}$

e) Expand $x^5 - x^4 + x^3 - x^2 + x - 1$ in powers of $(x-1)$ and hence find $f(0.99)$.

Q.3 Attempt Any Three questions from the following. **09**

a) Find nth derivative of $y = \sin 2x . \cos 6x$

b) Show that $\sin^{-1}\left(\frac{2x}{1+x^2}\right) = 2\left(x - \frac{x^3}{3} + \frac{x^5}{5} - \frac{x^7}{7} + \cdots\right)$

c) Investigate for what values of λ and μ the equations $x + 2y + 3z = 4, x + 3y + 4z = 5, x + 3y + \lambda z = \mu$ have
i) No solution
ii) Unique solution
iii) Infinite number of solutions

d) Show that $\sec x = 1 + \frac{x^2}{2} + \frac{5x^4}{24} + \cdots$

e) Examine whether the vectors $X1 = [3\ \ 1\ \ 1], X2 = [2\ \ 0\ \ -1], X3 = [4\ \ 2\ \ 1]$ are linearly dependent or independent

Q.4 Attempt Any Two questions from the following. **10**

a) If $\cos^{-1}\left(\frac{y}{b}\right) = \log\left(\frac{x}{n}\right)^n$ then show that $x^2y_{n+2} + (2n+1)xy_{n+1} + 2n^2y_n = 0$

b) Calculate the values of a, b, c such that $\lim_{x\to 0} \frac{ae^x - be^{-x} - cx}{x - \sin x} = 4$

c) Determine the eigen values and eigen vector corresponding to largest eigen value of the matrix $A = \begin{bmatrix} 2 & 1 & 1 \\ 2 & 3 & 2 \\ 3 & 3 & 4 \end{bmatrix}$

SECTION – II

Q.5 Attempt Any Three questions from the following. **09**

a) Determine the directional derivative of $\Phi = xy^2 + yz^2$ at the point $(2, -1, 1)$ in the direction of vector $i + 2j + 2k$.

b) Calculate approximately the maximum possible errors in the volume and lateral surface area, if the diameter and altitude of a right circular cylinder are measured as 24 cms. And 30 cms. respectively. The maximum possible error in each measurement is 0.1 cm.

c) Calculate $\frac{\partial^3 u}{\partial x \partial y \partial z'}$ if $u = e^{xyz}$.

d) Show that $\nabla(r^n) = nr^{n-2}\bar{r}$

e) Show that $\frac{dz}{dt} = \frac{3}{\sqrt{1-t^2}}$, if $z = \sin^{-1}(x - y)$ and $x = 3t, y = 4t^3$

Q.6 Attempt Any Three questions from the following. **09**

a) Show that:

i) $\left(\frac{\partial u}{\partial x}\right)_y \cdot \left(\frac{\partial x}{\partial u}\right)_y = \frac{l^2}{l^2 + m^2}$

ii) $\left(\frac{\partial y}{\partial v}\right)_x \cdot \left(\frac{\partial v}{\partial y}\right)_u = \frac{l^2+m^2}{l^2}$, if $u = lx + my, v = mx - ly$

b) Determine the maximum value of their product, if the sum of three positive numbers is 1.

c) Calculate the velocity & acceleration vectors and magnitude of velocity and acceleration at $t = 0$, if a particle moves along the curve $x = t^3 + 2t, y = -3e^{-2t}, z = 2\sin 5t$.

d) If $u = f(e^{x-y}, e^{y-z}, e^{z-x})$ then show that $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} = 0$

e) If $x = uv, y = u/v$ then prove that $JJ' = 1$

Q.7 Attempt Any Two questions from the following. **10**

a) Show that the vector $\bar{f} = (6xy + z^3)i + (3x^2 - z)j + (3xz^2 - y)k$ is irrotational and hence find scalar potential Φ such that $\bar{f} = \nabla\Phi$.

b) If $u = \sin^{-1}\left(\frac{x^{1/4}+y^{1/4}}{x^{1/5}+y^{1/5}}\right)$ then show that

$$x^2\frac{\partial^2 u}{\partial x^2} + 2xy\frac{\partial^2 u}{\partial x \partial y} + y^2\frac{\partial^2 u}{\partial y^2} = \frac{1}{400}(\tan^2 u - 19)$$

c) Examine for maxima and minima $x^4 + y^4 - 4a^2xy$.

SLR-QH-2

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mechanics
(BTCE0106)/ (BTCSE0106) / (BTETE0106)/ (BTEE0106)/ (BTME0106)/(BTECE0106)/(BTMRE106)/(BTAI0106)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Forces are called concurrent when their lines of action meet in _____.
a) one point b) two points
c) plane d) perpendicular planes

2) If the arm of a couple is doubled, it's moment will _____.
a) be halved b) remains the same
c) be doubled d) None of above

3) Redundant truss is a type of _____.
a) perfect truss b) imperfect truss
c) stable truss d) None of the above

4) The velocity of body reaching ground from height h is, _____.
a) $2\sqrt{gh}$ b) $\sqrt{gh}$
c) $\sqrt{2gh}$ d) $2g\sqrt{h}$

5) For fixed support number of unknown are _____.
a) one b) two
c) three d) None of these

6) A body is projected vertically upwards with velocity u from a surface. The velocity with which it strikes the surface back is _____.
a) u b) $2u$
c) u^2/g d) u/g

7) When acceleration is _____, velocity of a particle is constant.
a) constant but non zero
b) maximum
c) zero
d) None of the above

8) When a body of mass moment of inertia I (about a given axis) is rotated about that axis with an angular velocity, then the kinetic energy of rotation is _____.
a) $0.5\ \mathrm{I}.\omega$
b) $\mathrm{I}.\omega$
c) $0.5\ \mathrm{I}.\omega^2$
d) $\mathrm{I}.\omega^2$

9) The energy possessed by a body, for doing work by virtue of its position, is called _____.
a) Potential energy
b) Kinetic energy
c) Electrical energy
d) Chemical energy

10) 1 joule is equal to _____.
a) 1 N × 1 m
b) 1 N + 1 m
c) 1 N − 1 m
d) 1 G9 × 1m

11) Time of flight of a projectile on a horizontal, plane is _____.
a) $2u\sin\alpha/\ g$
b) $2u\cos\ \alpha/\ g$
c) $2u\tan\alpha/\ g$
d) $2u\cot\alpha/g$

12) The parallel axis theorem uses the _____ of the distance.
a) Square root
b) Square
c) Cube root
d) Cube

13) The torque acting on a body of moment of inertia (I) and angular acceleration (α) is _____.
a) $\mathrm{I}\ \alpha$
b) $\mathrm{I}\ \alpha^2$
c) $0.5\mathrm{I}\ \alpha$
d) $0.5\mathrm{I}\ \alpha^2$

14) The time rate of doing work is known as, _____.
a) Potential energy
b) Kinetic energy
c) Power
d) None of these

SLR-QH-2

Seat No.	

Set | **P**

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mechanics
(BTCE0106)/ (BTCSE0106) / (BTETE0106)/ (BTEE0106)/ (BTME0106)/(BTECE0106)/(BTMRE106)/(BTAI0106)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed & mention it clearly.
4) Draw neat sketches wherever necessary.

SECTION – I

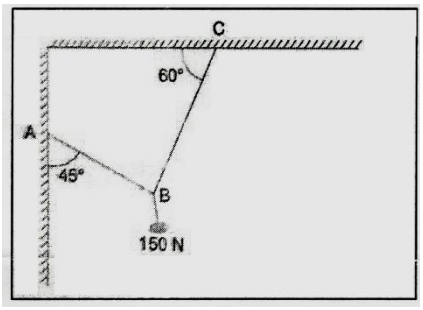
Q.2 Attempt Any Four of the following. **12**

a) State and explain principle of transmissibility.

b) Define couple and state its characteristics.

c) What are the assumptions made in the analysis of trusses?

d) Find the forces developed in the wires, supporting on elastic fixtures as shown in the figure.

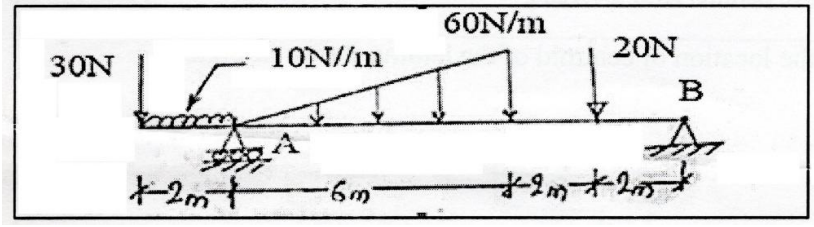


e) Define the terms.
i) Horizontal range
ii) Trajectory
iii) Time of flight

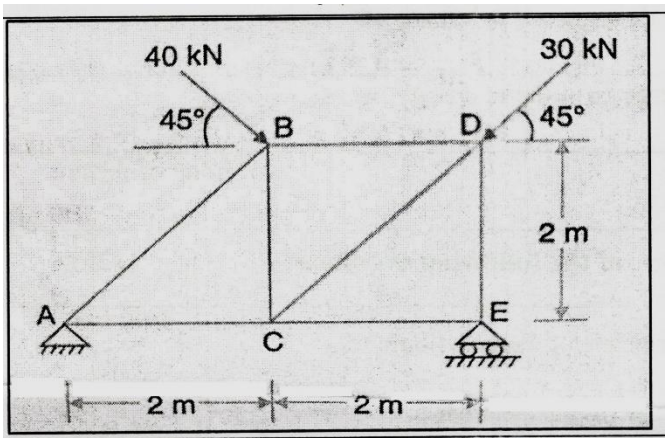
f) Distinguish between angular motion and linear motion.

Q.3 Attempt Any Two of the following: **16**

a) An overhanging beam is on rollers at A and is hinged at B and is loaded as shown in Figure. Determine the reactions at A and B.



b) Find the forces in all members by using method of joints.



c) Two cars are travelling towards each other on a single lane road at a velocity 12m/s & 9m/s respectively. When 100m apart both driver realize the situation of accident & apply the break simultaneously. They succeed in stopping simultaneously on just verge of collision. Assuming retardation for each case.
Determine:

i) Time required to stop car
ii) Retardation for each car
iii) Distance travelled by each car while slowing down.

SECTION – II

Q.4 Attempt Any Four of the following: **12**

a) Define

i) Work done
ii) Impulse
iii) Momentum

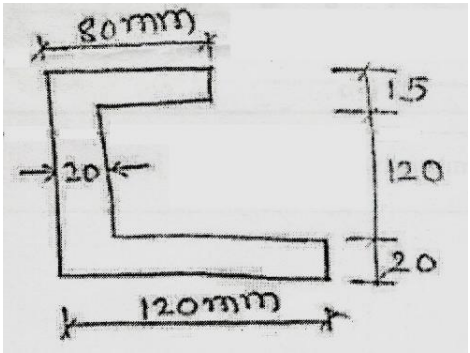
b) State and prove the work energy principle for linear motion.

c) State and explain the law of conservation of momentum.

d) State and explain D'Alembert's principle.

e) State and prove parallel axes theorem.

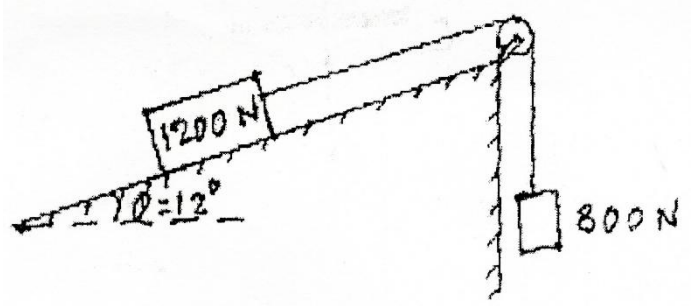
f) Determine the location of centroid of the lamina shown in Figure.



Q.5 Attempt Any Two of the following: **16**

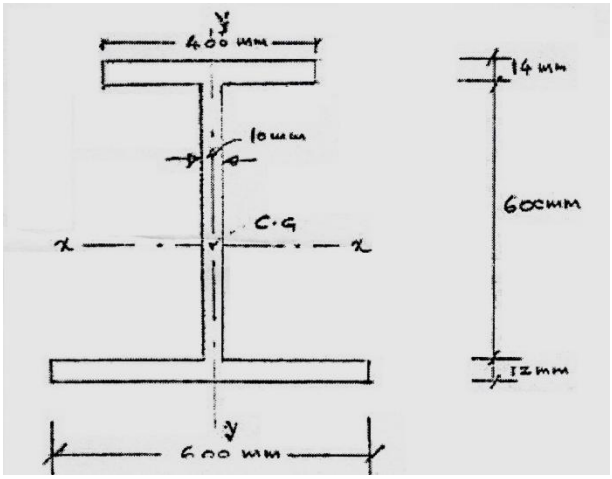
a) A body weighing 1200 N rests on a rough plane inclined at 12° to the horizontal. It is pulled up the plane by means of a light rope running parallel to the plane and passing over a light frictionless pulley at the top of the plane as shown in the figure. The portion of the rope beyond the pulley hangs vertically down and carries a weight of 800 N at its end. The coefficient of friction for the plane and the body is 0.2.
Find

i) Tension in the rope
ii) Acceleration with which the body moves up the plane.
iii) The distance moved by the body in 3 seconds after starting from rest.



b) A block weighing 2500 N rests on level horizontal plane for which coefficient of friction is 0.20. This block is pulled by a force of 1000 N acting at an angle of 30° to the horizontal. Find the velocity of the block after it moves 30 m starting from rest. If the force of 1000 N is then removed how further will it move? Use work energy method.

c) Determine the polar moment of inertial of the I section as shown in figure. Also determine the radii of gyration with respect to x-x and y-y axis.



SLR-QH-2

Seat No.	

Set Q

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mechanics
(BTCE0106)/ (BTCSE0106) / (BTETE0106)/ (BTEE0106)/ (BTME0106)/(BTECE0106)/(BTMRE106)/(BTAI0106)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data whenever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) When a body of mass moment of inertia I (about a given axis) is rotated about that axis with an angular velocity, then the kinetic energy of rotation is _____.
a) $0.5\ \mathrm{I}.\omega$ b) $\mathrm{I}.\omega$
c) $0.5\ \mathrm{I}.\omega^2$ d) $\mathrm{I}.\omega^2$

2) The energy possessed by a body, for doing work by virtue of its position, is called _____.
a) Potential energy b) Kinetic energy
c) Electrical energy d) Chemical energy

3) 1 joule is equal to _____.
a) 1 N × 1 m b) 1 N + 1 m
c) 1 N − 1 m d) 1 G9 × 1m

4) Time of flight of a projectile on a horizontal, plane is _____.
a) $2u \sin \alpha / g$ b) $2u \cos \alpha / g$
c) $2u \tan \alpha / g$ d) $2u \cot \alpha / g$

5) The parallel axis theorem uses the _____ of the distance.
a) Square root b) Square
c) Cube root d) Cube

6) The torque acting on a body of moment of inertia (I) and angular acceleration (α) is _____.
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b) $2u$
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d) u/g

14) When acceleration is _____, velocity of a particle is constant.
a) constant but non zero
b) maximum
c) zero
d) None of the above

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mechanics
(BTCE0106)/ (BTCSE0106) / (BTETE0106)/ (BTEE0106)/ (BTME0106)/(BTECE0106)/(BTMRE106)/(BTAI0106)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
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SECTION – I

Q.2 Attempt Any Four of the following. **12**

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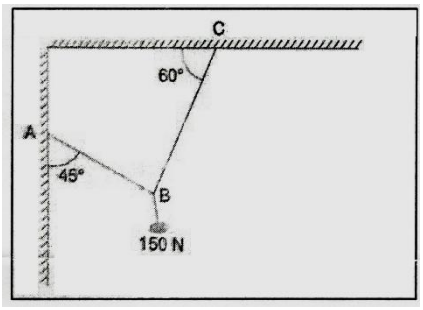

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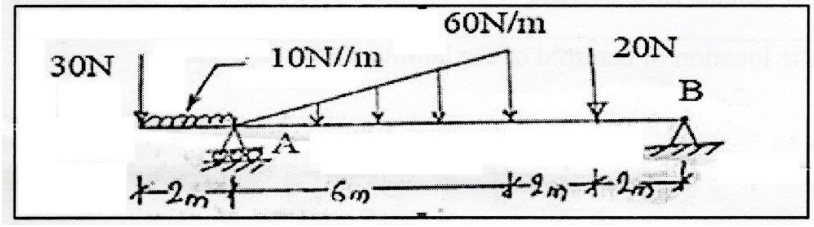
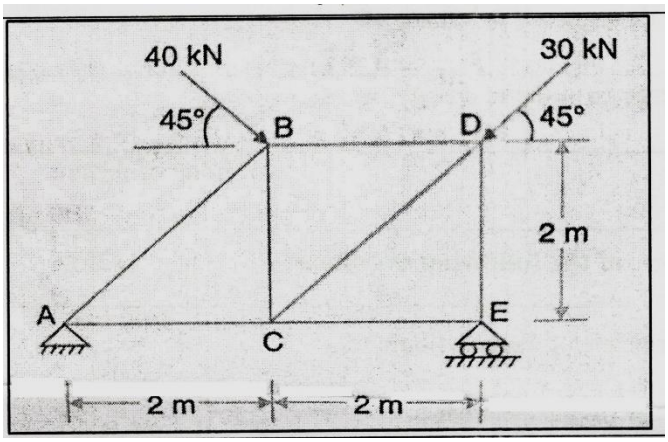


b) Find the forces in all members by using method of joints.



c) Two cars are travelling towards each other on a single lane road at a velocity 12m/s & 9m/s respectively. When 100m apart both driver realize the situation of accident & apply the break simultaneously. They succeed in stopping simultaneously on just verge of collision. Assuming retardation for each case.
Determine:

i) Time required to stop car
ii) Retardation for each car
iii) Distance travelled by each car while slowing down.

SECTION – II

Q.4 Attempt Any Four of the following: **12**

a) Define

i) Work done
ii) Impulse
iii) Momentum

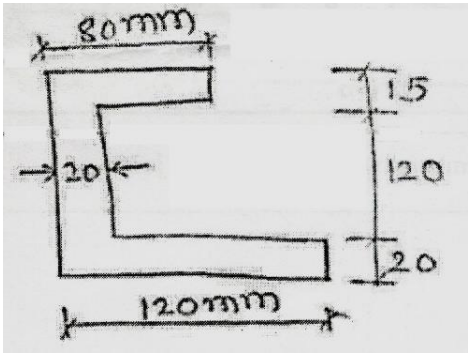
b) State and prove the work energy principle for linear motion.

c) State and explain the law of conservation of momentum.

d) State and explain D'Alembert's principle.

e) State and prove parallel axes theorem.

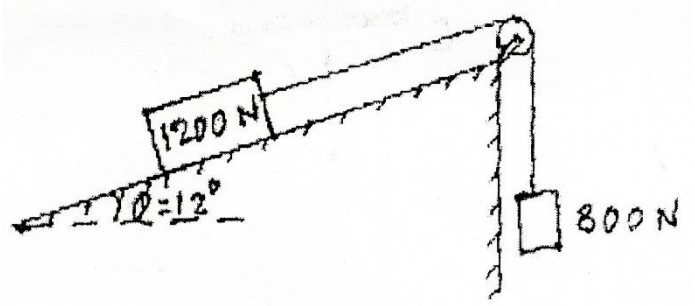
f) Determine the location of centroid of the lamina shown in Figure.



Q.5 Attempt Any Two of the following: **16**

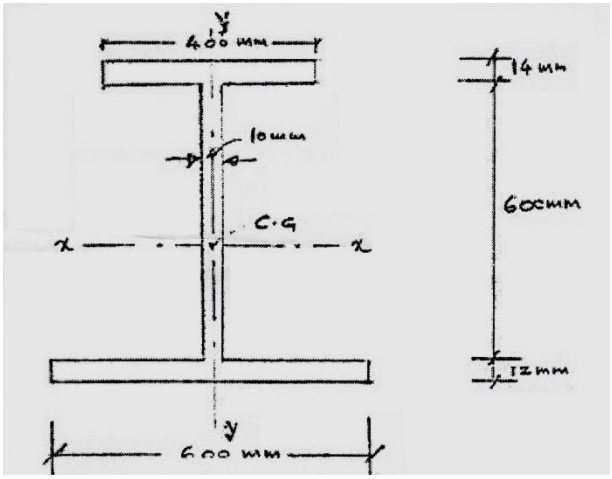
a) A body weighing 1200 N rests on a rough plane inclined at 12° to the horizontal. It is pulled up the plane by means of a light rope running parallel to the plane and passing over a light frictionless pulley at the top of the plane as shown in the figure. The portion of the rope beyond the pulley hangs vertically down and carries a weight of 800 N at its end. The coefficient of friction for the plane and the body is 0.2.
Find

i) Tension in the rope
ii) Acceleration with which the body moves up the plane.
iii) The distance moved by the body in 3 seconds after starting from rest.



b) A block weighing 2500 N rests on level horizontal plane for which coefficient of friction is 0.20. This block is pulled by a force of 1000 N acting at an angle of 30° to the horizontal. Find the velocity of the block after it moves 30 m starting from rest. If the force of 1000 N is then removed how further will it move? Use work energy method.

c) Determine the polar moment of inertial of the I section as shown in figure. Also determine the radii of gyration with respect to x-x and y-y axis.



SLR-QH-2

Seat No.	

Set R

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mechanics
(BTCE0106)/ (BTCSE0106) / (BTETE0106)/ (BTEE0106)/ (BTME0106)/(BTECE0106)/(BTMRE106)/(BTAI0106)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Time of flight of a projectile on a horizontal, plane is _____.
a) $2u \sin \alpha / g$ b) $2u \cos \alpha / g$
c) $2u \tan \alpha / g$ d) $2u \cot \alpha / g$

2) The parallel axis theorem uses the _____ of the distance.
a) Square root b) Square
c) Cube root d) Cube

3) The torque acting on a body of moment of inertia (I) and angular acceleration (α) is _____.
a) $\mathrm{I}\,\alpha$ b) $\mathrm{I}\,\alpha^2$
c) $0.5\mathrm{I}\,\alpha$ d) $0.5\mathrm{I}\,\alpha^2$

4) The time rate of doing work is known as, _____.
a) Potential energy b) Kinetic energy
c) Power d) None of these

5) Forces are called concurrent when their lines of action meet in _____.
a) one point b) two points
c) plane d) perpendicular planes

6) If the arm of a couple is doubled, it's moment will _____.
a) be halved b) remains the same
c) be doubled d) None of above

7) Redundant truss is a type of _____.
a) perfect truss b) imperfect truss
c) stable truss d) None of the above

8) The velocity of body reaching ground from height h is, _____.
a) $2\sqrt{gh}$ b) $\sqrt{gh}$
c) $\sqrt{2gh}$ d) $2g\sqrt{h}$

9) For fixed support number of unknown are _____.
a) one b) two
c) three d) None of these

10) A body is projected vertically upwards with velocity u from a surface. The velocity with which it strikes the surface back is _____.
a) u b) $2u$
c) u^2/g d) u/g

11) When acceleration is _____, velocity of a particle is constant.
a) constant but non zero b) maximum
c) zero d) None of the above

12) When a body of mass moment of inertia I (about a given axis) is rotated about that axis with an angular velocity, then the kinetic energy of rotation is _____.
a) $0.5\ \mathrm{I}.\omega$ b) $\mathrm{I}.\omega$
c) $0.5\ \mathrm{I}.\omega^2$ d) $\mathrm{I}.\omega^2$

13) The energy possessed by a body, for doing work by virtue of its position, is called _____.
a) Potential energy b) Kinetic energy
c) Electrical energy d) Chemical energy

14) 1 joule is equal to _____.
a) 1 N × 1 m b) 1 N + 1 m
c) 1 N − 1 m d) 1 G9 × 1m

SLR-QH-2

Seat No.		Set	R

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mechanics
(BTCE0106)/ (BTCSE0106) / (BTETE0106)/ (BTEE0106)/ (BTME0106)/(BTECE0106)/(BTMRE106)/(BTAI0106)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed & mention it clearly.
4) Draw neat sketches wherever necessary.

SECTION – I

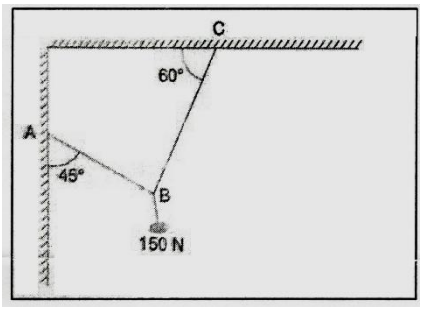
Q.2 Attempt Any Four of the following. **12**

a) State and explain principle of transmissibility.

b) Define couple and state its characteristics.

c) What are the assumptions made in the analysis of trusses?

d) Find the forces developed in the wires, supporting on elastic fixtures as shown in the figure.

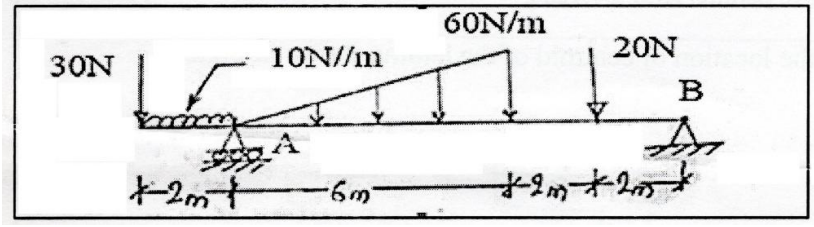


e) Define the terms.
i) Horizontal range
ii) Trajectory
iii) Time of flight

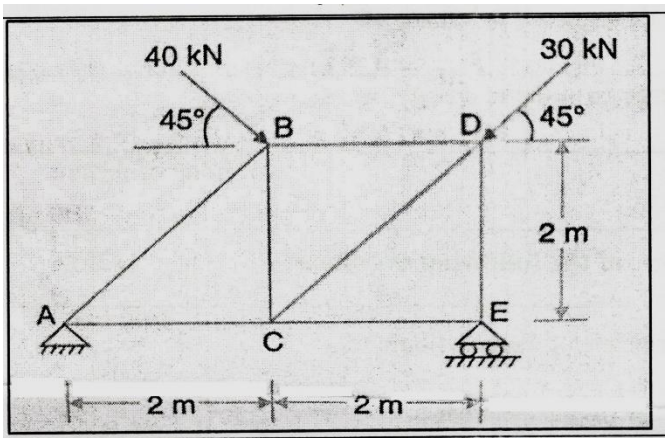
f) Distinguish between angular motion and linear motion.

Q.3 Attempt Any Two of the following: **16**

a) An overhanging beam is on rollers at A and is hinged at B and is loaded as shown in Figure. Determine the reactions at A and B.



b) Find the forces in all members by using method of joints.



c) Two cars are travelling towards each other on a single lane road at a velocity 12m/s & 9m/s respectively. When 100m apart both driver realize the situation of accident & apply the break simultaneously. They succeed in stopping simultaneously on just verge of collision. Assuming retardation for each case.
Determine:

i) Time required to stop car
ii) Retardation for each car
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SECTION – II

Q.4 Attempt Any Four of the following: **12**

a) Define

i) Work done
ii) Impulse
iii) Momentum

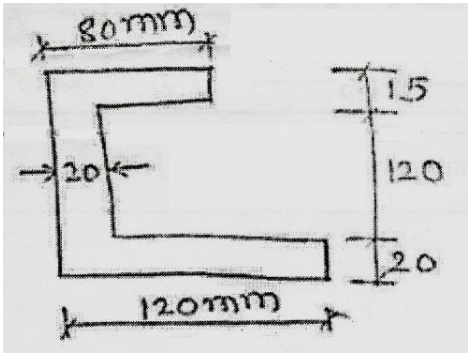
b) State and prove the work energy principle for linear motion.

c) State and explain the law of conservation of momentum.

d) State and explain D'Alembert's principle.

e) State and prove parallel axes theorem.

f) Determine the location of centroid of the lamina shown in Figure.



Q.5 Attempt Any Two of the following: **16**

a) A body weighing 1200 N rests on a rough plane inclined at 12° to the horizontal. It is pulled up the plane by means of a light rope running parallel to the plane and passing over a light frictionless pulley at the top of the plane as shown in the figure. The portion of the rope beyond the pulley hangs vertically down and carries a weight of 800 N at its end. The coefficient of friction for the plane and the body is 0.2.
Find

i) Tension in the rope
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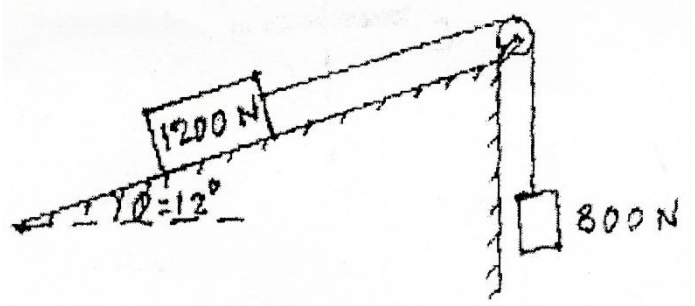

b) A block weighing 2500 N rests on level horizontal plane for which coefficient of friction is 0.20. This block is pulled by a force of 1000 N acting at an angle of 30° to the horizontal. Find the velocity of the block after it moves 30 m starting from rest. If the force of 1000 N is then removed how further will it move? Use work energy method.

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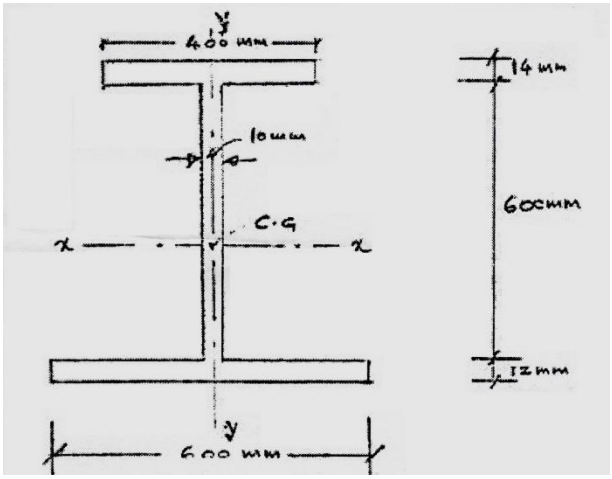

SLR-QH-2

Seat No.	

Set S

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mechanics
(BTCE0106)/ (BTCSE0106) / (BTETE0106)/ (BTEE0106)/ (BTME0106)/(BTECE0106)/(BTMRE106)/(BTAI0106)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) A body is projected vertically upwards with velocity u from a surface. The velocity with which it strikes the surface back is _____.
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c) u^2/g d) u/g

2) When acceleration is _____, velocity of a particle is constant.
a) constant but non zero b) maximum
c) zero d) None of the above

3) When a body of mass moment of inertia I (about a given axis) is rotated about that axis with an angular velocity, then the kinetic energy of rotation is _____.
a) $0.5\ \mathrm{I}.\omega$ b) $\mathrm{I}.\omega$
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5) 1 joule is equal to _____.
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b) Square
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d) Cube

8) The torque acting on a body of moment of inertia (I) and angular acceleration (α) is _____.
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c) stable truss
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13) The velocity of body reaching ground from height h is, _____.
a) $2\sqrt{gh}$
b) $\sqrt{gh}$
c) $\sqrt{2gh}$
d) $2g\sqrt{h}$

14) For fixed support number of unknown are _____.
a) one
b) two
c) three
d) None of these

SLR-QH-2

Seat No.		Set	S

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mechanics
(BTCE0106)/ (BTCSE0106) / (BTETE0106)/ (BTEE0106)/ (BTME0106)/(BTECE0106)/(BTMRE106)/(BTAI0106)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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4) Draw neat sketches wherever necessary.

SECTION – I

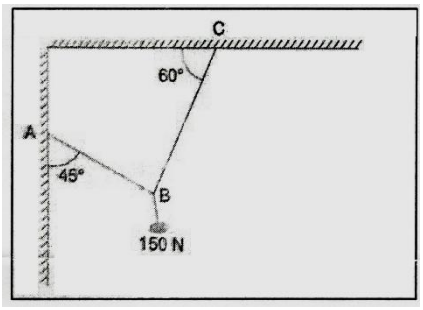
Q.2 Attempt Any Four of the following. **12**

a) State and explain principle of transmissibility.

b) Define couple and state its characteristics.

c) What are the assumptions made in the analysis of trusses?

d) Find the forces developed in the wires, supporting on elastic fixtures as shown in the figure.



e) Define the terms.
i) Horizontal range
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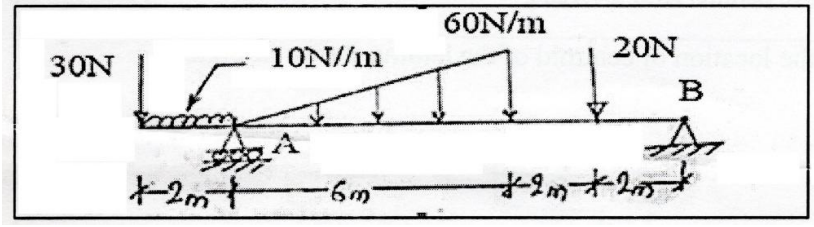
f) Distinguish between angular motion and linear motion.

Q.3 Attempt Any Two of the following: **16**

a) An overhanging beam is on rollers at A and is hinged at B and is loaded as shown in Figure. Determine the reactions at A and B.



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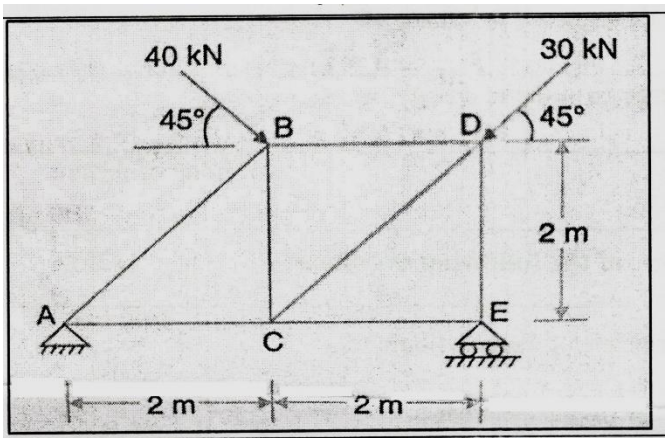

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Determine:

i) Time required to stop car
ii) Retardation for each car
iii) Distance travelled by each car while slowing down.

SECTION – II

Q.4 Attempt Any Four of the following: **12**

a) Define

i) Work done
ii) Impulse
iii) Momentum

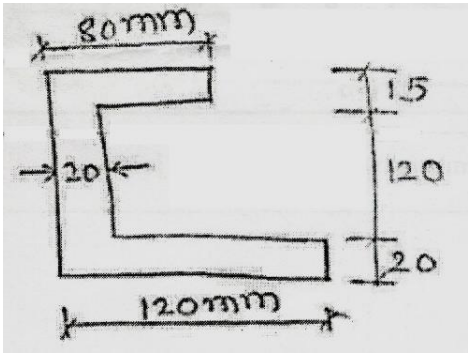
b) State and prove the work energy principle for linear motion.

c) State and explain the law of conservation of momentum.

d) State and explain D'Alembert's principle.

e) State and prove parallel axes theorem.

f) Determine the location of centroid of the lamina shown in Figure.



Q.5 Attempt Any Two of the following: **16**

a) A body weighing 1200 N rests on a rough plane inclined at 12° to the horizontal. It is pulled up the plane by means of a light rope running parallel to the plane and passing over a light frictionless pulley at the top of the plane as shown in the figure. The portion of the rope beyond the pulley hangs vertically down and carries a weight of 800 N at its end. The coefficient of friction for the plane and the body is 0.2.
Find

i) Tension in the rope
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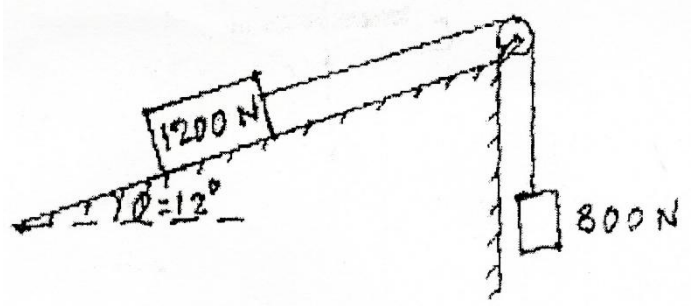
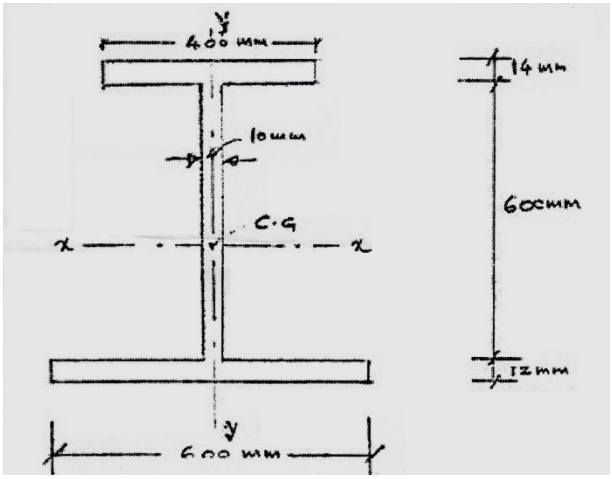
iii) The distance moved by the body in 3 seconds after starting from rest.



b) A block weighing 2500 N rests on level horizontal plane for which coefficient of friction is 0.20. This block is pulled by a force of 1000 N acting at an angle of 30° to the horizontal. Find the velocity of the block after it moves 30 m starting from rest. If the force of 1000 N is then removed how further will it move? Use work energy method.

c) Determine the polar moment of inertial of the I section as shown in figure. Also determine the radii of gyration with respect to x-x and y-y axis.



SLR-QH-3

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0101)/ (BTCSE0101)/ (BTETE0101)/ (BTEE0101)/ (BTME0101)/ (BTECE0101)/ (BTMRE101)/ (BTAI0101)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

Constants: 1) Avogadro's no., $N = 6.02 \times 10^{26}$ / k.mol.
2) Velocity of light, $c = 3 \times 10^{8}$ m/sec.
3) Charge of electron, $e = 1.6 \times 10^{-19}$ C.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. 14

1) In conductor, current flows due to _____.
a) electrons b) both holes and electrons
c) protons d) holes

2) Semiconductors that contain acceptor atoms and holes belong to the _____.
a) N-type b) P-type
c) both N-type and P-type d) neither N nor P-type

3) Effective number of atoms belonging to the unit cell of BCC structure is _____.
a) 6 b) 4
c) 2 d) 8

4) Atomic packing factor of SC structure is _____.
a) 0.68 b) 0.48
c) 0.52 d) 0.74

5) Cubic crystal has _____ two-fold axes of symmetry.
a) 6 b) 12
c) 3 d) 4

6) SONAR stands for _____.
a) Sound Ranging and Navigation
b) Sonic Detection and Ranging
c) Solar Navigation and Ranging
d) Sound Navigation and Ranging

7) The persistence of audible sound after the source has stopped to emit sound is known as _____.
a) echo
b) reflection
c) reverberation
d) reverberation time

8) The grating constant is given by the equation _____
a) No. of lines per inch
b) $\frac{1.54}{\text{No. of lines/inch}}$
c) No. of lines per cm
d) $\frac{1}{\text{No. of lines/cm}}$

9) In Laurentz's half shade Polarimeter, the half part of Laurentz's plate is of _____.
a) calcite, tourmaline
b) quartz, calcite
c) glass, quartz
d) glass, calcite

10) Stimulated emission process is represented as _____.
a) $A + hv \rightarrow A^*$
b) $A^* + hv \rightarrow A + 2hv$
c) $A^* \rightarrow A + hv$
d) $A^* + hv \rightarrow A + hv$

11) LASER is a short form of _____.
a) Light Amplification by Stimulated Emission of Radiation
b) Light Absorption by Spontaneous Emission of Radiation
c) Light Amplification by Spontaneous Emission of Radiation
d) Light Absorption by Stimulated Emission of Radiation

12) For He-Ne laser, typical value of divergence is _____.
a) 10^5 radian
b) 10^3 radian
c) 10^{-5} radian
d) 10^{-3} radian

13) The numerical aperture is defined as the _____.
a) tangent of the acceptance angle
b) sine of the acceptance angle
c) cosine of the acceptance angle
d) cosec of the acceptance angle

14) Dimensions of nanomaterials ranging from _____.
a) 1 to 150 nm
b) 2 to 250 nm
c) 1 to 100 nm
d) 25 to 100 nm

Seat No.	

Set **P**

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0101)/ (BTCSE0101)/ (BTETE0101)/ (BTEE0101)/ (BTME0101)/ (BTECE0101)/ (BTMRE101)/ (BTAI0101)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Attempt Any SIX of the following. **18**

a) Define: valence band, conduction band and energy gap. Show them with neat diagram.

b) Derive an expression for Fermi level lies at the middle of valence band and conduction band in intrinsic semiconductors.

c) Define: Atomic radius. Determine the relation between lattice constant (a) and atomic radius (r) for BCC, and FCC.

d) Explain: Plane of symmetry.

e) State: Basic requirements for acoustically good hall.

f) State: Properties of ultrasonic waves.

g) Calculate the Hall voltage across a copper strip which is 2.5 cm wide and 1 mm thick, carrying current of 250A and placed in a magnetic field with B = 1.65 wb/m^2. Given: number of charge carriers in the copper strip 8.4×10^{28} m^{-3}.

h) A hall has a volume of 2265.6 m^3. Its total absorption is equivalent to 92.90 m^2 of open window. What will be the effect on the reverberation time if curtains of total absorption equivalent to 92.90 m^2 are placed inside?

Q.3 Attempt Any TWO of the following. **10**

a) State Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H).

b) Explain the factors affecting the architectural acoustics of a hall and their remedies.

c) Explain the term Miller indices. Derive the relation between lattice constant and interplanar spacing for cubic crystal.

$$d_{(hkl)} = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

d) i) A substance with the FCC lattice has density 6200 kg/m^3 and molecular weight 60.2. Calculate the lattice constant 'a'.
Given: Avogadro number is 6.02×10^{26} /kg.mole.

ii) Calculate the radius of atoms in α-iron belonging to BCC structure. The density of α-iron is 7860 kg/m^3 and atomic weight of iron is 55.85.

SECTION – II

Q.4 Attempt Any SIX of the following. **18**

a) Explain: Rayleigh's criterion of resolution.

b) State and Explain: Malus Law.

c) Explain:
i) Stimulated Emission and
ii) Population Inversion

d) State: Properties of LASER source.

e) Explain: Principal of Optical Fiber.

f) Explain: Types of Carbon Nanotubes (CNT).

g) In a transmission diffraction grating with 5000 number of lines/cm, a light of the wavelength 6350 Å is incident normally on it. Determine how many orders will be visible with this grating?

h) Optical fiber is made of glass with a core of refractive index of 1.75 and is clad with a refractive index 1.61 and launching takes from air. Calculate numerical aperture and acceptance angle of the fiber.

Q.5 Attempt Any TWO of the following. **10**

a) What is diffraction grating? Derive an expression $\lambda/d\lambda = n.N$ for the resolving power of a diffraction grating.

b) Derive an expression for acceptance angle (θ_0), acceptance cone, numerical aperture and fractional refractive index change (Δ) of an optical fiber.

c) i) A glass tube with 200 mm long containing sugar solution rotates the plane of polarization by 10.11^0. If the specific rotation of sugar is 66°, calculate the strength of the solution.

ii) Sodium yellow light of wavelength 5893 Å is a doublet of 6 Å . What is the minimum number of lines a grating should have to resolve the doublet in the 3rd order spectrum.

d) Explain: He-Ne gas laser with neat energy level and transition diagram.

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0101)/ (BTCSE0101)/ (BTETE0101)/ (BTEE0101)/ (BTME0101)/ (BTECE0101)/ (BTMRE101)/ (BTAI0101)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

Constants: 1) Avogadro's no., N = 6.02×10^{26} / k.mol.
2) Velocity of light, c = 3×10^{8} m/sec.
3) Charge of electron, e = 1.6×10^{-19} C.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) The grating constant is given by the equation _____

a) No. of lines per inch
b) $\frac{1.54}{\text{No. of lines/inch}}$
c) No. of lines per cm
d) $\frac{1}{\text{No. of lines/cm}}$

2) In Laurentz's half shade Polarimeter, the half part of Laurentz's plate is of _____.

a) calcite, tourmaline
b) quartz, calcite
c) glass, quartz
d) glass, calcite

3) Stimulated emission process is represented as _____.

a) $A + hv \rightarrow A^*$
b) $A^* + hv \rightarrow A + 2hv$
c) $A^* \rightarrow A + hv$
d) $A^* + hv \rightarrow A + hv$

4) LASER is a short form of _____.

a) Light Amplification by Stimulated Emission of Radiation
b) Light Absorption by Spontaneous Emission of Radiation
c) Light Amplification by Spontaneous Emission of Radiation
d) Light Absorption by Stimulated Emission of Radiation

5) For He-Ne laser, typical value of divergence is _____.
a) 10^5 radian b) 10^3 radian
c) 10^{-5} radian d) 10^{-3} radian

6) The numerical aperture is defined as the _____.
a) tangent of the acceptance angle
b) sine of the acceptance angle
c) cosine of the acceptance angle
d) cosec of the acceptance angle

7) Dimensions of nanomaterials ranging from _____.
a) 1 to 150 nm b) 2 to 250 nm
c) 1 to 100 nm d) 25 to 100 nm

8) In conductor, current flows due to _____.
a) electrons b) both holes and electrons
c) protons d) holes

9) Semiconductors that contain acceptor atoms and holes belong to the _____.
a) N-type b) P-type
c) both N-type and P-type d) neither N nor P-type

10) Effective number of atoms belonging to the unit cell of BCC structure is _____.
a) 6 b) 4
c) 2 d) 8

11) Atomic packing factor of SC structure is _____.
a) 0.68 b) 0.48
c) 0.52 d) 0.74

12) Cubic crystal has _____ two-fold axes of symmetry.
a) 6 b) 12
c) 3 d) 4

13) SONAR stands for _____.
a) Sound Ranging and Navigation
b) Sonic Detection and Ranging
c) Solar Navigation and Ranging
d) Sound Navigation and Ranging

14) The persistence of audible sound after the source has stopped to emit sound is known as _____.
a) echo b) reflection
c) reverberation d) reverberation time

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0101)/ (BTCSE0101)/ (BTETE0101)/ (BTEE0101)/ (BTME0101)/ (BTECE0101)/ (BTMRE101)/ (BTAI0101)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Attempt Any SIX of the following. **18**

a) Define: valence band, conduction band and energy gap. Show them with neat diagram.

b) Derive an expression for Fermi level lies at the middle of valence band and conduction band in intrinsic semiconductors.

c) Define: Atomic radius. Determine the relation between lattice constant (a) and atomic radius (r) for BCC, and FCC.

d) Explain: Plane of symmetry.

e) State: Basic requirements for acoustically good hall.

f) State: Properties of ultrasonic waves.

g) Calculate the Hall voltage across a copper strip which is 2.5 cm wide and 1 mm thick, carrying current of 250A and placed in a magnetic field with B = 1.65 wb/m^2. Given: number of charge carriers in the copper strip 8.4×10^{28} m^{-3}.

h) A hall has a volume of 2265.6 m^3. Its total absorption is equivalent to 92.90 m^2 of open window. What will be the effect on the reverberation time if curtains of total absorption equivalent to 92.90 m^2 are placed inside?

Q.3 Attempt Any TWO of the following. **10**

a) State Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H).

b) Explain the factors affecting the architectural acoustics of a hall and their remedies.

c) Explain the term Miller indices. Derive the relation between lattice constant and interplanar spacing for cubic crystal.

$$d_{(hkl)} = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

d) i) A substance with the FCC lattice has density 6200 kg/m^3 and molecular weight 60.2. Calculate the lattice constant 'a'.
Given: Avogadro number is 6.02×10^{26} /kg.mole.

ii) Calculate the radius of atoms in α-iron belonging to BCC structure. The density of α-iron is 7860 kg/m^3 and atomic weight of iron is 55.85.

SECTION – II

Q.4 Attempt Any SIX of the following. **18**

a) Explain: Rayleigh's criterion of resolution.

b) State and Explain: Malus Law.

c) Explain:
i) Stimulated Emission and
ii) Population Inversion

d) State: Properties of LASER source.

e) Explain: Principal of Optical Fiber.

f) Explain: Types of Carbon Nanotubes (CNT).

g) In a transmission diffraction grating with 5000 number of lines/cm, a light of the wavelength 6350 Å is incident normally on it. Determine how many orders will be visible with this grating?

h) Optical fiber is made of glass with a core of refractive index of 1.75 and is clad with a refractive index 1.61 and launching takes from air. Calculate numerical aperture and acceptance angle of the fiber.

Q.5 Attempt Any TWO of the following. **10**

a) What is diffraction grating? Derive an expression $\lambda/d\lambda = n.N$ for the resolving power of a diffraction grating.

b) Derive an expression for acceptance angle (θ_0), acceptance cone, numerical aperture and fractional refractive index change (Δ) of an optical fiber.

c) i) A glass tube with 200 mm long containing sugar solution rotates the plane of polarization by 10.11^0. If the specific rotation of sugar is 66°, calculate the strength of the solution.

ii) Sodium yellow light of wavelength 5893 Å is a doublet of 6 Å . What is the minimum number of lines a grating should have to resolve the doublet in the 3rd order spectrum.

d) Explain: He-Ne gas laser with neat energy level and transition diagram.

Seat No.	

Set **R**

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0101)/ (BTCSE0101)/ (BTETE0101)/ (BTEE0101)/ (BTME0101)/ (BTECE0101)/ (BTMRE101)/ (BTAI0101)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

Constants: 1) Avogadro's no., $N = 6.02 \times 10^{26}$ / k.mol.
2) Velocity of light, $c = 3 \times 10^{8}$ m/sec.
3) Charge of electron, $e = 1.6 \times 10^{-19}$ C.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) LASER is a short form of _____.
a) Light Amplification by Stimulated Emission of Radiation
b) Light Absorption by Spontaneous Emission of Radiation
c) Light Amplification by Spontaneous Emission of Radiation
d) Light Absorption by Stimulated Emission of Radiation

2) For He-Ne laser, typical value of divergence is _____.
a) 10^{5} radian b) 10^{3} radian
c) 10^{-5} radian d) 10^{-3} radian

3) The numerical aperture is defined as the _____.
a) tangent of the acceptance angle
b) sine of the acceptance angle
c) cosine of the acceptance angle
d) cosec of the acceptance angle

4) Dimensions of nanomaterials ranging from _____.
a) 1 to 150 nm b) 2 to 250 nm
c) 1 to 100 nm d) 25 to 100 nm

5) In conductor, current flows due to _____.
a) electrons b) both holes and electrons
c) protons d) holes

6) Semiconductors that contain acceptor atoms and holes belong to the _____.

a) N-type
b) P-type
c) both N-type and P-type
d) neither N nor P-type

7) Effective number of atoms belonging to the unit cell of BCC structure is _____.

a) 6
b) 4
c) 2
d) 8

8) Atomic packing factor of SC structure is _____.

a) 0.68
b) 0.48
c) 0.52
d) 0.74

9) Cubic crystal has _____ two-fold axes of symmetry.

a) 6
b) 12
c) 3
d) 4

10) SONAR stands for _____.

a) Sound Ranging and Navigation
b) Sonic Detection and Ranging
c) Solar Navigation and Ranging
d) Sound Navigation and Ranging

11) The persistence of audible sound after the source has stopped to emit sound is known as _____.

a) echo
b) reflection
c) reverberation
d) reverberation time

12) The grating constant is given by the equation _____

a) No. of lines per inch
b) $\frac{1.54}{\text{No. of lines/inch}}$
c) No. of lines per cm
d) $\frac{1}{\text{No. of lines/cm}}$

13) In Laurentz's half shade Polarimeter, the half part of Laurentz's plate is of _____.

a) calcite, tourmaline
b) quartz, calcite
c) glass, quartz
d) glass, calcite

14) Stimulated emission process is represented as _____.

a) $A + hv \rightarrow A^*$
b) $A^* + hv \rightarrow A + 2hv$
c) $A^* \rightarrow A + hv$
d) $A^* + hv \rightarrow A + hv$

Seat No.	

Set **R**

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0101)/ (BTCSE0101)/ (BTETE0101)/ (BTEE0101)/ (BTME0101)/ (BTECE0101)/ (BTMRE101)/ (BTAI0101)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Attempt Any SIX of the following. **18**

a) Define: valence band, conduction band and energy gap. Show them with neat diagram.

b) Derive an expression for Fermi level lies at the middle of valence band and conduction band in intrinsic semiconductors.

c) Define: Atomic radius. Determine the relation between lattice constant (a) and atomic radius (r) for BCC, and FCC.

d) Explain: Plane of symmetry.

e) State: Basic requirements for acoustically good hall.

f) State: Properties of ultrasonic waves.

g) Calculate the Hall voltage across a copper strip which is 2.5 cm wide and 1 mm thick, carrying current of 250A and placed in a magnetic field with B = 1.65 wb/m^2. Given: number of charge carriers in the copper strip 8.4×10^{28} m^{-3}.

h) A hall has a volume of 2265.6 m^3. Its total absorption is equivalent to 92.90 m^2 of open window. What will be the effect on the reverberation time if curtains of total absorption equivalent to 92.90 m^2 are placed inside?

Q.3 Attempt Any TWO of the following. **10**

a) State Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H).

b) Explain the factors affecting the architectural acoustics of a hall and their remedies.

c) Explain the term Miller indices. Derive the relation between lattice constant and interplanar spacing for cubic crystal.

$$d_{(hkl)} = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

d) i) A substance with the FCC lattice has density 6200 kg/m^3 and molecular weight 60.2. Calculate the lattice constant 'a'.
Given: Avogadro number is 6.02×10^{26} /kg.mole.

ii) Calculate the radius of atoms in α-iron belonging to BCC structure. The density of α-iron is 7860 kg/m^3 and atomic weight of iron is 55.85.

SECTION – II

Q.4 Attempt Any SIX of the following. **18**

a) Explain: Rayleigh's criterion of resolution.

b) State and Explain: Malus Law.

c) Explain:
i) Stimulated Emission and
ii) Population Inversion

d) State: Properties of LASER source.

e) Explain: Principal of Optical Fiber.

f) Explain: Types of Carbon Nanotubes (CNT).

g) In a transmission diffraction grating with 5000 number of lines/cm, a light of the wavelength 6350 Å is incident normally on it. Determine how many orders will be visible with this grating?

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a) What is diffraction grating? Derive an expression $\lambda/d\lambda = n.N$ for the resolving power of a diffraction grating.

b) Derive an expression for acceptance angle (θ_0), acceptance cone, numerical aperture and fractional refractive index change (Δ) of an optical fiber.

c) i) A glass tube with 200 mm long containing sugar solution rotates the plane of polarization by 10.11^0. If the specific rotation of sugar is 66°, calculate the strength of the solution.

ii) Sodium yellow light of wavelength 5893 Å is a doublet of 6 Å . What is the minimum number of lines a grating should have to resolve the doublet in the 3rd order spectrum.

d) Explain: He-Ne gas laser with neat energy level and transition diagram.

SLR-QH-3

Seat No.	

Set | **S**

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0101)/ (BTCSE0101)/ (BTETE0101)/ (BTEE0101)/ (BTME0101)/ (BTECE0101)/ (BTMRE101)/ (BTAI0101)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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4) Make suitable assumptions if necessary and state them clearly.

Constants: 1) Avogadro's no., $N = 6.02 \times 10^{26}$ / k.mol.
2) Velocity of light, $c = 3 \times 10^{8}$ m/sec.
3) Charge of electron, $e = 1.6 \times 10^{-19}$ C.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) SONAR stands for _____.
a) Sound Ranging and Navigation
b) Sonic Detection and Ranging
c) Solar Navigation and Ranging
d) Sound Navigation and Ranging

2) The persistence of audible sound after the source has stopped to emit sound is known as _____.
a) echo b) reflection
c) reverberation d) reverberation time

3) The grating constant is given by the equation _____
a) No. of lines per inch b) $\frac{1.54}{\text{No. of lines/inch}}$
c) No. of lines per cm d) $\frac{1}{\text{No. of lines/cm}}$

4) In Laurentz's half shade Polarimeter, the half part of Laurentz's plate is of _____.
a) calcite, tourmaline b) quartz, calcite
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5) Stimulated emission process is represented as _____.
a) $A + hv \rightarrow A^*$ b) $A^* + hv \rightarrow A + 2hv$
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a) Light Amplification by Stimulated Emission of Radiation
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7) For He-Ne laser, typical value of divergence is _____.
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8) The numerical aperture is defined as the _____.
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b) sine of the acceptance angle
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9) Dimensions of nanomaterials ranging from _____.
a) 1 to 150 nm b) 2 to 250 nm
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10) In conductor, current flows due to _____.
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11) Semiconductors that contain acceptor atoms and holes belong to the _____.
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12) Effective number of atoms belonging to the unit cell of BCC structure is _____.
a) 6 b) 4
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13) Atomic packing factor of SC structure is _____.
a) 0.68 b) 0.48
c) 0.52 d) 0.74

14) Cubic crystal has _____ two-fold axes of symmetry.
a) 6 b) 12
c) 3 d) 4

SLR-QH-3

Seat No.		Set	S

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0101)/ (BTCSE0101)/ (BTETE0101)/ (BTEE0101)/ (BTME0101)/ (BTECE0101)/ (BTMRE101)/ (BTAI0101)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Attempt Any SIX of the following. **18**

a) Define: valence band, conduction band and energy gap. Show them with neat diagram.

b) Derive an expression for Fermi level lies at the middle of valence band and conduction band in intrinsic semiconductors.

c) Define: Atomic radius. Determine the relation between lattice constant (a) and atomic radius (r) for BCC, and FCC.

d) Explain: Plane of symmetry.

e) State: Basic requirements for acoustically good hall.

f) State: Properties of ultrasonic waves.

g) Calculate the Hall voltage across a copper strip which is 2.5 cm wide and 1 mm thick, carrying current of 250A and placed in a magnetic field with B = 1.65 wb/m^2. Given: number of charge carriers in the copper strip 8.4×10^{28} m^{-3}.

h) A hall has a volume of 2265.6 m^3. Its total absorption is equivalent to 92.90 m^2 of open window. What will be the effect on the reverberation time if curtains of total absorption equivalent to 92.90 m^2 are placed inside?

Q.3 Attempt Any TWO of the following. **10**

a) State Hall effect? Derive the relation for Hall voltage (V_H) and Hall coefficient (R_H).

b) Explain the factors affecting the architectural acoustics of a hall and their remedies.

c) Explain the term Miller indices. Derive the relation between lattice constant and interplanar spacing for cubic crystal.

$$d_{(hkl)} = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

d) i) A substance with the FCC lattice has density 6200 kg/m^3 and molecular weight 60.2. Calculate the lattice constant 'a'.
Given: Avogadro number is 6.02×10^{26} /kg.mole.

ii) Calculate the radius of atoms in α-iron belonging to BCC structure. The density of α-iron is 7860 kg/m^3 and atomic weight of iron is 55.85.

SECTION – II

Q.4 Attempt Any SIX of the following. **18**

a) Explain: Rayleigh's criterion of resolution.

b) State and Explain: Malus Law.

c) Explain:
i) Stimulated Emission and
ii) Population Inversion

d) State: Properties of LASER source.

e) Explain: Principal of Optical Fiber.

f) Explain: Types of Carbon Nanotubes (CNT).

g) In a transmission diffraction grating with 5000 number of lines/cm, a light of the wavelength 6350 Å is incident normally on it. Determine how many orders will be visible with this grating?

h) Optical fiber is made of glass with a core of refractive index of 1.75 and is clad with a refractive index 1.61 and launching takes from air. Calculate numerical aperture and acceptance angle of the fiber.

Q.5 Attempt Any TWO of the following. **10**

a) What is diffraction grating? Derive an expression $\lambda/d\lambda = n.N$ for the resolving power of a diffraction grating.

b) Derive an expression for acceptance angle (θ_0), acceptance cone, numerical aperture and fractional refractive index change (Δ) of an optical fiber.

c) i) A glass tube with 200 mm long containing sugar solution rotates the plane of polarization by 10.11^0. If the specific rotation of sugar is 66°, calculate the strength of the solution.

ii) Sodium yellow light of wavelength 5893 Å is a doublet of 6 Å . What is the minimum number of lines a grating should have to resolve the doublet in the 3rd order spectrum.

d) Explain: He-Ne gas laser with neat energy level and transition diagram.

SLR-QH-4

Seat No.		Set	P

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0102 / BTCSE0102 / BTETE0102 / BTEE0102 / BTME0102 / BTECE0102 / BTMRE102 / BTAI0102)

Day & Date: Tuesday, 12-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select correct option. **14**

1) Permanent hardness of water cannot be removed by _____.
a) adding soda b) distillation
c) boiling d) adding lime-soda

2) Alkalinity in water cannot be due to the presence of _____.
a) OH^- only b) OH^- and CO_3^{--}
c) OH^- and HCO_3^{--} d) CO_3^{--} and HCO_3^-

3) A semipermeable membrane allows the flow of _____.
a) solvent molecules
b) solute molecules
c) both solute and solvent molecules
d) neither solute nor solvent molecules

4) A suitable lubricant for watches is _____.
a) greases b) graphite
c) Vegetable oil d) Mineral Oil

5) A good lubricant should have _____.
a) low viscosity index b) high viscosity index
c) low fire point d) high volatility

6) Non volatile film-forming constituents of a paint is called _____.
a) drier b) pigments
c) thinner d) drying oil

7) The process of zinc coating over iron sheet by hot dipping is called _____.
a) Galvanizing b) Tinning
c) Sheradizing d) Anodizing

8) An example of primary fuel is _____.
a) natural gas b) petrol
c) wood charcoal d) coke

9) A good fuel should possess _____.
a) low calorific value b) high ignition temperature
c) high calorific value d) high ash content

10) GR-S rubber is an example of _____.
a) condensation polymerization
b) copolymerization
c) cross-linked polymerization
d) addition polymerization in which single monomer takes part

11) Natural rubber is basically a polymer of _____.
a) isoprene b) propylene
c) ethylene d) propane

12) Most commonly used vulcanizing agent is _____.
a) graphite b) carbon black
c) dry ice d) sulphur

13) Which of the following can be used for purification of substances?
a) IR spectroscopy b) UV spectroscopy
c) Gas chromatography d) Calorimetry

14) Number of gram equivalents of solute present in a liter of solution is called _____.
a) Normality b) Molarity
c) Molality d) Mole fraction

Seat No.	

Set | P

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0102 / BTCSE0102 / BTETE0102 / BTEE0102 / BTME0102 / BTECE0102 / BTMRE102 / BTAI0102)

Day & Date: Tuesday, 12-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	40.15	162
$Mg(HCO_3)_2$	38.73	146
$MgSO_4$	24.10	120
$CaCl_2$	53.90	111
$MgCl_2$	16.5	95

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Define aeration. Explain different types of aerators.

c) Explain types of liquid lubricants.

d) Define following terms:
i) Cloud point
ii) Flash point
iii) Acid value
iv) Viscosity index

e) Define corrosion. Explain mechanism of oxidation corrosion.

f) Explain prevention of corrosion by galvanizing and tinning.

Q.3 Attempt Any Four. **12**

a) Define disinfection. Explain disinfection of water by chloramine.

b) Define is COD. Explain determination of COD. Explain is its significance.

c) Explain mechanism of extreme pressure lubrication.

d) 7 gm of an oil sample after saponification with 65 ml of N/2 alcoholic KOH solution and subsequent titration with N/2 HCl gave the titre value of 8 ml to phenopthalein end point. A blank experiment was conducted without taking oil sample. On repeating same procedure gave a titer value of 65 ml. Calculate saponification value of an oil sample.

e) Explain characteristics of good paints.

f) Explain composition, properties and applications of steel.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Calculate gross and net calorific value of a coal sample of coal having C = 83%, H = 5%, O = 2%, S = 1.5%, N = 3.1% and ash = 3.4%. (Take latent heat of steam = 587 cal/g)

b) Explain construction and working of Boy's calorimeter.

c) Compare solid and liquid fuels.

d) Define plastic. Explain thermosoftening and thermosetting plastics.

e) Explain molding of plastics in to articles by following methods.

i) Compression molding
ii) Extrusion molding

f) Define TGA. Explain instrumentation of TGA. What are its applications?

Q.5 Attempt Any Four. **12**

a) Explain types of batteries.

b) Explain the characteristics of good fuels.

c) Explain synthesis, properties and applications of PET.

d) Describe biodegradable polymer. Discuss any two examples of biodegradable polymers with applications.

e) A polymer has following population

15 molecules have molecular weight each 8000
20 molecules have molecular weight each 12000
25 molecules have molecular weight each 16000
30 molecules have molecular weight each 20000
Calculate its number average molecular weight.

f) Calculate weight of Na_2CO_3 required to prepare 0.4 M 700 ml solution. (Mol. Wt. of Na_2CO_3 = 106)

SLR-QH-4

Seat No.		Set	Q

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0102 / BTCSE0102 / BTETE0102 / BTEE0102 / BTME0102 / BTECE0102 / BTMRE102 / BTAI0102)

Day & Date: Tuesday, 12-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select correct option. **14**

1) An example of primary fuel is _____.
a) natural gas b) petrol
c) wood charcoal d) coke

2) A good fuel should possess _____.
a) low calorific value b) high ignition temperature
c) high calorific value d) high ash content

3) GR-S rubber is an example of _____.
a) condensation polymerization
b) copolymerization
c) cross-linked polymerization
d) addition polymerization in which single monomer takes part

4) Natural rubber is basically a polymer of _____.
a) isoprene b) propylene
c) ethylene d) propane

5) Most commonly used vulcanizing agent is _____.
a) graphite b) carbon black
c) dry ice d) sulphur

6) Which of the following can be used for purification of substances?
a) IR spectroscopy b) UV spectroscopy
c) Gas chromatography d) Calorimetry

7) Number of gram equivalents of solute present in a liter of solution is called _____.

a) Normality
b) Molarity
c) Molality
d) Mole fraction

8) Permanent hardness of water cannot be removed by _____.

a) adding soda
b) distillation
c) boiling
d) adding lime-soda

9) Alkalinity in water cannot be due to the presence of _____.

a) OH^- only
b) OH^- and CO_3^{--}
c) OH^- and HCO_3^{--}
d) CO_3^{--} and HCO_3^-

10) A semipermeable membrane allows the flow of _____.

a) solvent molecules
b) solute molecules
c) both solute and solvent molecules
d) neither solute nor solvent molecules

11) A suitable lubricant for watches is _____.

a) greases
b) graphite
c) Vegetable oil
d) Mineral Oil

12) A good lubricant should have _____.

a) low viscosity index
b) high viscosity index
c) low fire point
d) high volatility

13) Non volatile film-forming constituents of a paint is called _____.

a) drier
b) pigments
c) thinner
d) drying oil

14) The process of zinc coating over iron sheet by hot dipping is called _____.

a) Galvanizing
b) Tinning
c) Sheradizing
d) Anodizing

SLR-QH-4

Seat No.	

Set Q

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0102 / BTCSE0102 / BTETE0102 / BTEE0102 / BTME0102 / BTECE0102 / BTMRE102 / BTAI0102)

Day & Date: Tuesday, 12-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	40.15	162
$Mg(HCO_3)_2$	38.73	146
$MgSO_4$	24.10	120
$CaCl_2$	53.90	111
$MgCl_2$	16.5	95

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Define aeration. Explain different types of aerators.

c) Explain types of liquid lubricants.

d) Define following terms:
i) Cloud point
ii) Flash point
iii) Acid value
iv) Viscosity index

e) Define corrosion. Explain mechanism of oxidation corrosion.

f) Explain prevention of corrosion by galvanizing and tinning.

Q.3 Attempt Any Four. **12**

a) Define disinfection. Explain disinfection of water by chloramine.

b) Define is COD. Explain determination of COD. Explain is its significance.

c) Explain mechanism of extreme pressure lubrication.

d) 7 gm of an oil sample after saponification with 65 ml of N/2 alcoholic KOH solution and subsequent titration with N/2 HCl gave the titre value of 8 ml to phenopthalein end point. A blank experiment was conducted without taking oil sample. On repeating same procedure gave a titer value of 65 ml. Calculate saponification value of an oil sample.

e) Explain characteristics of good paints.

f) Explain composition, properties and applications of steel.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Calculate gross and net calorific value of a coal sample of coal having C = 83%, H = 5%, O = 2%, S = 1.5%, N = 3.1% and ash = 3.4%. (Take latent heat of steam = 587 cal/g)

b) Explain construction and working of Boy's calorimeter.

c) Compare solid and liquid fuels.

d) Define plastic. Explain thermosoftening and thermosetting plastics.

e) Explain molding of plastics in to articles by following methods.

i) Compression molding
ii) Extrusion molding

f) Define TGA. Explain instrumentation of TGA. What are its applications?

Q.5 Attempt Any Four. **12**

a) Explain types of batteries.

b) Explain the characteristics of good fuels.

c) Explain synthesis, properties and applications of PET.

d) Describe biodegradable polymer. Discuss any two examples of biodegradable polymers with applications.

e) A polymer has following population

15 molecules have molecular weight each 8000
20 molecules have molecular weight each 12000
25 molecules have molecular weight each 16000
30 molecules have molecular weight each 20000
Calculate its number average molecular weight.

f) Calculate weight of Na_2CO_3 required to prepare 0.4 M 700 ml solution. (Mol. Wt. of Na_2CO_3 = 106)

Seat No.	

Set R

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0102 / BTCSE0102 / BTETE0102 / BTEE0102 / BTME0102 / BTECE0102 / BTMRE102 / BTAI0102)

Day & Date: Tuesday, 12-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select correct option. **14**

1) Natural rubber is basically a polymer of _____.
a) isoprene b) propylene
c) ethylene d) propane

2) Most commonly used vulcanizing agent is _____.
a) graphite b) carbon black
c) dry ice d) sulphur

3) Which of the following can be used for purification of substances?
a) IR spectroscopy b) UV spectroscopy
c) Gas chromatography d) Calorimetry

4) Number of gram equivalents of solute present in a liter of solution is called _____.
a) Normality b) Molarity
c) Molality d) Mole fraction

5) Permanent hardness of water cannot be removed by _____.
a) adding soda b) distillation
c) boiling d) adding lime-soda

6) Alkalinity in water cannot be due to the presence of _____.
a) OH^- only b) OH^- and CO_3^{--}
c) OH^- and HCO_3^{--} d) CO_3^{--} and HCO_3^-

7) A semipermeable membrane allows the flow of _____.
a) solvent molecules
b) solute molecules
c) both solute and solvent molecules
d) neither solute nor solvent molecules

8) A suitable lubricant for watches is _____.
a) greases b) graphite
c) Vegetable oil d) Mineral Oil

9) A good lubricant should have _____.
a) low viscosity index b) high viscosity index
c) low fire point d) high volatility

10) Non volatile film-forming constituents of a paint is called _____.
a) drier b) pigments
c) thinner d) drying oil

11) The process of zinc coating over iron sheet by hot dipping is called _____.
a) Galvanizing b) Tinning
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12) An example of primary fuel is _____.
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14) GR-S rubber is an example of _____.
a) condensation polymerization
b) copolymerization
c) cross-linked polymerization
d) addition polymerization in which single monomer takes part

Seat No.	

Set **R**

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0102 / BTCSE0102 / BTETE0102 / BTEE0102 / BTME0102 / BTECE0102 / BTMRE102 / BTAI0102)

Day & Date: Tuesday, 12-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	40.15	162
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Calculate the temporary, permanent and total hardness of water in mg/lit.

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d) Define following terms:
i) Cloud point
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iv) Viscosity index

e) Define corrosion. Explain mechanism of oxidation corrosion.

f) Explain prevention of corrosion by galvanizing and tinning.

Q.3 Attempt Any Four. **12**

a) Define disinfection. Explain disinfection of water by chloramine.

b) Define is COD. Explain determination of COD. Explain is its significance.

c) Explain mechanism of extreme pressure lubrication.

d) 7 gm of an oil sample after saponification with 65 ml of N/2 alcoholic KOH solution and subsequent titration with N/2 HCl gave the titre value of 8 ml to phenopthalein end point. A blank experiment was conducted without taking oil sample. On repeating same procedure gave a titer value of 65 ml. Calculate saponification value of an oil sample.

e) Explain characteristics of good paints.

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SECTION – II

Q.4 Attempt Any Four. **16**

a) Calculate gross and net calorific value of a coal sample of coal having C = 83%, H = 5%, O = 2%, S = 1.5%, N = 3.1% and ash = 3.4%. (Take latent heat of steam = 587 cal/g)

b) Explain construction and working of Boy's calorimeter.

c) Compare solid and liquid fuels.

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Q.5 Attempt Any Four. **12**

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b) Explain the characteristics of good fuels.

c) Explain synthesis, properties and applications of PET.

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f) Calculate weight of Na_2CO_3 required to prepare 0.4 M 700 ml solution. (Mol. Wt. of Na_2CO_3 = 106)

SLR-QH-4

Seat No.		Set	S

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0102 / BTCSE0102 / BTETE0102 / BTEE0102 / BTME0102 / BTECE0102 / BTMRE102 / BTAI0102)

Day & Date: Tuesday, 12-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select correct option. **14**

1) Non volatile film-forming constituents of a paint is called _____.
a) drier b) pigments
c) thinner d) drying oil

2) The process of zinc coating over iron sheet by hot dipping is called _____.
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3) An example of primary fuel is _____.
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13) A suitable lubricant for watches is _____.
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14) A good lubricant should have _____.
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SLR-QH-4

Seat No.	

Set S

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0102 / BTCSE0102 / BTETE0102 / BTEE0102 / BTME0102 / BTECE0102 / BTMRE102 / BTAI0102)

Day & Date: Tuesday, 12-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit:

	Amount	Mo. Wt.
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$Mg(HCO_3)_2$	38.73	146
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b) Define aeration. Explain different types of aerators.

c) Explain types of liquid lubricants.

d) Define following terms:
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ii) Flash point
iii) Acid value
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e) Define corrosion. Explain mechanism of oxidation corrosion.

f) Explain prevention of corrosion by galvanizing and tinning.

Q.3 Attempt Any Four. **12**

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b) Define is COD. Explain determination of COD. Explain is its significance.

c) Explain mechanism of extreme pressure lubrication.

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e) Explain characteristics of good paints.

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SECTION – II

Q.4 Attempt Any Four. **16**

a) Calculate gross and net calorific value of a coal sample of coal having C = 83%, H = 5%, O = 2%, S = 1.5%, N = 3.1% and ash = 3.4%. (Take latent heat of steam = 587 cal/g)

b) Explain construction and working of Boy's calorimeter.

c) Compare solid and liquid fuels.

d) Define plastic. Explain thermosoftening and thermosetting plastics.

e) Explain molding of plastics in to articles by following methods.

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ii) Extrusion molding

f) Define TGA. Explain instrumentation of TGA. What are its applications?

Q.5 Attempt Any Four. **12**

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b) Explain the characteristics of good fuels.

c) Explain synthesis, properties and applications of PET.

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20 molecules have molecular weight each 12000
25 molecules have molecular weight each 16000
30 molecules have molecular weight each 20000
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f) Calculate weight of Na_2CO_3 required to prepare 0.4 M 700 ml solution. (Mol. Wt. of Na_2CO_3 = 106)

SLR-QH-5

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104) / (BTECE0104) / (BTMRE104) / (BTAI0104)

Day & Date: Sunday, 10-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Use of log table and non-programmable single memory calculator is allowed.

Section – I

MCQ/Objective Type Questions

Duration: 15 Minutes Marks: 07

Q.1 Choose the correct alternative from the options and rewrite the sentence. **07**

1) Following sub branch of Civil Engineering is related with supply of water to crops?
a) Environmental Engineering b) Foundation Engineering
c) Irrigation d) Soil Mechanics

2) Soil and its behavior under the application of load is studied under the following sub branch of civil engineering _____.
a) Geotechnical Engineering b) Environmental Engineering
c) Surveying d) Town planning

3) The load is transferred to the foundation in framed structure in the following sequence.
a) Beam-Column-Foundation-Slab
b) Slab-Beam-Column-Foundation
c) Slab-Column-Beam-Foundation
d) Column-Slab-Beam-Foundation

4) The following element of a framed structure is designed to carry self-weight only _____.
a) Foundation b) Wall
c) Column d) Beam

5) The process of killing the infective bacteria from the water and making it safe to the user is called _____.

a) Softening
b) Coagulation
c) Flocculation
d) Disinfection

6) Green city concept encourages _____.

a) Mass transportation
b) Pollution free city
c) Use of non-conventional energy
d) All the above

7) Survey conducted to find depth of water at various points in bodies of water like sea is known as _____ survey.

a) Astronomical survey
b) Hydrographic survey
c) City survey
d) Land survey

Section – II

MCQ/Objective Type Questions

Duration: 15 Minutes Marks: 07

Q.1 Choose the correct alternative from the options and rewrite the sentence. **07**

1) Positive displacement pumps is from the following _____.
a) Reciprocating pumps b) Rotary pump
c) vane d) None of the above

2) During a cycle, the heat transfer are given by: 120kJ, -60kJ, -48kJ, and 12kJ then the network transfer the cycle is _____.
a) 60000 Nm b) 24000 Nm
c) 12000 Nm d) 4400 Nm

3) A system comprising of a single phase, is known as _____.
a) Open system b) Closed system
c) Homogeneous system d) Heterogeneous system

4) Drilling can be carried out on _____.
a) lathe b) drilling machine
c) milling machine d) both a and b

5) Most commonly used flame in gas welding is _____.
a) Neutral b) Oxidizing
c) Carburizing d) None of the above

6) The ratio of tensions in the tight and slack side of tb belt is given by the relation _____.
a) $\frac{T1}{T2} = e^{\mu\theta}$ b) $\frac{T1}{T2} = e^{\theta}$
c) $\frac{T1}{T2} = e^{\mu}$ d) None of the above

7) Length of Cross-belt drive between two pulleys depends upon _____.
a) sum of the diameter b) difference of the diameters
c) Both a & b above d) None of the above

SLR-QH-5

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104) / (BTECE0104) / (BTMRE104) / (BTAI0104)

Day & Date: Sunday, 10-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.No.2 and Q.No.4 are short answer type questions.
2) Q.No.3 and Q.No.5 are long answer type questions.
3) Neat diagram must be drawn whenever necessary.
4) Use of log table and non-programmable single memory calculator is allowed.
5) Make suitable assumptions, if necessary and mention them clearly.

Section – I

Q.2 Answer Any Five of the following. **15**

a) What are the sub branches of civil engineering? Explain any one in short.

b) Explain Classification of Roads.

c) Draw a neat layout of water supply scheme and explain.

d) What is Geographic Information System? Give its applications in engineering.

e) Write short note - "Grillage foundation".

f) Differentiate between active remote sensing & passive remote sensing.

g) Explain the classification of Surveying.

Q.3 Attempt Any One out of (a) and (b) and solve Any Two out of (c) to (f) **13**

a) Draw a neat sketch of road structure in embankment. **05**

b) The following consecutive readings were taken with a dumpy level along a chain line at a common interval of 15 m. The first reading was at a chainage of 165 m where the RL is 98.085. The instrument was shifted after the fourth and ninth readings. 3.150, 2.245, 1.125, 0.860, 3.125, 2.760, 1.835, 1.470,1.965, 1.225, 2.390 and 3.035. Find RL of the all points by: **05**
i) HI method or
ii) Rise And Fall method

c) With neat sketch explain any two types of shallow foundation. **04**

d) Write note on Principle of surveying. **04**

e) Explain Hydrological Cycle. **04**

f) Define: **04**

i) D.P.C.
ii) Plinth
iii) Parapet
iv) Lintel

Section – II

Q.2 Answer Any Five of the following. **15**

a) What is a Pump? and state it's applications. **03**

b) Write a note on working of a Pelton wheel with its diagram. **03**

c) What is Soldering process? Explain with neat sketch. **03**

d) State and explain Kelvin-Plank and Clausius statements of the second law of thermodynamics. **03**

e) Write short notes on: **03**
i) Open belt drive ii) Cross belt drive

f) Explain types of system. **03**

g) Derive an expression for velocity of fluid at the exit of nozzle, by applying SFEE. **03**

Q.3 Solve Any One out of (a) and (b) and solve Any Two out of (c) to (f). **13**

a) Two parallel shafts, which have center distance between them 6 m. They are connected by crossed belt drive. The diameter of driver pulley is 0.8 m and diameter of driven pulley is 0.6 m. The direction of rotation of driven is need to be reversed by changing over an open belt drive. Calculate the length of both open and crossed belt drive and state can same belt be applied in changed arrangement? If not, then what will be the solution to fix the belt in open belt drive? **05**

b) Describe Drilling Machine with its block diagram. **05**

c) A cycle comprises three processes. The energy transfers in each are tabulated below. Complete the table. **04**

Process	Q (KJ)	W (KJ)	ΔU (KJ)
1−2	+70	+30	---
2−3	---	−60	+20
3−1	+60	---	---

d) Explain with neat sketch working of Francis turbine. **04**

e) Derive an expression for length of belt for open belt drive. **04**

f) Sketch and describe Lathe machine operations. **04**

SLR-QH-5

Seat No.	

Set Q

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104) / (BTECE0104) / (BTMRE104) / (BTAI0104)

Day & Date: Sunday, 10-05-2026 Max. Marks: 70
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Section – I

MCQ/Objective Type Questions

Duration: 15 Minutes Marks: 07

Q.1 Choose the correct alternative from the options and rewrite the sentence. **07**

1) The process of killing the infective bacteria from the water and making it safe to the user is called _____.
a) Softening b) Coagulation
c) Flocculation d) Disinfection

2) Green city concept encourages _____.
a) Mass transportation
b) Pollution free city
c) Use of non-conventional energy
d) All the above

3) Survey conducted to find depth of water at various points in bodies of water like sea is known as _____ survey.
a) Astronomical survey b) Hydrographic survey
c) City survey d) Land survey

4) Following sub branch of Civil Engineering is related with supply of water to crops?
a) Environmental Engineering b) Foundation Engineering
c) Irrigation d) Soil Mechanics

5) Soil and its behavior under the application of load is studied under the following sub branch of civil engineering _____.

a) Geotechnical Engineering
b) Environmental Engineering
c) Surveying
d) Town planning

6) The load is transferred to the foundation in framed structure in the following sequence.

a) Beam-Column-Foundation-Slab
b) Slab-Beam-Column-Foundation
c) Slab-Column-Beam-Foundation
d) Column-Slab-Beam-Foundation

7) The following element of a framed structure is designed to carry self-weight only _____.

a) Foundation
b) Wall
c) Column
d) Beam

Section – II

MCQ/Objective Type Questions

Duration: 15 Minutes Marks: 07

Q.1 Choose the correct alternative from the options and rewrite the sentence. **07**

1) Most commonly used flame in gas welding is _____.

a) Neutral b) Oxidizing
c) Carburizing d) None of the above

2) The ratio of tensions in the tight and slack side of tb belt is given by the relation _____.

a) $\frac{T1}{T2} = e^{\mu\theta}$ b) $\frac{T1}{T2} = e^{\theta}$
c) $\frac{T1}{T2} = e^{\mu}$ d) None of the above

3) Length of Cross-belt drive between two pulleys depends upon _____.

a) sum of the diameter b) difference of the diameters
c) Both a & b above d) None of the above

4) Positive displacement pumps is from the following _____.

a) Reciprocating pumps b) Rotary pump
c) vane d) None of the above

5) During a cycle, the heat transfer are given by: 120kJ, -60kJ, -48kJ, and 12kJ then the network transfer the cycle is _____.

a) 60000 Nm b) 24000 Nm
c) 12000 Nm d) 4400 Nm

6) A system comprising of a single phase, is known as _____.

a) Open system b) Closed system
c) Homogeneous system d) Heterogeneous system

7) Drilling can be carried out on _____.

a) lathe b) drilling machine
c) milling machine d) both a and b

SLR-QH-5

Seat No.		Set	Q

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104) / (BTECE0104) / (BTMRE104) / (BTAI0104)

Day & Date: Sunday, 10-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.No.2 and Q.No.4 are short answer type questions.
2) Q.No.3 and Q.No.5 are long answer type questions.
3) Neat diagram must be drawn whenever necessary.
4) Use of log table and non-programmable single memory calculator is allowed.
5) Make suitable assumptions, if necessary and mention them clearly.

Section – I

Q.2 Answer Any Five of the following. **15**

a) What are the sub branches of civil engineering? Explain any one in short.

b) Explain Classification of Roads.

c) Draw a neat layout of water supply scheme and explain.

d) What is Geographic Information System? Give its applications in engineering.

e) Write short note - "Grillage foundation".

f) Differentiate between active remote sensing & passive remote sensing.

g) Explain the classification of Surveying.

Q.3 Attempt Any One out of (a) and (b) and solve Any Two out of (c) to (f) **13**

a) Draw a neat sketch of road structure in embankment. **05**

b) The following consecutive readings were taken with a dumpy level along a chain line at a common interval of 15 m. The first reading was at a chainage of 165 m where the RL is 98.085. The instrument was shifted after the fourth and ninth readings. 3.150, 2.245, 1.125, 0.860, 3.125, 2.760, 1.835, 1.470,1.965, 1.225, 2.390 and 3.035. Find RL of the all points by: **05**
i) HI method or
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c) With neat sketch explain any two types of shallow foundation. **04**

d) Write note on Principle of surveying. **04**

e) Explain Hydrological Cycle. **04**

f) Define: **04**

i) D.P.C.
ii) Plinth
iii) Parapet
iv) Lintel

Section – II

Q.2 Answer Any Five of the following. **15**

a) What is a Pump? and state it's applications. **03**

b) Write a note on working of a Pelton wheel with its diagram. **03**

c) What is Soldering process? Explain with neat sketch. **03**

d) State and explain Kelvin-Plank and Clausius statements of the second law of thermodynamics. **03**

e) Write short notes on: **03**
i) Open belt drive ii) Cross belt drive

f) Explain types of system. **03**

g) Derive an expression for velocity of fluid at the exit of nozzle, by applying SFEE. **03**

Q.3 Solve Any One out of (a) and (b) and solve Any Two out of (c) to (f). **13**

a) Two parallel shafts, which have center distance between them 6 m. They are connected by crossed belt drive. The diameter of driver pulley is 0.8 m and diameter of driven pulley is 0.6 m. The direction of rotation of driven is need to be reversed by changing over an open belt drive. Calculate the length of both open and crossed belt drive and state can same belt be applied in changed arrangement? If not, then what will be the solution to fix the belt in open belt drive? **05**

b) Describe Drilling Machine with its block diagram. **05**

c) A cycle comprises three processes. The energy transfers in each are tabulated below. Complete the table. **04**

Process	Q (KJ)	W (KJ)	ΔU (KJ)
1−2	+70	+30	---
2−3	---	−60	+20
3−1	+60	---	---

d) Explain with neat sketch working of Francis turbine. **04**

e) Derive an expression for length of belt for open belt drive. **04**

f) Sketch and describe Lathe machine operations. **04**

SLR-QH-5

Seat No.	

Set R

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104) / (BTECE0104) / (BTMRE104) / (BTAI0104)

Day & Date: Sunday, 10-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.
5) Use of log table and non-programmable single memory calculator is allowed.

Section – I

MCQ/Objective Type Questions

Duration: 15 Minutes Marks: 07

Q.1 Choose the correct alternative from the options and rewrite the sentence. **07**

1) The load is transferred to the foundation in framed structure in the following sequence.
a) Beam-Column-Foundation-Slab
b) Slab-Beam-Column-Foundation
c) Slab-Column-Beam-Foundation
d) Column-Slab-Beam-Foundation

2) The following element of a framed structure is designed to carry self-weight only _____.
a) Foundation b) Wall
c) Column d) Beam

3) The process of killing the infective bacteria from the water and making it safe to the user is called _____.
a) Softening b) Coagulation
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4) Green city concept encourages _____.
a) Mass transportation
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5) Survey conducted to find depth of water at various points in bodies of water like sea is known as _____ survey.

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6) Following sub branch of Civil Engineering is related with supply of water to crops?

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d) Soil Mechanics

7) Soil and its behavior under the application of load is studied under the following sub branch of civil engineering _____.

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b) Environmental Engineering
c) Surveying
d) Town planning

Section – II

MCQ/Objective Type Questions

Duration: 15 Minutes Marks: 07

Q.1 Choose the correct alternative from the options and rewrite the sentence. **07**

1) A system comprising of a single phase, is known as _____.
a) Open system b) Closed system
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2) Drilling can be carried out on _____.
a) lathe b) drilling machine
c) milling machine d) both a and b

3) Most commonly used flame in gas welding is _____.
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4) The ratio of tensions in the tight and slack side of tb belt is given by the relation _____.
a) $\frac{T1}{T2} = e^{\mu\theta}$ b) $\frac{T1}{T2} = e^{\theta}$
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5) Length of Cross-belt drive between two pulleys depends upon _____.
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7) During a cycle, the heat transfer are given by: 120kJ, -60kJ, -48kJ, and 12kJ then the network transfer the cycle is _____.
a) 60000 Nm b) 24000 Nm
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SLR-QH-5

Seat No.	

Set R

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104) / (BTECE0104) / (BTMRE104) / (BTAI0104)

Day & Date: Sunday, 10-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.No.2 and Q.No.4 are short answer type questions.
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3) Neat diagram must be drawn whenever necessary.
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5) Make suitable assumptions, if necessary and mention them clearly.

Section – I

Q.2 Answer Any Five of the following. **15**

a) What are the sub branches of civil engineering? Explain any one in short.

b) Explain Classification of Roads.

c) Draw a neat layout of water supply scheme and explain.

d) What is Geographic Information System? Give its applications in engineering.

e) Write short note - "Grillage foundation".

f) Differentiate between active remote sensing & passive remote sensing.

g) Explain the classification of Surveying.

Q.3 Attempt Any One out of (a) and (b) and solve Any Two out of (c) to (f) **13**

a) Draw a neat sketch of road structure in embankment. **05**

b) The following consecutive readings were taken with a dumpy level along a chain line at a common interval of 15 m. The first reading was at a chainage of 165 m where the RL is 98.085. The instrument was shifted after the fourth and ninth readings. 3.150, 2.245, 1.125, 0.860, 3.125, 2.760, 1.835, 1.470,1.965, 1.225, 2.390 and 3.035. Find RL of the all points by: **05**
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c) With neat sketch explain any two types of shallow foundation. **04**

d) Write note on Principle of surveying. **04**

e) Explain Hydrological Cycle. **04**

f) Define: **04**

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ii) Plinth
iii) Parapet
iv) Lintel

Section – II

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b) Write a note on working of a Pelton wheel with its diagram. **03**

c) What is Soldering process? Explain with neat sketch. **03**

d) State and explain Kelvin-Plank and Clausius statements of the second law of thermodynamics. **03**

e) Write short notes on: **03**
i) Open belt drive ii) Cross belt drive

f) Explain types of system. **03**

g) Derive an expression for velocity of fluid at the exit of nozzle, by applying SFEE. **03**

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a) Two parallel shafts, which have center distance between them 6 m. They are connected by crossed belt drive. The diameter of driver pulley is 0.8 m and diameter of driven pulley is 0.6 m. The direction of rotation of driven is need to be reversed by changing over an open belt drive. Calculate the length of both open and crossed belt drive and state can same belt be applied in changed arrangement? If not, then what will be the solution to fix the belt in open belt drive? **05**

b) Describe Drilling Machine with its block diagram. **05**

c) A cycle comprises three processes. The energy transfers in each are tabulated below. Complete the table. **04**

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d) Explain with neat sketch working of Francis turbine. **04**

e) Derive an expression for length of belt for open belt drive. **04**

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SLR-QH-5

Seat No.	

Set S

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104) / (BTECE0104) / (BTMRE104) / (BTAI0104)

Day & Date: Sunday, 10-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
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Section – I

MCQ/Objective Type Questions

Duration: 15 Minutes Marks: 07

Q.1 Choose the correct alternative from the options and rewrite the sentence. **07**

1) Survey conducted to find depth of water at various points in bodies of water like sea is known as _____ survey.
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7) Green city concept encourages _____.

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b) Pollution free city
c) Use of non-conventional energy
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Section – II

MCQ/Objective Type Questions

Duration: 15 Minutes Marks: 07

Q.1 Choose the correct alternative from the options and rewrite the sentence. **07**

1) Length of Cross-belt drive between two pulleys depends upon _____.
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SLR-QH-5

Seat No.		Set	S

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0104) / (BTCSE0104) / (BTETE0104) / (BTEE0104) / (BTME0104) / (BTECE0104) / (BTMRE104) / (BTAI0104)

Day & Date: Sunday, 10-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.No.2 and Q.No.4 are short answer type questions.
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Section – I

Q.2 Answer Any Five of the following. **15**

a) What are the sub branches of civil engineering? Explain any one in short.

b) Explain Classification of Roads.

c) Draw a neat layout of water supply scheme and explain.

d) What is Geographic Information System? Give its applications in engineering.

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c) With neat sketch explain any two types of shallow foundation. **04**

d) Write note on Principle of surveying. **04**

e) Explain Hydrological Cycle. **04**

f) Define: **04**

i) D.P.C.
ii) Plinth
iii) Parapet
iv) Lintel

Section – II

Q.2 Answer Any Five of the following. **15**

a) What is a Pump? and state it's applications. **03**

b) Write a note on working of a Pelton wheel with its diagram. **03**

c) What is Soldering process? Explain with neat sketch. **03**

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1−2	+70	+30	---
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3−1	+60	---	---

d) Explain with neat sketch working of Francis turbine. **04**

e) Derive an expression for length of belt for open belt drive. **04**

f) Sketch and describe Lathe machine operations. **04**

SLR-QH-6

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0105 / BTCSE0105 / BTETE0105 / BTEE0105 / BTME0105 / BTECE0105 / BTMRE105 / BTAI0105)

Day & Date: Saturday, 23-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

SECTION – I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. 07

1) According to KCL algebraic sum of currents meeting at junction is _____.
a) Infinity b) Minimum
c) Zero d) None of the above

2) A sinusoidal alternating current has a maximum value of I_m. Its average value will be _____.
a) I_m/π b) $I_m/2\pi$
c) $2I_m/\pi$ d) None of these

3) An absolute permeability of magnetic material is _____.
a) Φ/B b) B/H
c) HB d) $1/\mu_0\,\mu_r$

4) The SI unit of reluctance is _____.
a) AT/M b) AT/Wb
c) AT d) N/Wb

5) If alternating voltage is given by, $v = 230\sin(376.99t)$, then the frequency is _____.
a) 60Hz b) 50 Hz
c) 40 Hz d) 200Hz

6) The form factor of sinusoidal quantity is _____.

a) 1.11 b) 1.57

c) 1.414 d) 0.637

7) Frequency of an a.c. quantity is defined as _____.

a) number of cycles/sec

b) time/cycles

c) sec/revolution of magnetic energy

d) cycle/revolution

SECTION – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the given options. 07

8) Break down of PN junction occurs _____.
- a) with forward bias
- b) with reverse bias
- c) because of manufacturing defect
- d) None of these

9) A diode is used as _____.
- a) An amplifier
- b) A rectifier
- c) An oscillator
- d) Voltage regulator

10) Transistor is operated as a closed switch in _____ region.
- a) Saturation
- b) Cut-off
- c) Active region
- d) None of these

11) In BJT, largest current flow occurs in the _____.
- a) emitter
- b) collector
- c) base
- d) All of these

12) The decimal number 17 is equal to binary number _____.
- a) 10010
- b) 11000
- c) 10001
- d) 01001

13) The output of an AND gate is high when _____.
- a) Any input is high
- b) All inputs are high
- c) No inputs are high
- d) Both a) and b)

14) The term nibble means _____.
- a) 2 bits
- b) 1 bit
- c) 4 bits
- d) 8 bits

SLR-QH-6

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0105 / BTCSE0105 / BTETE0105 / BTEE0105 / BTME0105 / BTECE0105 / BTMRE105 / BTAI0105)

Day & Date: Saturday, 23-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) State and Explain Kirchhoff's current and voltage law with suitable diagram.

b) Derive the expression for the division of current through three branches in parallel.

c) State and explain Faraday's laws of electromagnetic induction.

d) Derive the emf equation of single-phase transformer.

e) Derive expression for purely capacitive circuit. Draw phasor diagram.

f) For series R-L-C circuit the supply voltage $V_S = 100$ V, Voltage across resistance is 80 V, voltage across inductance is 150 V. What is the voltage across capacitor and power factor of a circuit? Assume $V_L > V_C$.

Q.3 Solve Any Two. **12**

a) Derive the equation for converting star resistances into equivalent delta resistances.

b) A single-phase transformer has 350 primaries and 1050 secondary turns. The net cross sectional area of the core is 50 cm^2. If the primary winding is connected to a 50 Hz supply at 400 V, calculate:
i) The maximum value of the flux density in the core, and
ii) The voltage induced in the secondary winding.

c) Explain series R-L-C circuit for the condition $X_L > X_C$, with voltage triangle, impedance triangle and phasor diagram.

SECTION – II

Q.4 Solve Any Four. **16**

a) Draw circuit diagram and explain VI characteristics of PN junction diode.

b) Explain Full wave center tap rectifier with necessary diagrams.

c) Explain working of BJT as amplifier.

d) Explain input and output characteristics of common base (CB) configuration of transistor.

e) State and prove De-Morgan theorem.

f) Covert
i) $(AB.CD)_H$ to binary
ii) $(132)_8$ to decimal

Q.5 Solve Any Two. **12**

a) Explain working of capacitor filter using full wave rectifier with neat circuit diagram.

b) Compare different transistor configurations on the basis of input resistance, output resistance, voltage gain, and current gain.

c) What is meant by universal gate? Derive basic gates using NAND and NOR gate.

SLR-QH-6

Seat No.	

Set Q

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0105 / BTCSE0105 / BTETE0105 / BTEE0105 / BTME0105 / BTECE0105 / BTMRE105 / BTAI0105)

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SECTION – I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

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c) 40 Hz d) 200Hz

2) The form factor of sinusoidal quantity is _____.
a) 1.11 b) 1.57
c) 1.414 d) 0.637

3) Frequency of an a.c. quantity is defined as _____.
a) number of cycles/sec
b) time/cycles
c) sec/revolution of magnetic energy
d) cycle/revolution

4) According to KCL algebraic sum of currents meeting at junction is _____.
a) Infinity b) Minimum
c) Zero d) None of the above

5) A sinusoidal alternating current has a maximum value of I_m. Its average value will be _____.
a) I_m/π b) $I_m/2\pi$
c) $2I_m/\pi$ d) None of these

6) An absolute permeability of magnetic material is _____.

a) Φ/B b) B/H

c) HB d) $1/\mu_0\,\mu_r$

7) The SI unit of reluctance is _____.

a) AT/M b) AT/Wb

c) AT d) N/Wb

SECTION – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the given options. 07

8) The decimal number 17 is equal to binary number _____.
- a) 10010
- b) 11000
- c) 10001
- d) 01001

9) The output of an AND gate is high when _____.
- a) Any input is high
- b) All inputs are high
- c) No inputs are high
- d) Both a) and b)

10) The term nibble means _____.
- a) 2 bits
- b) 1 bit
- c) 4 bits
- d) 8 bits

11) Break down of PN junction occurs _____.
- a) with forward bias
- b) with reverse bias
- c) because of manufacturing defect
- d) None of these

12) A diode is used as _____.
- a) An amplifier
- b) A rectifier
- c) An oscillator
- d) Voltage regulator

13) Transistor is operated as a closed switch in _____ region.
- a) Saturation
- b) Cut-off
- c) Active region
- d) None of these

14) In BJT, largest current flow occurs in the _____.
- a) emitter
- b) collector
- c) base
- d) All of these

SLR-QH-6

Seat No.	

Set Q

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0105 / BTCSE0105 / BTETE0105 / BTEE0105 / BTME0105 / BTECE0105 / BTMRE105 / BTAI0105)

Day & Date: Saturday, 23-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) State and Explain Kirchhoff's current and voltage law with suitable diagram.

b) Derive the expression for the division of current through three branches in parallel.

c) State and explain Faraday's laws of electromagnetic induction.

d) Derive the emf equation of single-phase transformer.

e) Derive expression for purely capacitive circuit. Draw phasor diagram.

f) For series R-L-C circuit the supply voltage $V_S = 100$ V, Voltage across resistance is 80 V, voltage across inductance is 150 V. What is the voltage across capacitor and power factor of a circuit? Assume $V_L > V_C$.

Q.3 Solve Any Two. **12**

a) Derive the equation for converting star resistances into equivalent delta resistances.

b) A single-phase transformer has 350 primaries and 1050 secondary turns. The net cross sectional area of the core is 50 cm^2. If the primary winding is connected to a 50 Hz supply at 400 V, calculate:
i) The maximum value of the flux density in the core, and
ii) The voltage induced in the secondary winding.

c) Explain series R-L-C circuit for the condition $X_L > X_C$, with voltage triangle, impedance triangle and phasor diagram.

SECTION – II

Q.4 Solve Any Four. **16**

a) Draw circuit diagram and explain VI characteristics of PN junction diode.

b) Explain Full wave center tap rectifier with necessary diagrams.

c) Explain working of BJT as amplifier.

d) Explain input and output characteristics of common base (CB) configuration of transistor.

e) State and prove De-Morgan theorem.

f) Covert
i) $(AB.CD)_H$ to binary
ii) $(132)_8$ to decimal

Q.5 Solve Any Two. **12**

a) Explain working of capacitor filter using full wave rectifier with neat circuit diagram.

b) Compare different transistor configurations on the basis of input resistance, output resistance, voltage gain, and current gain.

c) What is meant by universal gate? Derive basic gates using NAND and NOR gate.

SLR-QH-6

Seat No.	

Set R

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0105 / BTCSE0105 / BTETE0105 / BTEE0105 / BTME0105 / BTECE0105 / BTMRE105 / BTAI0105)

Day & Date: Saturday, 23-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

SECTION – I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. **07**

1) An absolute permeability of magnetic material is _____.
a) Φ/B b) B/H
c) HB d) $1/\mu_0\ \mu_r$

2) The SI unit of reluctance is _____.
a) AT/M b) AT/Wb
c) AT d) N/Wb

3) If alternating voltage is given by, $v = 230\sin(376.99t)$, then the frequency is _____.
a) 60Hz b) 50 Hz
c) 40 Hz d) 200Hz

4) The form factor of sinusoidal quantity is _____.
a) 1.11 b) 1.57
c) 1.414 d) 0.637

5) Frequency of an a.c. quantity is defined as _____.
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7) A sinusoidal alternating current has a maximum value of I_m. Its average value will be _____.

a) I_m/π b) $I_m/2\pi$

c) $2I_m/\pi$ d) None of these

SECTION – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the given options. 07

8) Transistor is operated as a closed switch in _____ region.
a) Saturation b) Cut-off
c) Active region d) None of these

9) In BJT, largest current flow occurs in the _____.
a) emitter b) collector
c) base d) All of these

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11) The output of an AND gate is high when _____.
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12) The term nibble means _____.
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c) 4 bits d) 8 bits

13) Break down of PN junction occurs _____.
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c) because of manufacturing defect
d) None of these

14) A diode is used as _____.
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SLR-QH-6

Seat No.	

Set R

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0105 / BTCSE0105 / BTETE0105 / BTEE0105 / BTME0105 / BTECE0105 / BTMRE105 / BTAI0105)

Day & Date: Saturday, 23-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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SECTION – I

Q.2 Solve Any Four. **16**

a) State and Explain Kirchhoff's current and voltage law with suitable diagram.

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c) State and explain Faraday's laws of electromagnetic induction.

d) Derive the emf equation of single-phase transformer.

e) Derive expression for purely capacitive circuit. Draw phasor diagram.

f) For series R-L-C circuit the supply voltage $V_S = 100$ V, Voltage across resistance is 80 V, voltage across inductance is 150 V. What is the voltage across capacitor and power factor of a circuit? Assume $V_L > V_C$.

Q.3 Solve Any Two. **12**

a) Derive the equation for converting star resistances into equivalent delta resistances.

b) A single-phase transformer has 350 primaries and 1050 secondary turns. The net cross sectional area of the core is 50 cm^2. If the primary winding is connected to a 50 Hz supply at 400 V, calculate:
i) The maximum value of the flux density in the core, and
ii) The voltage induced in the secondary winding.

c) Explain series R-L-C circuit for the condition $X_L > X_C$, with voltage triangle, impedance triangle and phasor diagram.

SECTION – II

Q.4 Solve Any Four. **16**

a) Draw circuit diagram and explain VI characteristics of PN junction diode.

b) Explain Full wave center tap rectifier with necessary diagrams.

c) Explain working of BJT as amplifier.

d) Explain input and output characteristics of common base (CB) configuration of transistor.

e) State and prove De-Morgan theorem.

f) Covert
i) $(AB.CD)_H$ to binary
ii) $(132)_8$ to decimal

Q.5 Solve Any Two. **12**

a) Explain working of capacitor filter using full wave rectifier with neat circuit diagram.

b) Compare different transistor configurations on the basis of input resistance, output resistance, voltage gain, and current gain.

c) What is meant by universal gate? Derive basic gates using NAND and NOR gate.

SLR-QH-6

Seat No.	

Set S

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0105 / BTCSE0105 / BTETE0105 / BTEE0105 / BTME0105 / BTECE0105 / BTMRE105 / BTAI0105)

Day & Date: Saturday, 23-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

SECTION – I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:07

Q.1 Choose the correct alternatives from the given options. 07

1) Frequency of an a.c. quantity is defined as _____.
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b) time/cycles
c) sec/revolution of magnetic energy
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a) 1.11
b) 1.57
c) 1.414
d) 0.637

SECTION – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the given options. 07

8) The term nibble means _____.
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c) 4 bits d) 8 bits

9) Break down of PN junction occurs _____.
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b) with reverse bias
c) because of manufacturing defect
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a) 10010 b) 11000
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a) Any input is high b) All inputs are high
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SLR-QH-6

Seat No.	

Set S

F.Y. (B.Tech.) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0105 / BTCSE0105 / BTETE0105 / BTEE0105 / BTME0105 / BTECE0105 / BTMRE105 / BTAI0105)

Day & Date: Saturday, 23-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) State and Explain Kirchhoff's current and voltage law with suitable diagram.

b) Derive the expression for the division of current through three branches in parallel.

c) State and explain Faraday's laws of electromagnetic induction.

d) Derive the emf equation of single-phase transformer.

e) Derive expression for purely capacitive circuit. Draw phasor diagram.

f) For series R-L-C circuit the supply voltage $V_S = 100$ V, Voltage across resistance is 80 V, voltage across inductance is 150 V. What is the voltage across capacitor and power factor of a circuit? Assume $V_L > V_C$.

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a) Derive the equation for converting star resistances into equivalent delta resistances.

b) A single-phase transformer has 350 primaries and 1050 secondary turns. The net cross sectional area of the core is 50 cm^2. If the primary winding is connected to a 50 Hz supply at 400 V, calculate:
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c) Explain series R-L-C circuit for the condition $X_L > X_C$, with voltage triangle, impedance triangle and phasor diagram.

SECTION – II

Q.4 Solve Any Four. **16**

a) Draw circuit diagram and explain VI characteristics of PN junction diode.

b) Explain Full wave center tap rectifier with necessary diagrams.

c) Explain working of BJT as amplifier.

d) Explain input and output characteristics of common base (CB) configuration of transistor.

e) State and prove De-Morgan theorem.

f) Covert
i) $(AB.CD)_H$ to binary
ii) $(132)_8$ to decimal

Q.5 Solve Any Two. **12**

a) Explain working of capacitor filter using full wave rectifier with neat circuit diagram.

b) Compare different transistor configurations on the basis of input resistance, output resistance, voltage gain, and current gain.

c) What is meant by universal gate? Derive basic gates using NAND and NOR gate.

SLR-QH-7

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0201 / BTME0201 / BTETE0201 / BTCSE0201 / BTEE0201 / BTECE0201 / BTIT0201 / BTAI0201 / BTMRE0201)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions, if necessary.

Constants: 1) Avogadro's no, $\mathrm{N} = 6.02 \times 10^{26}$ / k. mol.
2) Velocity of light, $\mathrm{c} = 3 \times 10^{8}$ m/sec
3) Charge of electron, $\mathrm{e} = 1.6 \times 10^{-19}$ C

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. 14

1) The impurity atoms with which silicon should be doped to make P-type semiconductor is _____.
a) Boron b) Phosphorous
c) Antimony d) Germanium

2) The mobility μ is given by _____.
a) $\mu = \rho\, \mathrm{R_H}$ b) $\mu = \sigma\, \mathrm{R_H}$
c) $\mu = \sigma/\mathrm{R_H}$ d) $\mu = \rho/\mathrm{R_H}$

3) The number of atoms in unit cell of FCC structure is _____.
a) 1 b) 2
c) 3 d) 4

4) The sound waves having frequency more than 20 KHz are called as ____.
a) Audible waves b) Infrasonic waves
c) Ultrasonic waves d) Ultraviolet waves

5) According to Sabine reverberation time is directly proportional to _____.
a) volume b) surface area
c) absorption coefficient d) total absorption

6) The nearest neighbor distance in SC is _____.

a) a b) $a/2$

c) $\frac{a}{\sqrt{2}}$ d) $\frac{a}{3\sqrt{2}}$

7) According to Bravais there are only _____ ways of arranging points in space lattices.

a) 7 b) 14

c) 10 d) 23

8) Light waves are transverse in nature, can be demonstrated by observing the phenomenon of _____.

a) polarization b) diffraction

c) dispersion d) interference

9) The bending of light around the edges of an obstacle is known as _____.

a) Scattering b) Polarization

c) Diffraction d) Dispersion

10) Emission of a photon by an atom without an external stimulus is called _____.

a) stimulated emission b) induced emission

c) amplified emission d) spontaneous emission

11) In He-Ne lasers, the diameter of the discharge tube is _____.

a) wide b) thick

c) narrow d) large

12) For population inversion _____ (symbols have usual meaning)

a) $\mathrm{N}_2 \gg \mathrm{N}_1$ b) $\mathrm{N}_1 \gg \mathrm{N}_2$

c) $\mathrm{N}_2 = \mathrm{N}_1$ d) can't say

13) Basic principle of optical fiber is _____.

a) interference b) refraction

c) reflection d) total internal reflection

14) The chirality of Armchair CNT is _____.

a) (a, a) b) (a, b)

c) $(0, \mathrm{b})$ d) $(\mathrm{a}, 0)$

SLR-QH-7

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0201 / BTME0201 / BTETE0201 / BTCSE0201 / BTEE0201 / BTECE0201 / BTIT0201 / BTAI0201 / BTMRE0201)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions, if necessary.

Constants: 1) Avogadro's no, $\mathrm{N} = 6.02 \times 10^{26} \ / \ \mathrm{k.mol.}$
2) Velocity of light, $\mathrm{c} = 3 \times 10^{8} \ \mathrm{m/sec}$
3) Charge of electron, $\mathrm{e} = 1.6 \times 10^{-19} \ \mathrm{C}$

SECTION – I

Q.2 Attempt Any Six of the following. **18**

a) On the basis of energy band gap, classify solids as conductor, semiconductor and insulator.

b) Represent positions of Fermi level in intrinsic, P type and N type semiconductors at $\mathrm{T} = 0\mathrm{K}$

c) Define the following terms:
i) Crystallography
ii) Unit cell
iii) Atomic radius

d) Calculate atomic packing factor for SC, BCC & FCC crystal structures.

e) State and explain Sabine's formula for the reverberation time.

f) State properties of ultrasonic waves.

g) Polonium belongs to SC lattice. If the lattice constant is 3.36Å, Calculate its density. The atomic weight of polonium is 209.

h) A cinema hall has a volume of 7500m^3. It is required to have reverberation time of 1.5 sec. What would be the total absorption of the hall? What will be the effect if you increase the total absorption of the hall?

Q.3 Attempt Any Two of the following. **10**

a) State Hall Effect. Hence derive the relation for Hall voltage.

b) Explain the factors affecting t acoustics of the auditorium and state the remedies over it.

c) Explain: Miller indices. Derive an expression for the spacing between consecutive parallel planes in cubic crystal of Miller indices $(h\ k\ l)$ is given by,

$$d_{hkl} = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

d) i) Calculate the interplanar spacing for a $(3\ 2\ 1)$ in SC lattice whose lattice constant is 4.2×10^{-8} cm.

ii) Copper has FCC structure with lattice constant of $3.61\ \text{A}^0$. Calculate radius of copper atoms.

SECTION – II

Q.4 Attempt Any Six of the following. **18**

a) Define:
i) Diffraction
ii) Diffraction grating
iii) Resolving power of optical instruments

b) State and explain: Malus's law.

c) Explain:
i) Population Inversion
ii) Stimulated Emission

d) State properties of LASER.

e) Explain structure of optical fiber with neat diagram.

f) Write applications of nanotechnology in various fields.

g) What is the highest order spectrum which may be seen with monochromatic light of wavelength 6000 AU by means of diffraction grating with 5000 lines per cm?

h) The numerical aperture of an optical fiber is 0.5 and the core refractive index is 1.5. Find refractive index of the cladding.

Q.5 Attempt Any Two of the following. **10**

a) What is diffraction grating? Derive an expression for the resolving power of a diffraction grating $(\lambda/d\lambda = n.N)$.

b) Explain: He-Ne gas laser with neat energy diagram.

c) Obtain the expression for acceptance angle and acceptance cone. Hence define numerical aperture.

d) i) Calculate specific rotation if plane of polarization is turned through 26.4^0, traversing 20 cm length of 20% sugar solution.

ii) In a step index optical fiber, core index $n_1 = 1.55$ and cladding index $n_2 = 1\ .40$. Find
1) N A 2) Δ and, 3) Acceptance angle

SLR-QH-7

Seat No.	

Set Q

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0201 / BTME0201 / BTETE0201 / BTCSE0201 / BTEE0201 / BTECE0201 / BTIT0201 / BTAI0201 / BTMRE0201)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. 14

1) Light waves are transverse in nature, can be demonstrated by observing the phenomenon of _____.
a) polarization b) diffraction
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13) The nearest neighbor distance in SC is _____.
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14) According to Bravais there are only _____ ways of arranging points in space lattices.
a) 7 b) 14
c) 10 d) 23

SLR-QH-7

Seat No.	

Set Q

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0201 / BTME0201 / BTETE0201 / BTCSE0201 / BTEE0201 / BTECE0201 / BTIT0201 / BTAI0201 / BTMRE0201)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

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d) Calculate atomic packing factor for SC, BCC & FCC crystal structures.

e) State and explain Sabine's formula for the reverberation time.

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$$d_{hkl} = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$

d) i) Calculate the interplanar spacing for a $(3\ 2\ 1)$ in SC lattice whose lattice constant is 4.2×10^{-8} cm.

ii) Copper has FCC structure with lattice constant of $3.61\ \text{A}^0$. Calculate radius of copper atoms.

SECTION – II

Q.4 Attempt Any Six of the following. **18**

a) Define:
i) Diffraction
ii) Diffraction grating
iii) Resolving power of optical instruments

b) State and explain: Malus's law.

c) Explain:
i) Population Inversion
ii) Stimulated Emission

d) State properties of LASER.

e) Explain structure of optical fiber with neat diagram.

f) Write applications of nanotechnology in various fields.

g) What is the highest order spectrum which may be seen with monochromatic light of wavelength 6000 AU by means of diffraction grating with 5000 lines per cm?

h) The numerical aperture of an optical fiber is 0.5 and the core refractive index is 1.5. Find refractive index of the cladding.

Q.5 Attempt Any Two of the following. **10**

a) What is diffraction grating? Derive an expression for the resolving power of a diffraction grating $(\lambda/d\lambda = n.N)$.

b) Explain: He-Ne gas laser with neat energy diagram.

c) Obtain the expression for acceptance angle and acceptance cone. Hence define numerical aperture.

d) i) Calculate specific rotation if plane of polarization is turned through 26.4^0, traversing 20 cm length of 20% sugar solution.

ii) In a step index optical fiber, core index $n_1 = 1.55$ and cladding index $n_2 = 1\ .40$. Find
1) N A 2) Δ and, 3) Acceptance angle

SLR-QH-7

Seat No.	

Set R

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0201 / BTME0201 / BTETE0201 / BTCSE0201 / BTEE0201 / BTECE0201 / BTIT0201 / BTAI0201 / BTMRE0201)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions, if necessary.

Constants: 1) Avogadro's no, $\mathrm{N} = 6.02 \times 10^{26}$ / k. mol.
2) Velocity of light, $\mathrm{c} = 3 \times 10^{8}$ m/sec
3) Charge of electron, $\mathrm{e} = 1.6 \times 10^{-19}$ C

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. 14

1) In He-Ne lasers, the diameter of the discharge tube is _____.
a) wide b) thick
c) narrow d) large

2) For population inversion _____ (symbols have usual meaning)
a) $\mathrm{N}_2 \gg \mathrm{N}_1$ b) $\mathrm{N}_1 \gg \mathrm{N}_2$
c) $\mathrm{N}_2 = \mathrm{N}_1$ d) can't say

3) Basic principle of optical fiber is _____.
a) interference b) refraction
c) reflection d) total internal reflection

4) The chirality of Armchair CNT is _____.
a) (a, a) b) (a, b)
c) $(0, \mathrm{b})$ d) $(\mathrm{a}, 0)$

5) The impurity atoms with which silicon should be doped to make P-type semiconductor is _____.
a) Boron b) Phosphorous
c) Antimony d) Germanium

6) The mobility μ is given by _____.

a) $\mu = \rho\, R_H$ b) $\mu = \sigma\, R_H$

c) $\mu = \sigma / R_H$ d) $\mu = \rho / R_H$

7) The number of atoms in unit cell of FCC structure is _____.

a) 1 b) 2

c) 3 d) 4

8) The sound waves having frequency more than 20 KHz are called as ____.

a) Audible waves b) Infrasonic waves

c) Ultrasonic waves d) Ultraviolet waves

9) According to Sabine reverberation time is directly proportional to _____.

a) volume b) surface area

c) absorption coefficient d) total absorption

10) The nearest neighbor distance in SC is _____.

a) a b) $a/2$

c) $\frac{a}{\sqrt{2}}$ d) $\frac{a}{3\sqrt{2}}$

11) According to Bravais there are only _____ ways of arranging points in space lattices.

a) 7 b) 14

c) 10 d) 23

12) Light waves are transverse in nature, can be demonstrated by observing the phenomenon of _____.

a) polarization b) diffraction

c) dispersion d) interference

13) The bending of light around the edges of an obstacle is known as _____.

a) Scattering b) Polarization

c) Diffraction d) Dispersion

14) Emission of a photon by an atom without an external stimulus is called _____.

a) stimulated emission b) induced emission

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SLR-QH-7

Seat No.	

Set R

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0201 / BTME0201 / BTETE0201 / BTCSE0201 / BTEE0201 / BTECE0201 / BTIT0201 / BTAI0201 / BTMRE0201)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Constants: 1) Avogadro's no, $\mathrm{N} = 6.02 \times 10^{26} \ / \ \mathrm{k.mol.}$
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SECTION – I

Q.2 Attempt Any Six of the following. **18**

a) On the basis of energy band gap, classify solids as conductor, semiconductor and insulator.

b) Represent positions of Fermi level in intrinsic, P type and N type semiconductors at $\mathrm{T} = 0\mathrm{K}$

c) Define the following terms:
i) Crystallography
ii) Unit cell
iii) Atomic radius

d) Calculate atomic packing factor for SC, BCC & FCC crystal structures.

e) State and explain Sabine's formula for the reverberation time.

f) State properties of ultrasonic waves.

g) Polonium belongs to SC lattice. If the lattice constant is 3.36Å, Calculate its density. The atomic weight of polonium is 209.

h) A cinema hall has a volume of 7500m^3. It is required to have reverberation time of 1.5 sec. What would be the total absorption of the hall? What will be the effect if you increase the total absorption of the hall?

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d) i) Calculate the interplanar spacing for a $(3\ 2\ 1)$ in SC lattice whose lattice constant is 4.2×10^{-8} cm.

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g) What is the highest order spectrum which may be seen with monochromatic light of wavelength 6000 AU by means of diffraction grating with 5000 lines per cm?

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ii) In a step index optical fiber, core index $n_1 = 1.55$ and cladding index $n_2 = 1\ .40$. Find

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SLR-QH-7

Seat No.	

Set S

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0201 / BTME0201 / BTETE0201 / BTCSE0201 / BTEE0201 / BTECE0201 / BTIT0201 / BTAI0201 / BTMRE0201)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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1) The nearest neighbor distance in SC is _____.
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SLR-QH-7

Seat No.		Set	S

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Physics
(BTCE0201 / BTME0201 / BTETE0201 / BTCSE0201 / BTEE0201 / BTECE0201 / BTIT0201 / BTAI0201 / BTMRE0201)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions, if necessary.

Constants: 1) Avogadro's no, $\mathrm{N} = 6.02 \times 10^{26} \ / \ \mathrm{k.mol.}$
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SECTION – I

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b) Represent positions of Fermi level in intrinsic, P type and N type semiconductors at $\mathrm{T} = 0\mathrm{K}$

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i) Crystallography
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d) Calculate atomic packing factor for SC, BCC & FCC crystal structures.

e) State and explain Sabine's formula for the reverberation time.

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b) Explain the factors affecting t acoustics of the auditorium and state the remedies over it.

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SECTION – II

Q.4 Attempt Any Six of the following. **18**

a) Define:
i) Diffraction
ii) Diffraction grating
iii) Resolving power of optical instruments

b) State and explain: Malus's law.

c) Explain:
i) Population Inversion
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1) N A 2) Δ and, 3) Acceptance angle

SLR-QH-8

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0202 / BTME0202 / BTETE0202 / BTCSE0202 / BTEE0202 / BTECE0202 / BTIT0202 / BTAI0202 / BTMRE0202)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select correct option. **14**

1) Water containing dissolved salts with a peculiar salty taste is called _____.
a) soft water b) brackish water
c) hard water d) desalinated water

2) Scale formation in boiler causes _____.
a) no loss of heat b) wastage of heat
c) increase in efficiency d) None of the above

3) Hard water may be softened by passing it through _____.
a) sodium silicate
b) limestone
c) Ion exchange resin
d) sodium hexametaphosphate (Calgon)

4) Oiliness is least in case of _____.
a) greases b) mineral oils
c) animal oils d) palm oils

5) Greases are not used to lubricate _____.
a) rail axle boxes
b) gears
c) delicate instruments
d) bearing working at high temperatures

6) Corrosion is an example of _____.
a) oxidation b) reduction
c) electrolysis d) extraction of metal

7) During electrochemical corrosion in acidic environment _____.
a) oxygen evolution occurs
b) oxygen absorption occurs
c) hydrogen evolution takes place
d) hydrogen absorption takes place

8) In bomb calorimeter the ignition of fuel is made with the help of _____.
a) Cu fuse wire b) Mg fuse wire
c) Al fuse wire d) Zn fuse wire

9) A fuel having high ignition temperature is _____.
a) Petrol b) Wood
c) Kerosene d) LPG

10) Most commonly used vulcanizing agent is _____.
a) graphite b) carbon black
c) dry ice d) sulphur

11) Molecular mass of a polymer is _____.
a) small b) very small
c) large d) negligible

12) Raw rubber on vulcanization becomes _____.
a) plastic b) tacky
c) soft d) less elastic

13) Number of moles of solute present in a liter of solution is called _____.
a) Normality b) Molarity
c) Molality d) Mole fraction

14) Which of the following technique is used to detect the steroid consumed by athletes in international sports competition?
a) IR spectroscopy b) Gas chromatography
c) UV spectroscopy d) pH measurement

SLR-QH-8

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0202 / BTME0202 / BTETE0202 / BTCSE0202 / BTEE0202 / BTECE0202 / BTIT0202 / BTAI0202 / BTMRE0202)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Attempt Any Four. **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit.

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	10.15	162
$Mg(HCO_3)_2$	28.73	146
$MgSO_4$	34.10	120
$CaCl_2$	43.90	111
$CaSO_4$	17.00	136
$MgCl_2$	46.5	95

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Define desalination. Explain desalination of water by reverse osmosis process.

c) Explain sedimentation with coagulation of water.

d) Define following terms:
i) Viscosity ii) Fire point
iii) Cloud point iv) Oiliness

e) Define corrosion. List the types of corrosion? Explain mechanism of oxidation corrosion.

f) Explain prevention of corrosion by galvanizing and tinning.

Q.3 Attempt (Any Four) **12**

a) Define is COD. Explain determination of COD. Explain is its significance.

b) Define disinfection. Explain disinfection of water by Chloramine.

c) Define Lubricant. Explain its functions.

d) 6 gm of an oil sample after saponification with 60 ml of N/2 alcoholic KOH solution and subsequent titration with N/2 HCI gave the titre value of 6 ml to phenolphthalein end point. A blank experiment was conducted without taking oil sample. On repeating same procedure gave a titer value of 60 ml. Calculate saponification value of an oil sample.

e) Explain semisolid lubricants.

f) Explain composition, properties and applications of steel.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Calculate gross and net calorific value of a coal sample of coal having C = 82%, H = 7%, O = 3%, S = 3.5%, N = 2.1% and ash = 4.4%. (Take latent heat of steam = 580 cal/g)

b) Explain construction and working of Boy's calorimeter.

c) Compare solid and liquid fuels.

d) Explain molding of plastics in to articles by following methods.
i) Injection molding
ii) Extrusion molding

e) Define plastics. Explain thermosoftening and thermosetting plastics.

f) Define TGA. Explain instrumentation of TGA. What are its applications?

Q.5 Attempt Any Four. **12**

a) Explain the characteristics of good fuels.

b) Summarize advantages and disadvantages of biodiesel.

c) Explain charging & discharging of Li-ion batteries.

d) Explain synthesis, properties and applications of PET.

e) Calculate Molecular weight of polyvinyl chloride having degree of polymerization 450.
(Mol. Wt. of VC = 62.5)

f) Calculate the weight of $MgCl_2$ required to prepare 500 ml of 0.6N solutions.
(Mol. Wt. of $MgCl_2$ = 95)

SLR-QH-8

Seat No.	

Set Q

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0202 / BTME0202 / BTETE0202 / BTCSE0202 / BTEE0202 / BTECE0202 / BTIT0202 / BTAI0202 / BTMRE0202)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
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Duration: 30 Minutes Marks:14

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Seat No.	

Set **Q**

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0202 / BTME0202 / BTETE0202 / BTCSE0202 / BTEE0202 / BTECE0202 / BTIT0202 / BTAI0202 / BTMRE0202)

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SLR-QH-8

Seat No.	

Set R

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0202 / BTME0202 / BTETE0202 / BTCSE0202 / BTEE0202 / BTECE0202 / BTIT0202 / BTAI0202 / BTMRE0202)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select correct option. **14**

1) Molecular mass of a polymer is _____.
a) small b) very small
c) large d) negligible

2) Raw rubber on vulcanization becomes _____.
a) plastic b) tacky
c) soft d) less elastic

3) Number of moles of solute present in a liter of solution is called _____.
a) Normality b) Molarity
c) Molality d) Mole fraction

4) Which of the following technique is used to detect the steroid consumed by athletes in international sports competition?
a) IR spectroscopy b) Gas chromatography
c) UV spectroscopy d) pH measurement

5) Water containing dissolved salts with a peculiar salty taste is called _____.
a) soft water b) brackish water
c) hard water d) desalinated water

6) Scale formation in boiler causes _____.
a) no loss of heat b) wastage of heat
c) increase in efficiency d) None of the above

7) Hard water may be softened by passing it through _____.
   a) sodium silicate
   b) limestone
   c) Ion exchange resin
   d) sodium hexametaphosphate (Calgon)

8) Oiliness is least in case of _____.
   a) greases b) mineral oils
   c) animal oils d) palm oils

9) Greases are not used to lubricate _____.
   a) rail axle boxes
   b) gears
   c) delicate instruments
   d) bearing working at high temperatures

10) Corrosion is an example of _____.
   a) oxidation b) reduction
   c) electrolysis d) extraction of metal

11) During electrochemical corrosion in acidic environment _____.
   a) oxygen evolution occurs
   b) oxygen absorption occurs
   c) hydrogen evolution takes place
   d) hydrogen absorption takes place

12) In bomb calorimeter the ignition of fuel is made with the help of _____.
   a) Cu fuse wire b) Mg fuse wire
   c) Al fuse wire d) Zn fuse wire

13) A fuel having high ignition temperature is _____.
   a) Petrol b) Wood
   c) Kerosene d) LPG

14) Most commonly used vulcanizing agent is _____.
   a) graphite b) carbon black
   c) dry ice d) sulphur

Seat No.	

Set **R**

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0202 / BTME0202 / BTETE0202 / BTCSE0202 / BTEE0202 / BTECE0202 / BTIT0202 / BTAI0202 / BTMRE0202)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and labeled diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Attempt Any Four. **16**

a) A sample of water on analysis was found to contain the following impurities in mg/lit.

	Amount	Mo. Wt.
$Ca(HCO_3)_2$	10.15	162
$Mg(HCO_3)_2$	28.73	146
$MgSO_4$	34.10	120
$CaCl_2$	43.90	111
$CaSO_4$	17.00	136
$MgCl_2$	46.5	95

Calculate the temporary, permanent and total hardness of water in mg/lit.

b) Define desalination. Explain desalination of water by reverse osmosis process.

c) Explain sedimentation with coagulation of water.

d) Define following terms:
i) Viscosity ii) Fire point
iii) Cloud point iv) Oiliness

e) Define corrosion. List the types of corrosion? Explain mechanism of oxidation corrosion.

f) Explain prevention of corrosion by galvanizing and tinning.

Q.3 Attempt (Any Four) **12**

a) Define is COD. Explain determination of COD. Explain is its significance.

b) Define disinfection. Explain disinfection of water by Chloramine.

c) Define Lubricant. Explain its functions.

d) 6 gm of an oil sample after saponification with 60 ml of N/2 alcoholic KOH solution and subsequent titration with N/2 HCI gave the titre value of 6 ml to phenolphthalein end point. A blank experiment was conducted without taking oil sample. On repeating same procedure gave a titer value of 60 ml. Calculate saponification value of an oil sample.

e) Explain semisolid lubricants.

f) Explain composition, properties and applications of steel.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Calculate gross and net calorific value of a coal sample of coal having C = 82%, H = 7%, O = 3%, S = 3.5%, N = 2.1% and ash = 4.4%. (Take latent heat of steam = 580 cal/g)

b) Explain construction and working of Boy's calorimeter.

c) Compare solid and liquid fuels.

d) Explain molding of plastics in to articles by following methods.
i) Injection molding
ii) Extrusion molding

e) Define plastics. Explain thermosoftening and thermosetting plastics.

f) Define TGA. Explain instrumentation of TGA. What are its applications?

Q.5 Attempt Any Four. **12**

a) Explain the characteristics of good fuels.

b) Summarize advantages and disadvantages of biodiesel.

c) Explain charging & discharging of Li-ion batteries.

d) Explain synthesis, properties and applications of PET.

e) Calculate Molecular weight of polyvinyl chloride having degree of polymerization 450.
(Mol. Wt. of VC = 62.5)

f) Calculate the weight of $MgCl_2$ required to prepare 500 ml of 0.6N solutions.
(Mol. Wt. of $MgCl_2$ = 95)

SLR-QH-8

Seat No.	

Set S

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0202 / BTME0202 / BTETE0202 / BTCSE0202 / BTEE0202 / BTECE0202 / BTIT0202 / BTAI0202 / BTMRE0202)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Select correct option. **14**

1) Corrosion is an example of _____.
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2) During electrochemical corrosion in acidic environment _____.
a) oxygen evolution occurs
b) oxygen absorption occurs
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a) Cu fuse wire b) Mg fuse wire
c) Al fuse wire d) Zn fuse wire

4) A fuel having high ignition temperature is _____.
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5) Most commonly used vulcanizing agent is _____.
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6) Molecular mass of a polymer is _____.
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8) Number of moles of solute present in a liter of solution is called _____.
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Seat No.	

Set | S

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Chemistry
(BTCE0202 / BTME0202 / BTETE0202 / BTCSE0202 / BTEE0202 / BTECE0202 / BTIT0202 / BTAI0202 / BTMRE0202)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

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c) Define Lubricant. Explain its functions.

d) 6 gm of an oil sample after saponification with 60 ml of N/2 alcoholic KOH solution and subsequent titration with N/2 HCI gave the titre value of 6 ml to phenolphthalein end point. A blank experiment was conducted without taking oil sample. On repeating same procedure gave a titer value of 60 ml. Calculate saponification value of an oil sample.

e) Explain semisolid lubricants.

f) Explain composition, properties and applications of steel.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Calculate gross and net calorific value of a coal sample of coal having C = 82%, H = 7%, O = 3%, S = 3.5%, N = 2.1% and ash = 4.4%. (Take latent heat of steam = 580 cal/g)

b) Explain construction and working of Boy's calorimeter.

c) Compare solid and liquid fuels.

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ii) Extrusion molding

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f) Define TGA. Explain instrumentation of TGA. What are its applications?

Q.5 Attempt Any Four. **12**

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b) Summarize advantages and disadvantages of biodiesel.

c) Explain charging & discharging of Li-ion batteries.

d) Explain synthesis, properties and applications of PET.

e) Calculate Molecular weight of polyvinyl chloride having degree of polymerization 450.
(Mol. Wt. of VC = 62.5)

f) Calculate the weight of $MgCl_2$ required to prepare 500 ml of 0.6N solutions.
(Mol. Wt. of $MgCl_2$ = 95)

SLR-QH-9

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0204 / BTME0204 / BTETE0204 / BTCSE0204 / BTEE0204 / BTECE0204 / BTIT0204 / BTAI0204 / BTMRE0204)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct option from the following: **07**

1) Construction of transmission towers is the relevance of _____ Civil engineering.
a) Computer Engineering b) Mechanical Engineering
c) IT Engineering d) Electrical Engineering

2) _____ is the role of civil engineer.
a) Taking approval for plan b) Structural design
c) Preparing estimate d) All of the above

3) Portion of structure between ground level and floor level is called as _____.
a) Plinth b) Superstructure
c) Substructure d) None of the above

4) Rain water harvesting in required for _____.
a) Ground water table recharge b) Bore-well recharge solids
c) Storage for future use d) All of the above

5) Hardware, software, data and people, these are components of _____.
a) GPS b) RS
c) GIS d) Total Station

6) The process of killing the infective bacteria from the water and making it safe to the user is called ____.

a) Softening
b) Coagulation
c) Flocculation
d) Disinfection

7) Survey conducted to find depth of water at various points in bodies of water like sea is known as _____ survey.

a) Astronomical survey
b) Hydrographic survey
c) City survey
d) Land survey

SECTION – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct option from the following: 07

1) The sequence of process that eventually returns the working substance to its original state is known as _____.

a) Event b) Thermodynamic cycle
c) Thermodynamic Property d) None of the above

2) To increase the pressure of the gas, machine driven by prime mover is used. This is known as _____.

a) Steam Turbine b) Gas Turbine
c) I. C. Engine d) Compressor

3) Which of the following is the simplest type of resistance welding used in making lap welds?

a) Resistance weld b) Resistance seam
c) Projection d) Upset

4) As per the sign convention, heat going out of system to surrounding is treated as _____.

a) Positive b) Negative
c) Neglected d) None of the above

5) Which joining process is carried out above 450° C?

a) Soldering b) Brazing
c) Both of these d) None of the above

6) A pressure cooker forms a _____.

a) Isolated system b) Closed system
c) Open system d) None of the above

7) An engine running at 150 rpm drives a shaft with belt arrangement. If the diameter of engine pulley is 55 cm and shaft pulley 33 cm, find the speed of shaft _____.

a) 150 rpm b) 100 rpm
c) 300 rpm d) 250 rpm

SLR-QH-9

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0204 / BTME0204 / BTETE0204 / BTCSE0204 / BTEE0204 / BTECE0204 / BTIT0204 / BTAI0204 / BTMRE0204)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of log tables and non-programmable single memory calculator is allowed.
4) Make suitable assumptions, if necessary and mention them clearly.

SECTION – I

Q.2 Attempt Any Five. **15**

a) What are the sub branches of civil engineering? Explain any one in short.

b) Explain the role of civil engineering various construction activities.

c) State the function:
i) Wall
ii) Chajja
iii) Lintel

d) Explain the term rain water harvesting.

e) What is solid waste? Explain its classification.

f) What is GPS? Give its applications in various fields.

g) Explain the classification of Surveying.

Q.3 Attempt Any One out of (a) and (b) and solve Any Two out of (c) to (f) **13**

a) The following staff readings were observed successively with a level, the instrument have been moved after 3rd, 6th and 8th reading. 2.230, 1.605, 0.990, 2.090, 2.865, 1.260, 0.600, 1.980, 1.045, 2.685. Calculate the RL of points if RL of B.M. is 432.385 m from where 1st reading was taken. Use H.I. Method. Apply arithmetic check. **05**

b) The following readings were taken with a dumpy level and 4 m levelling staff. The instrument was shifted after 3rd and 6th readings. The readings are 2.665, 3.225, 2.905, 1.850, 0.980, 2.620, 1.585, 0.960, 0.425 m. Calculate the R.L. of points, if the first reading was taken with a staff held on B.M. of 240 m. Use rise and fall method. Apply arithmetic check. **05**

c)	Explain the IRC classification of roads.	**04**
d)	What is the difference between load bearing structure and framed structure?	**04**
e)	Explain with neat sketch any two types of foundation.	**04**
f)	Give the relevance of civil engineering with Electrical and Mechanical Engineering.	**04**

SECTION – II

Q.4 Answer Any Five of the following. **15**

a) Distinguish between Centrifugal Pump & Reciprocating Pump.

b) Write a note on construction of Pelton wheel with its diagram.

c) Explain open belt & cross belt drive.

d) State the types of system and explain any one with example.

e) What is priming? Why it essential for centrifugal pump.

f) State & explain Zeroth Law of Thermodynamics.

g) Explain resistance welding with neat sketch.

Q.5 Solve Any One out of (a) and (b) and solve Any Two out of (c) to (f). **13**

a) In open belt drive, two pulleys of 500 mm diameter are connected at distance of 2m apart. The initial tension in the belt is 500 N if, the coefficient of friction between the belt and pulley is 0.3. Find the power transmitted at 700 rpm. Also calculate the length of belt. **05**

b) Describe Center Lathe Machine with its block diagram. **05**

c) 150 kJ of work is supplied to a closed system. If the initial volume is 0.6 m^3 and pressure of the system changes as P= 8 - 4v, where p is in bar and v is in m^3. Determine the final volume and pressure of the system. **04**

d) Write a note on Centrifugal Pump **04**

e) Derive an expression for length of cross belt drive. **04**

f) Sketch and explain Oxy-acetylene welding. **04**

SLR-QH-9

Seat No.	

Set Q

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0204 / BTME0204 / BTETE0204 / BTCSE0204 / BTEE0204 / BTECE0204 / BTIT0204 / BTAI0204 / BTMRE0204)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct option from the following: **07**

1) Hardware, software, data and people, these are components of _____.
a) GPS b) RS
c) GIS d) Total Station

2) The process of killing the infective bacteria from the water and making it safe to the user is called ____.
a) Softening b) Coagulation
c) Flocculation d) Disinfection

3) Survey conducted to find depth of water at various points in bodies of water like sea is known as _____ survey.
a) Astronomical survey b) Hydrographic survey
c) City survey d) Land survey

4) Construction of transmission towers is the relevance of _____ Civil engineering.
a) Computer Engineering b) Mechanical Engineering
c) IT Engineering d) Electrical Engineering

5) _____ is the role of civil engineer.
a) Taking approval for plan b) Structural design
c) Preparing estimate d) All of the above

6) Portion of structure between ground level and floor level is called as _____.

a) Plinth
b) Superstructure
c) Substructure
d) None of the above

7) Rain water harvesting in required for _____.

a) Ground water table recharge
b) Bore-well recharge solids
c) Storage for future use
d) All of the above

SECTION – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct option from the following: 07

1) Which joining process is carried out above 450° C?
a) Soldering b) Brazing
c) Both of these d) None of the above

2) A pressure cooker forms a _____.
a) Isolated system b) Closed system
c) Open system d) None of the above

3) An engine running at 150 rpm drives a shaft with belt arrangement. If the diameter of engine pulley is 55 cm and shaft pulley 33 cm, find the speed of shaft _____.
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6) Which of the following is the simplest type of resistance welding used in making lap welds?
a) Resistance weld b) Resistance seam
c) Projection d) Upset

7) As per the sign convention, heat going out of system to surrounding is treated as _____.
a) Positive b) Negative
c) Neglected d) None of the above

SLR-QH-9

Seat No.	

Set Q

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0204 / BTME0204 / BTETE0204 / BTCSE0204 / BTEE0204 / BTECE0204 / BTIT0204 / BTAI0204 / BTMRE0204)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Five. **15**

a) What are the sub branches of civil engineering? Explain any one in short.

b) Explain the role of civil engineering various construction activities.

c) State the function:
i) Wall
ii) Chajja
iii) Lintel

d) Explain the term rain water harvesting.

e) What is solid waste? Explain its classification.

f) What is GPS? Give its applications in various fields.

g) Explain the classification of Surveying.

Q.3 Attempt Any One out of (a) and (b) and solve Any Two out of (c) to (f) **13**

a) The following staff readings were observed successively with a level, the instrument have been moved after 3rd, 6th and 8th reading. 2.230, 1.605, 0.990, 2.090, 2.865, 1.260, 0.600, 1.980, 1.045, 2.685. Calculate the RL of points if RL of B.M. is 432.385 m from where 1st reading was taken. Use H.I. Method. Apply arithmetic check. **05**

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c)	Explain the IRC classification of roads.	**04**
d)	What is the difference between load bearing structure and framed structure?	**04**
e)	Explain with neat sketch any two types of foundation.	**04**
f)	Give the relevance of civil engineering with Electrical and Mechanical Engineering.	**04**

SECTION – II

Q.4 Answer Any Five of the following. **15**

a) Distinguish between Centrifugal Pump & Reciprocating Pump.

b) Write a note on construction of Pelton wheel with its diagram.

c) Explain open belt & cross belt drive.

d) State the types of system and explain any one with example.

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a) In open belt drive, two pulleys of 500 mm diameter are connected at distance of 2m apart. The initial tension in the belt is 500 N if, the coefficient of friction between the belt and pulley is 0.3. Find the power transmitted at 700 rpm. Also calculate the length of belt. **05**

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c) 150 kJ of work is supplied to a closed system. If the initial volume is 0.6 m^3 and pressure of the system changes as P= 8 - 4v, where p is in bar and v is in m^3. Determine the final volume and pressure of the system. **04**

d) Write a note on Centrifugal Pump **04**

e) Derive an expression for length of cross belt drive. **04**

f) Sketch and explain Oxy-acetylene welding. **04**

SLR-QH-9

Seat No.	

Set R

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0204 / BTME0204 / BTETE0204 / BTCSE0204 / BTEE0204 / BTECE0204 / BTIT0204 / BTAI0204 / BTMRE0204)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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SECTION – I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct option from the following: **07**

1) Portion of structure between ground level and floor level is called as _____.
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c) Substructure d) None of the above

2) Rain water harvesting in required for _____.
a) Ground water table recharge b) Bore-well recharge solids
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SECTION – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct option from the following: 07

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c) Both of these d) None of the above

4) A pressure cooker forms a _____.

a) Isolated system b) Closed system
c) Open system d) None of the above

5) An engine running at 150 rpm drives a shaft with belt arrangement. If the diameter of engine pulley is 55 cm and shaft pulley 33 cm, find the speed of shaft _____.

a) 150 rpm b) 100 rpm
c) 300 rpm d) 250 rpm

6) The sequence of process that eventually returns the working substance to its original state is known as _____.

a) Event b) Thermodynamic cycle
c) Thermodynamic Property d) None of the above

7) To increase the pressure of the gas, machine driven by prime mover is used. This is known as _____.

a) Steam Turbine b) Gas Turbine
c) I. C. Engine d) Compressor

SLR-QH-9

Seat No.	

Set R

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0204 / BTME0204 / BTETE0204 / BTCSE0204 / BTEE0204 / BTECE0204 / BTIT0204 / BTAI0204 / BTMRE0204)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of log tables and non-programmable single memory calculator is allowed.
4) Make suitable assumptions, if necessary and mention them clearly.

SECTION – I

Q.2 Attempt Any Five. **15**

a) What are the sub branches of civil engineering? Explain any one in short.

b) Explain the role of civil engineering various construction activities.

c) State the function:
i) Wall
ii) Chajja
iii) Lintel

d) Explain the term rain water harvesting.

e) What is solid waste? Explain its classification.

f) What is GPS? Give its applications in various fields.

g) Explain the classification of Surveying.

Q.3 Attempt Any One out of (a) and (b) and solve Any Two out of (c) to (f) **13**

a) The following staff readings were observed successively with a level, the instrument have been moved after 3rd, 6th and 8th reading. 2.230, 1.605, 0.990, 2.090, 2.865, 1.260, 0.600, 1.980, 1.045, 2.685. Calculate the RL of points if RL of B.M. is 432.385 m from where 1st reading was taken. Use H.I. Method. Apply arithmetic check. **05**

b) The following readings were taken with a dumpy level and 4 m levelling staff. The instrument was shifted after 3rd and 6th readings. The readings are 2.665, 3.225, 2.905, 1.850, 0.980, 2.620, 1.585, 0.960, 0.425 m. Calculate the R.L. of points, if the first reading was taken with a staff held on B.M. of 240 m. Use rise and fall method. Apply arithmetic check. **05**

c)	Explain the IRC classification of roads.	**04**
d)	What is the difference between load bearing structure and framed structure?	**04**
e)	Explain with neat sketch any two types of foundation.	**04**
f)	Give the relevance of civil engineering with Electrical and Mechanical Engineering.	**04**

SECTION – II

Q.4 Answer Any Five of the following. **15**

a) Distinguish between Centrifugal Pump & Reciprocating Pump.

b) Write a note on construction of Pelton wheel with its diagram.

c) Explain open belt & cross belt drive.

d) State the types of system and explain any one with example.

e) What is priming? Why it essential for centrifugal pump.

f) State & explain Zeroth Law of Thermodynamics.

g) Explain resistance welding with neat sketch.

Q.5 Solve Any One out of (a) and (b) and solve Any Two out of (c) to (f). **13**

a) In open belt drive, two pulleys of 500 mm diameter are connected at distance of 2m apart. The initial tension in the belt is 500 N if, the coefficient of friction between the belt and pulley is 0.3. Find the power transmitted at 700 rpm. Also calculate the length of belt. **05**

b) Describe Center Lathe Machine with its block diagram. **05**

c) 150 kJ of work is supplied to a closed system. If the initial volume is 0.6 m^3 and pressure of the system changes as P= 8 - 4v, where p is in bar and v is in m^3. Determine the final volume and pressure of the system. **04**

d) Write a note on Centrifugal Pump **04**

e) Derive an expression for length of cross belt drive. **04**

f) Sketch and explain Oxy-acetylene welding. **04**

SLR-QH-9

Seat No.	

Set S

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0204 / BTME0204 / BTETE0204 / BTCSE0204 / BTEE0204 / BTECE0204 / BTIT0204 / BTAI0204 / BTMRE0204)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicate full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct option from the following: **07**

1) Survey conducted to find depth of water at various points in bodies of water like sea is known as _____ survey.
a) Astronomical survey b) Hydrographic survey
c) City survey d) Land survey

2) Construction of transmission towers is the relevance of _____ Civil engineering.
a) Computer Engineering b) Mechanical Engineering
c) IT Engineering d) Electrical Engineering

3) _____ is the role of civil engineer.
a) Taking approval for plan b) Structural design
c) Preparing estimate d) All of the above

4) Portion of structure between ground level and floor level is called as _____.
a) Plinth b) Superstructure
c) Substructure d) None of the above

5) Rain water harvesting in required for _____.
a) Ground water table recharge b) Bore-well recharge solids
c) Storage for future use d) All of the above

6) Hardware, software, data and people, these are components of _____.

a) GPS
b) RS
c) GIS
d) Total Station

7) The process of killing the infective bacteria from the water and making it safe to the user is called ____.

a) Softening
b) Coagulation
c) Flocculation
d) Disinfection

SECTION – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct option from the following: 07

1) An engine running at 150 rpm drives a shaft with belt arrangement. If the diameter of engine pulley is 55 cm and shaft pulley 33 cm, find the speed of shaft _____.

a) 150 rpm b) 100 rpm
c) 300 rpm d) 250 rpm

2) The sequence of process that eventually returns the working substance to its original state is known as _____.

a) Event b) Thermodynamic cycle
c) Thermodynamic Property d) None of the above

3) To increase the pressure of the gas, machine driven by prime mover is used. This is known as _____.

a) Steam Turbine b) Gas Turbine
c) I. C. Engine d) Compressor

4) Which of the following is the simplest type of resistance welding used in making lap welds?

a) Resistance weld b) Resistance seam
c) Projection d) Upset

5) As per the sign convention, heat going out of system to surrounding is treated as _____.

a) Positive b) Negative
c) Neglected d) None of the above

6) Which joining process is carried out above 450° C?

a) Soldering b) Brazing
c) Both of these d) None of the above

7) A pressure cooker forms a _____.

a) Isolated system b) Closed system
c) Open system d) None of the above

SLR-QH-9

Seat No.	

Set S

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Civil and Mechanical Engineering
(BTCE0204 / BTME0204 / BTETE0204 / BTCSE0204 / BTEE0204 / BTECE0204 / BTIT0204 / BTAI0204 / BTMRE0204)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of log tables and non-programmable single memory calculator is allowed.
4) Make suitable assumptions, if necessary and mention them clearly.

SECTION – I

Q.2 Attempt Any Five. **15**

a) What are the sub branches of civil engineering? Explain any one in short.

b) Explain the role of civil engineering various construction activities.

c) State the function:
i) Wall
ii) Chajja
iii) Lintel

d) Explain the term rain water harvesting.

e) What is solid waste? Explain its classification.

f) What is GPS? Give its applications in various fields.

g) Explain the classification of Surveying.

Q.3 Attempt Any One out of (a) and (b) and solve Any Two out of (c) to (f) **13**

a) The following staff readings were observed successively with a level, the instrument have been moved after 3rd, 6th and 8th reading. 2.230, 1.605, 0.990, 2.090, 2.865, 1.260, 0.600, 1.980, 1.045, 2.685. Calculate the RL of points if RL of B.M. is 432.385 m from where 1st reading was taken. Use H.I. Method. Apply arithmetic check. **05**

b) The following readings were taken with a dumpy level and 4 m levelling staff. The instrument was shifted after 3rd and 6th readings. The readings are 2.665, 3.225, 2.905, 1.850, 0.980, 2.620, 1.585, 0.960, 0.425 m. Calculate the R.L. of points, if the first reading was taken with a staff held on B.M. of 240 m. Use rise and fall method. Apply arithmetic check. **05**

c)	Explain the IRC classification of roads.	**04**
d)	What is the difference between load bearing structure and framed structure?	**04**
e)	Explain with neat sketch any two types of foundation.	**04**
f)	Give the relevance of civil engineering with Electrical and Mechanical Engineering.	**04**

SECTION – II

Q.4 Answer Any Five of the following. **15**

a) Distinguish between Centrifugal Pump & Reciprocating Pump.

b) Write a note on construction of Pelton wheel with its diagram.

c) Explain open belt & cross belt drive.

d) State the types of system and explain any one with example.

e) What is priming? Why it essential for centrifugal pump.

f) State & explain Zeroth Law of Thermodynamics.

g) Explain resistance welding with neat sketch.

Q.5 Solve Any One out of (a) and (b) and solve Any Two out of (c) to (f). **13**

a) In open belt drive, two pulleys of 500 mm diameter are connected at distance of 2m apart. The initial tension in the belt is 500 N if, the coefficient of friction between the belt and pulley is 0.3. Find the power transmitted at 700 rpm. Also calculate the length of belt. **05**

b) Describe Center Lathe Machine with its block diagram. **05**

c) 150 kJ of work is supplied to a closed system. If the initial volume is 0.6 m^3 and pressure of the system changes as P= 8 - 4v, where p is in bar and v is in m^3. Determine the final volume and pressure of the system. **04**

d) Write a note on Centrifugal Pump **04**

e) Derive an expression for length of cross belt drive. **04**

f) Sketch and explain Oxy-acetylene welding. **04**

SLR-QH-10

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0205 / BTME0205 / BTETE0205 / BTCSE0205 / BTEE0205 / BTECE0205/ BTIT0205/ BTAI0205/ BTMRE0205)

Day & Date: Saturday, 23-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 15 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

SECTION – I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the given options. 07

1) If voltage applied to a circuit is 50 V and current through it is observed as 10 A then the circuit resistance is _____ ohms.
a) 5 b) 0.2
c) 10 d) 50

2) The time taken by an alternating quantity to complete one cycle is called _____.
a) Frequency b) Speed
c) Waveform d) Time period

3) The reluctance of a magnetic circuit is _____.
a) directly proportional to length and area
b) directly proportional to length and inversely proportional to area
c) directly proportional to area and inversely proportional to length
d) None of these

4) The reluctance of the magnetic circuit is _____.
a) MMF/current b) MMF/flux
c) flux/current d) flux/MMF

5) In a transformer electrical power is transformed from one circuit to other without change in the _____.
a) Voltage b) Current
c) Frequency d) None of these

6) The power factor of pure resistive circuit is _____.

a) Zero b) Unity

c) Lagging d) Leading

7) A DC motor converts _____.

a) Electrical energy into mechanical energy
b) Mechanical energy into electrical energy
c) Electrical energy into magnetic energy
d) Magnetic energy into electrical energy

SECTION – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the given options. 07

8) Break down of PN junction occurs _____.
a) with forward bias
b) with reverse bias
c) because of manufacturing defect
d) None of these

9) A diode is used as _____.
a) An amplifier b) A rectifier
c) An oscillator d) Voltage regulator

10) In transistor _____.
a) IC = IE + IB b) IB = IC + IE
c) IE = IC + IB d) IE = IC − IB

11) In BJT, largest current flow occurs in the _____.
a) emitter b) collector
c) base d) All of these

12) The decimal number 17 is equal to binary number _____.
a) 10010 b) 11000
c) 10001 d) 01001

13) The output of an AND gate is high when _____.
a) Any input is high b) All inputs are high
c) No inputs are high d) Both a) and b)

14) The term nibble means _____.
a) 2 bits b) 1 bit
c) 4 bits d) 8 bits

Seat No.	

Set **P**

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0205 / BTME0205 / BTETE0205 / BTCSE0205 / BTEE0205 / BTECE0205/ BTIT0205/ BTAI0205/ BTMRE0205)

Day & Date: Saturday, 23-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) State and explain Kirchhoff's laws as applied to dc circuits.

b) As shown in figure below, find the current I flowing through the circuit.

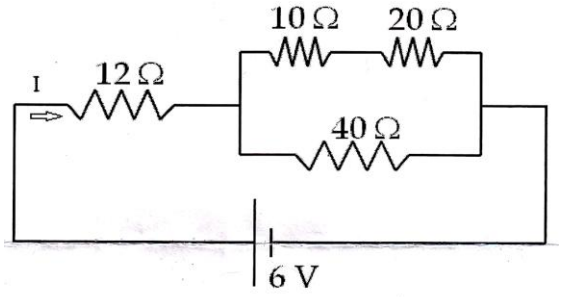

Fig.: Q.2 (2)

c) Explain Faraday's laws of electromagnetic induction.

d) Define and explain following terms:
i) Magnetic flux
ii) Magnetic flux density
iii) MMF
iv) Permeability

e) Define RMS value and derive expression of RMS value for sinusoidal quantity.

f) An alternating current is given as: $i = 5 \sin (314.15t)$ A. Find its amplitude, frequency and time period.

Q.3 Solve Any Two. **12**

a) Derive the equation for converting star resistances into equivalent delta resistances.

b) A 10 KVA, 3300/240 V, single phase, 50 Hz transformer has a core area of 300 cm^2. The flux density is 1.3 Tesla. Calculate:

i) Number of primary turns
ii) Number of secondary turns

c) Explain series R-C ac circuit with neat diagram. Also draw the waveform and phasor diagram.

SECTION – II

Q.4 Solve Any Four. **16**

a) Draw circuit diagram and explain VI characteristics of PN junction diode.

b) Explain Full wave center tap rectifier with necessary diagrams.

c) Explain working of BJT as amplifier.

d) Explain input and output characteristics of common base (CB) configuration of transistor.

e) State and prove De-Morgan theorem.

f) Covert

i) $(AB.CD)_H$ to octal

ii) $(132)_8$ to decimal

Q.5 Solve Any Two. **12**

a) Explain working of capacitor filter using full wave rectifier with neat circuit diagram.

b) Compare different transistor configurations on the basis of input resistance, output resistance, voltage gain and current gain.

c) What is meant by universal gate? Derive basic gates using NAND and NOR gate.

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0205 / BTME0205 / BTETE0205 / BTCSE0205 / BTEE0205 / BTECE0205/ BTIT0205/ BTAI0205/ BTMRE0205)

Day & Date: Saturday, 23-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 15 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

SECTION – I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the given options. 07

1) In a transformer electrical power is transformed from one circuit to other without change in the _____.
a) Voltage b) Current
c) Frequency d) None of these

2) The power factor of pure resistive circuit is _____.
a) Zero b) Unity
c) Lagging d) Leading

3) A DC motor converts _____.
a) Electrical energy into mechanical energy
b) Mechanical energy into electrical energy
c) Electrical energy into magnetic energy
d) Magnetic energy into electrical energy

4) If voltage applied to a circuit is 50 V and current through it is observed as 10 A then the circuit resistance is _____ ohms.
a) 5 b) 0.2
c) 10 d) 50

5) The time taken by an alternating quantity to complete one cycle is called _____.
a) Frequency b) Speed
c) Waveform d) Time period

6) The reluctance of a magnetic circuit is _____.
   a) directly proportional to length and area
   b) directly proportional to length and inversely proportional to area
   c) directly proportional to area and inversely proportional to length
   d) None of these

7) The reluctance of the magnetic circuit is _____.
   a) MMF/current
   b) MMF/flux
   c) flux/current
   d) flux/MMF

SECTION – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the given options. 07

8) The decimal number 17 is equal to binary number _____.
a) 10010 b) 11000
c) 10001 d) 01001

9) The output of an AND gate is high when _____.
a) Any input is high b) All inputs are high
c) No inputs are high d) Both a) and b)

10) The term nibble means _____.
a) 2 bits b) 1 bit
c) 4 bits d) 8 bits

11) Break down of PN junction occurs _____.
a) with forward bias
b) with reverse bias
c) because of manufacturing defect
d) None of these

12) A diode is used as _____.
a) An amplifier b) A rectifier
c) An oscillator d) Voltage regulator

13) In transistor _____.
a) IC = IE + IB b) IB = IC + IE
c) IE = IC + IB d) IE = IC − IB

14) In BJT, largest current flow occurs in the _____.
a) emitter b) collector
c) base d) All of these

Seat No.	

Set **Q**

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0205 / BTME0205 / BTETE0205 / BTCSE0205 / BTEE0205 / BTECE0205/ BTIT0205/ BTAI0205/ BTMRE0205)

Day & Date: Saturday, 23-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) State and explain Kirchhoff's laws as applied to dc circuits.

b) As shown in figure below, find the current I flowing through the circuit.

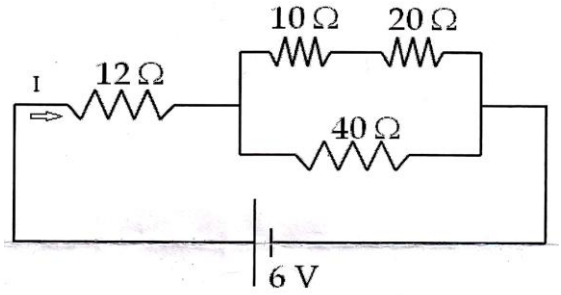

Fig.: Q.2 (2)

c) Explain Faraday's laws of electromagnetic induction.

d) Define and explain following terms:
i) Magnetic flux
ii) Magnetic flux density
iii) MMF
iv) Permeability

e) Define RMS value and derive expression of RMS value for sinusoidal quantity.

f) An alternating current is given as: $i = 5 \sin (314.15t)$ A. Find its amplitude, frequency and time period.

Q.3 Solve Any Two. **12**

a) Derive the equation for converting star resistances into equivalent delta resistances.

b) A 10 KVA, 3300/240 V, single phase, 50 Hz transformer has a core area of 300 cm^2. The flux density is 1.3 Tesla. Calculate:

i) Number of primary turns
ii) Number of secondary turns

c) Explain series R-C ac circuit with neat diagram. Also draw the waveform and phasor diagram.

SECTION – II

Q.4 Solve Any Four. **16**

a) Draw circuit diagram and explain VI characteristics of PN junction diode.

b) Explain Full wave center tap rectifier with necessary diagrams.

c) Explain working of BJT as amplifier.

d) Explain input and output characteristics of common base (CB) configuration of transistor.

e) State and prove De-Morgan theorem.

f) Covert

i) $(AB.CD)_H$ to octal

ii) $(132)_8$ to decimal

Q.5 Solve Any Two. **12**

a) Explain working of capacitor filter using full wave rectifier with neat circuit diagram.

b) Compare different transistor configurations on the basis of input resistance, output resistance, voltage gain and current gain.

c) What is meant by universal gate? Derive basic gates using NAND and NOR gate.

Seat No.	

Set **R**

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0205 / BTME0205 / BTETE0205 / BTCSE0205 / BTEE0205 / BTECE0205/ BTIT0205/ BTAI0205/ BTMRE0205)

Day & Date: Saturday, 23-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 15 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
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SECTION – I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the given options. 07

1) The reluctance of a magnetic circuit is _____.
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5) A DC motor converts _____.
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6) If voltage applied to a circuit is 50 V and current through it is observed as 10 A then the circuit resistance is _____ ohms.

a) 5 b) 0.2
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7) The time taken by an alternating quantity to complete one cycle is called _____.

a) Frequency b) Speed
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SECTION – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the given options. 07

8) In transistor _____.
a) IC = IE + IB b) IB = IC + IE
c) IE = IC + IB d) IE = IC − IB

9) In BJT, largest current flow occurs in the _____.
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c) because of manufacturing defect
d) None of these

14) A diode is used as _____.
a) An amplifier b) A rectifier
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Seat No.	

Set **R**

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0205 / BTME0205 / BTETE0205 / BTCSE0205 / BTEE0205 / BTECE0205/ BTIT0205/ BTAI0205/ BTMRE0205)

Day & Date: Saturday, 23-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Solve Any Four. **16**

a) State and explain Kirchhoff's laws as applied to dc circuits.

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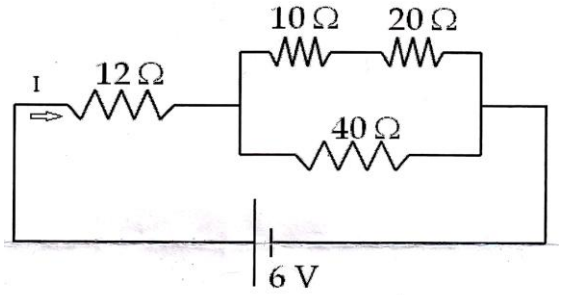

Fig.: Q.2 (2)

c) Explain Faraday's laws of electromagnetic induction.

d) Define and explain following terms:
i) Magnetic flux
ii) Magnetic flux density
iii) MMF
iv) Permeability

e) Define RMS value and derive expression of RMS value for sinusoidal quantity.

f) An alternating current is given as: $i = 5 \sin (314.15t)$ A. Find its amplitude, frequency and time period.

Q.3 Solve Any Two. **12**

a) Derive the equation for converting star resistances into equivalent delta resistances.

b) A 10 KVA, 3300/240 V, single phase, 50 Hz transformer has a core area of 300 cm^2. The flux density is 1.3 Tesla. Calculate:

i) Number of primary turns
ii) Number of secondary turns

c) Explain series R-C ac circuit with neat diagram. Also draw the waveform and phasor diagram.

SECTION – II

Q.4 Solve Any Four. **16**

a) Draw circuit diagram and explain VI characteristics of PN junction diode.

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c) Explain working of BJT as amplifier.

d) Explain input and output characteristics of common base (CB) configuration of transistor.

e) State and prove De-Morgan theorem.

f) Covert

i) $(AB.CD)_H$ to octal

ii) $(132)_8$ to decimal

Q.5 Solve Any Two. **12**

a) Explain working of capacitor filter using full wave rectifier with neat circuit diagram.

b) Compare different transistor configurations on the basis of input resistance, output resistance, voltage gain and current gain.

c) What is meant by universal gate? Derive basic gates using NAND and NOR gate.

SLR-QH-10

Seat No.	

Set S

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0205 / BTME0205 / BTETE0205 / BTCSE0205 / BTEE0205 / BTECE0205/ BTIT0205/ BTAI0205/ BTMRE0205)

Day & Date: Saturday, 23-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 15 minutes in Answer Book Page no. 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

SECTION – I

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the given options. 07

1) A DC motor converts _____.
a) Electrical energy into mechanical energy
b) Mechanical energy into electrical energy
c) Electrical energy into magnetic energy
d) Magnetic energy into electrical energy

2) If voltage applied to a circuit is 50 V and current through it is observed as 10 A then the circuit resistance is _____ ohms.
a) 5 b) 0.2
c) 10 d) 50

3) The time taken by an alternating quantity to complete one cycle is called _____.
a) Frequency b) Speed
c) Waveform d) Time period

4) The reluctance of a magnetic circuit is _____.
a) directly proportional to length and area
b) directly proportional to length and inversely proportional to area
c) directly proportional to area and inversely proportional to length
d) None of these

5) The reluctance of the magnetic circuit is _____.
a) MMF/current b) MMF/flux
c) flux/current d) flux/MMF

6) In a transformer electrical power is transformed from one circuit to other without change in the _____.

a) Voltage b) Current
c) Frequency d) None of these

7) The power factor of pure resistive circuit is _____.

a) Zero b) Unity
c) Lagging d) Leading

SECTION – II

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 07

Q.1 Choose the correct alternatives from the given options. 07

8) The term nibble means _____.
a) 2 bits b) 1 bit
c) 4 bits d) 8 bits

9) Break down of PN junction occurs _____.
a) with forward bias
b) with reverse bias
c) because of manufacturing defect
d) None of these

10) A diode is used as _____.
a) An amplifier b) A rectifier
c) An oscillator d) Voltage regulator

11) In transistor _____.
a) IC = IE + IB b) IB = IC + IE
c) IE = IC + IB d) IE = IC − IB

12) In BJT, largest current flow occurs in the _____.
a) emitter b) collector
c) base d) All of these

13) The decimal number 17 is equal to binary number _____.
a) 10010 b) 11000
c) 10001 d) 01001

14) The output of an AND gate is high when _____.
a) Any input is high b) All inputs are high
c) No inputs are high d) Both a) and b)

Seat No.	

Set **S**

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Basic Electrical & Electronics Engineering
(BTCE0205 / BTME0205 / BTETE0205 / BTCSE0205 / BTEE0205 / BTECE0205/ BTIT0205/ BTAI0205/ BTMRE0205)

Day & Date: Saturday, 23-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) State and explain Kirchhoff's laws as applied to dc circuits.

b) As shown in figure below, find the current I flowing through the circuit.

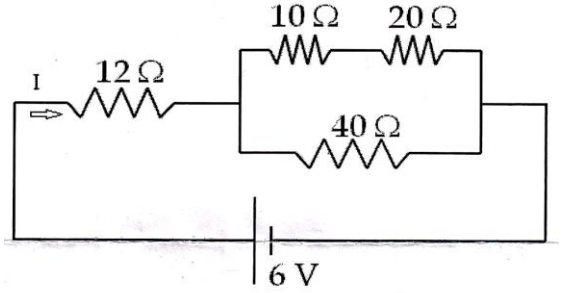

Fig.: Q.2 (2)

c) Explain Faraday's laws of electromagnetic induction.

d) Define and explain following terms:
i) Magnetic flux
ii) Magnetic flux density
iii) MMF
iv) Permeability

e) Define RMS value and derive expression of RMS value for sinusoidal quantity.

f) An alternating current is given as: $i = 5 \sin (314.15t)$ A. Find its amplitude, frequency and time period.

Q.3 Solve Any Two. **12**

a) Derive the equation for converting star resistances into equivalent delta resistances.

b) A 10 KVA, 3300/240 V, single phase, 50 Hz transformer has a core area of 300 cm^2. The flux density is 1.3 Tesla. Calculate:

i) Number of primary turns
ii) Number of secondary turns

c) Explain series R-C ac circuit with neat diagram. Also draw the waveform and phasor diagram.

SECTION – II

Q.4 Solve Any Four. **16**

a) Draw circuit diagram and explain VI characteristics of PN junction diode.

b) Explain Full wave center tap rectifier with necessary diagrams.

c) Explain working of BJT as amplifier.

d) Explain input and output characteristics of common base (CB) configuration of transistor.

e) State and prove De-Morgan theorem.

f) Covert

i) $(AB.CD)_H$ to octal

ii) $(132)_8$ to decimal

Q.5 Solve Any Two. **12**

a) Explain working of capacitor filter using full wave rectifier with neat circuit diagram.

b) Compare different transistor configurations on the basis of input resistance, output resistance, voltage gain and current gain.

c) What is meant by universal gate? Derive basic gates using NAND and NOR gate.

SLR-QH-11

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mathematics – II
(BTCE0203 / BTME0203 / BTETE0203 / BTCSE0203 / BTEE0203 / BTECE0203 / BTIT0203 / BTAI0203 / BTMRE0203)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) The series $a + ar + ar^2 + \ldots\ldots$ is convergent, if $|r| < 1$ and converges to _____.

a) $\frac{a}{1-r}$ b) $\frac{a}{1+r}$
c) $\frac{1}{1-r}$ d) $\frac{1}{1+r}$

2) The series $\sum_{n=1}^{n=\infty} \frac{1}{n^p}, p > 1$ is _____.

a) convergent b) divergent
c) oscillatory d) conditionally convergent

3) In Leibnitz test, an alternating series $u_1 - u_2 + u_3 - u_4 + \ldots\ldots$ is convergent if
i) each term is numerically less than the preceding term and
ii) $\log_{n\to\infty} u_n =$ _____.

a) 1 b) -1
c) 0 d) 2

4) Integrating factor of the differential equation $\frac{dx}{dy} + P'x = Q'$ is _____.

a) $e^{\int P' dx}$ b) $e^{\int Q' dy}$
c) $e^{\int Q' dx}$ d) $e^{\int P' dy}$

5) $\cos\ (x+iy) =$ _____.

a) $\cos x \cos y + \sin x \sin y$ b) $\cos x \cosh y + i \sin x\ \ x \sinh y$

c) $\cos x \cosh y - i\ \sin x \sinh y$ d) $\cosh x \sinh y + \sinh x \cosh y$

6) C-R equations for $f(z)$ to be analytic use _____.

a) $u_x = v_y, u_y = -v_x$ b) $u_x = -v_x, u_y = -v_y$

c) $u_x = -v_x\ , u_y = -v_x$ d) $u_x = -v_y, u_y = v_x$

7) The orthogonal trajectories of the curves $r = a(1+\cos\theta)$ is _____.

a) $r = c(1+\cos\theta)$ b) $r = c(1-\cos\theta)$

c) $r = c(1+\sin\theta)$ d) $r = c(1-\sin\theta)$

8) $\lceil n.\lceil 1-n =$ _____.

a) $B(n,n)$ b) $B(n,1-n)$

c) $B(1-n,1-n)$ d) $B(n,1+n)$

9) If the density ρ at any point of the lamina $y = f(x)$ bounded by $x = a, x = b, y = c, y = d$ varies as the product of the square of the ordinate.

a) kx^2 b) ky^2

c) kxy d) kx^2y^2

10) $\int_0^a \int_0^b dxdy =$ _____.

a) ab b) $\frac{a}{2}$

c) $\frac{b}{2}$ d) $-ab$

11) The curve $r^2 = a^2\cos 2\theta$ is symmetrical about _____.

a) $\theta = 0$ b) $\theta = \frac{\pi}{3}$

c) $\theta = \frac{\pi}{6}$ d) None of these

12) The tangents to the curve $x = a(\cos t + \frac{1}{2}\log\tan^2\frac{t}{2})\ , y = a\sin t$ at $t = \frac{\pi}{2}$ is _____.

a) Parallel to the x-axis b) Parallel to the y-axis

c) The line $y = x$ d) The line $y = -x$

13) $B(2,3) =$ _____.

a) $1/2$

b) $\frac{1}{3}$

c) $\frac{1}{6}$

d) $\frac{1}{12}$

14) $\left\lceil \frac{1}{2} \right. =$ _____.

a) π

b) $\frac{\pi}{2}$

c) 2π

d) $\sqrt{\pi}$

SLR-QH-11

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mathematics – II
(BTCE0203 / BTME0203 / BTETE0203 / BTCSE0203 / BTEE0203 / BTECE0203 / BTIT0203 / BTAI0203 / BTMRE0203)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three of the following. **09**

a) Solve $\left[y\left(1+\frac{1}{x}\right)+\cos y\right]dx+[x+\log x-x\sin y]\,dy=0$

b) Solve $(2x-2y+5)\frac{dy}{dx}=(x-y+3)$

c) Solve $x^{\frac{4}{3}}=\left(\frac{1}{2}+i\frac{\sqrt{3}}{2}\right)$ and show that continued product of all values is 1.

d) Test the convergence of: $\frac{1}{1.2.3}+\frac{3}{2.3.4}+\frac{5}{3.4.5}+\cdots+\frac{2n-1}{n(n+1)(n+2)}+\ldots$

e) Determine k such that $f(z)=\frac{1}{2}\log(x^2+y^2)+i\tan^{-1}\left(\frac{kx}{y}\right)$ is an analytic function.

Q.3 Attempt Any Three of the following. **09**

a) Solve $(2y-x^2)dx+xdy=0$

b) Find the orthogonal trajectories of the curve $r=a(1+\cos\theta)$

c) Show that $u=e^x\cos y$ is a harmonic function. Find its corresponding analytic function $f(z)$.

d) Test the convergence of $\frac{1.2}{3^2.4^2}+\frac{3.4}{5^2.6^2}+\frac{5.6}{7^2.8^2}+\ldots$

e) Test the convergence of: $\sum_{n=1}^{n=\infty}\frac{4^n+5^n}{6^n}$

Q.4 Attempt Any Two of the following. **10**

a) Apply De-Movire's to simplify $\left(\frac{1+\sin\frac{\pi}{8}+i\cos\frac{\pi}{8}}{1+\sin\frac{\pi}{8}-i\cos\frac{\pi}{8}}\right)^8$

b) Define the Absolute and Conditional Convergence and examine for the absolute and conditional convergence, $\sum_{n=1}^{n=\infty}(-1)^n\ \frac{(n+1)^n}{(2n)^n}$

c) When a switch is closed, the current built up in an electric circuit is given by $L\frac{di}{dt}+Ri=E$ if $L=640, R=250, E=500$, and $i=0$ when $t=0$. Show the current will approach 2 amp. when $t\to\infty$.

SECTION – II

Q.5 Attempt Any Three of the following. **09**

a) Evaluate $\int_0^4 x^2\sqrt{4x-x^2}dx$

b) Evaluate $\int_0^{\frac{\pi}{2}}\int_0^{a\sin\theta}\int_0^{\frac{a^2-r^2}{a}} rd\,\theta dr dz$

c) Express the following integral in polar coordinates and evaluate.
$\int_0^a \int_{\sqrt{(ax-x^2)}}^{\sqrt{(a^2-x^2)}} \frac{dx\,dy}{\sqrt{(a^2-x^2-y^2)}}$

d) Show that $\int_0^\infty \frac{\tan^{-1}\left(\frac{x}{a}\right)-\tan^{-1}\left(\frac{x}{b}\right)}{x}dx=\frac{\pi}{2}\log\left(\frac{b}{a}\right)$

e) Trace the curve $x=a(t+\sin t), y=a(1-\cos t)$

Q.6 Attempt Any Three of the following. **09**

a) Find the area included between the curves $y=x^2$ & $y=x^3$

b) Evaluate $\int_0^{\frac{\pi}{4}}\sin^4 4x\cos^3 2x dx$

c) Evaluate $\iint \frac{xy}{\sqrt{1-y^2}}\,dxdy$ over the positive quadrant of the circle $x^2+y^2=1$

d) Trace the curve $r=a(1+\cos\theta)$

e) Change to polar and evaluate $\int_0^\infty\int_0^\infty e^{-(x^2+y^2)}\,dxdy$

Q.7 Attempt Any Two of the following. **10**

a) Trace the curve with full justification $ay^2 = x.(a^2 - x^2)$

b) State and Prove duplication formula.

c) Find the mass of the wire in the shape of the cardioid $r = a(1 - \cos\theta)$,
if the density at any point of the wire is K times its distance from the Pole.

SLR-QH-11

Seat No.	

Set Q

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mathematics – II
(BTCE0203 / BTME0203 / BTETE0203 / BTCSE0203 / BTEE0203 / BTECE0203 / BTIT0203 / BTAI0203 / BTMRE0203)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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1) $\lceil n.\lceil 1-n = $ _____.

a) $B(n,n)$ b) $B(n,1-n)$
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9) The series $\sum_{n=1}^{n=\infty}\frac{1}{n^p}, p > 1$ is _____.

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i) each term is numerically less than the preceding term and
ii) $\log_{n\to\infty} u_n =$ _____.

a) 1
b) -1
c) 0
d) 2

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b) $e^{\int Q'dy}$
c) $e^{\int Q'dx}$
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SLR-QH-11

Seat No.	

Set Q

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mathematics – II
(BTCE0203 / BTME0203 / BTETE0203 / BTCSE0203 / BTEE0203 / BTECE0203 / BTIT0203 / BTAI0203 / BTMRE0203)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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SECTION – I

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c) Solve $x^{\frac{4}{3}}=\left(\frac{1}{2}+i\frac{\sqrt{3}}{2}\right)$ and show that continued product of all values is 1.

d) Test the convergence of: $\frac{1}{1.2.3}+\frac{3}{2.3.4}+\frac{5}{3.4.5}+\cdots+\frac{2n-1}{n(n+1)(n+2)}+\ldots$

e) Determine k such that $f(z)=\frac{1}{2}\log(x^2+y^2)+i\tan^{-1}\left(\frac{kx}{y}\right)$ is an analytic function.

Q.3 Attempt Any Three of the following. **09**

a) Solve $(2y-x^2)dx+xdy=0$

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c) Show that $u=e^x\cos y$ is a harmonic function. Find its corresponding analytic function $f(z)$.

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Q.4 Attempt Any Two of the following. **10**

a) Apply De-Movire's to simplify $\left(\frac{1+\sin\frac{\pi}{8}+i\cos\frac{\pi}{8}}{1+\sin\frac{\pi}{8}-i\cos\frac{\pi}{8}}\right)^8$

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c) When a switch is closed, the current built up in an electric circuit is given by $L\frac{di}{dt}+Ri=E$ if $L=640, R=250, E=500$, and $i=0$ when $t=0$. Show the current will approach 2 amp. when $t\to\infty$.

SECTION – II

Q.5 Attempt Any Three of the following. **09**

a) Evaluate $\int_0^4 x^2\sqrt{4x-x^2}dx$

b) Evaluate $\int_0^{\frac{\pi}{2}}\int_0^{a\sin\theta}\int_0^{\frac{a^2-r^2}{a}} rd\,\theta dr dz$

c) Express the following integral in polar coordinates and evaluate.
$\int_0^a \int_{\sqrt{(ax-x^2)}}^{\sqrt{(a^2-x^2)}} \frac{dx\,dy}{\sqrt{(a^2-x^2-y^2)}}$

d) Show that $\int_0^\infty \frac{\tan^{-1}\left(\frac{x}{a}\right)-\tan^{-1}\left(\frac{x}{b}\right)}{x}dx=\frac{\pi}{2}\log\left(\frac{b}{a}\right)$

e) Trace the curve $x=a(t+\sin t), y=a(1-\cos t)$

Q.6 Attempt Any Three of the following. **09**

a) Find the area included between the curves $y=x^2$ & $y=x^3$

b) Evaluate $\int_0^{\frac{\pi}{4}}\sin^4 4x\cos^3 2x dx$

c) Evaluate $\iint \frac{xy}{\sqrt{1-y^2}}\,dxdy$ over the positive quadrant of the circle $x^2+y^2=1$

d) Trace the curve $r=a(1+\cos\theta)$

e) Change to polar and evaluate $\int_0^\infty\int_0^\infty e^{-(x^2+y^2)}\,dxdy$

Q.7 Attempt Any Two of the following. **10**

a) Trace the curve with full justification $ay^2 = x.(a^2 - x^2)$

b) State and Prove duplication formula.

c) Find the mass of the wire in the shape of the cardioid $r = a(1 - \cos\theta)$,
if the density at any point of the wire is K times its distance from the Pole.

SLR-QH-11

Seat No.	

Set R

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mathematics – II
(BTCE0203 / BTME0203 / BTETE0203 / BTCSE0203 / BTEE0203 / BTECE0203 / BTIT0203 / BTAI0203 / BTMRE0203)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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5) Use of non-programable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) The curve $r^2 = a^2 \cos 2\theta$ is symmetrical about _____.

a) $\theta = 0$ b) $\theta = \frac{\pi}{3}$

c) $\theta = \frac{\pi}{6}$ d) None of these

2) The tangents to the curve $x = a(\cos t + \frac{1}{2}\log \tan^2 \frac{t}{2}), y = a \sin t$ at $t = \frac{\pi}{2}$ is _____.

a) Parallel to the x-axis b) Parallel to the y-axis

c) The line $y = x$ d) The line $y = -x$

3) $B(2,3) =$ _____.

a) $1/2$ b) $\frac{1}{3}$

c) $\frac{1}{6}$ d) $\frac{1}{12}$

4) $\left[\frac{1}{2} =$ _____.

a) π b) $\frac{\pi}{2}$

c) 2π d) $\sqrt{\pi}$

5) The series $a + ar + ar^2 + \ldots\ldots$ is convergent, if $|r| < 1$ and converges to _____.

a) $\frac{a}{1-r}$ b) $\frac{a}{1+r}$

c) $\frac{1}{1-r}$ d) $\frac{1}{1+r}$

6) The series $\sum_{n=1}^{n=\infty} \frac{1}{n^p}, p > 1$ is _____.

a) convergent b) divergent

c) oscillatory d) conditionally convergent

7) In Leibnitz test, an alternating series $u_1 - u_2 + u_3 - u_4 + \ldots\ldots$ is convergent if

i) each term is numerically less than the preceding term and

ii) $\log_{n\to\infty} u_n =$ _____.

a) 1 b) -1

c) 0 d) 2

8) Integrating factor of the differential equation $\frac{dx}{dy} + P'x = Q'$ is _____.

a) $e^{\int P' dx}$ b) $e^{\int Q' dy}$

c) $e^{\int Q' dx}$ d) $e^{\int P' dy}$

9) $\cos\,(x + iy) =$ _____.

a) $\cos x \cos y + \sin x \sin y$ b) $\cos x \cosh y + i \sin x \;\; x \sinh y$

c) $\cos x \cosh y - i \sin x \sinh y$ d) $\cosh x \sinh y + \sinh x \cosh y$

10) C-R equations for $f(z)$ to be analytic use _____.

a) $u_x = v_y, u_y = -v_x$ b) $u_x = -v_x, u_y = -v_y$

c) $u_x = -v_x\,, u_y = -v_x$ d) $u_x = -v_y, u_y = v_x$

11) The orthogonal trajectories of the curves $r = a(1 + \cos\theta)$ is ____.

a) $r = c(1 + \cos\theta)$ b) $r = c(1 - \cos\theta)$

c) $r = c(1 + \sin\theta)$ d) $r = c(1 - \sin\theta)$

12) $\lceil n . \lceil 1 - n =$ _____.

a) $B(n, n)$ b) $B(n, 1 - n)$

c) $B(1 - n, 1 - n)$ d) $B(n, 1 + n)$

13) If the density ρ at any point of the lamina $y = f(x)$ bounded by $x = a, x = b, y = c, y = d$ varies as the product of the square of the ordinate.

a) kx^2 b) ky^2

c) kxy d) kx^2y^2

14) $\int_0^a \int_0^b dxdy = _____.$

a) ab

b) $\frac{a}{2}$

c) $\frac{b}{2}$

d) $-ab$

SLR-QH-11

Seat No.	

Set R

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mathematics – II
(BTCE0203 / BTME0203 / BTETE0203 / BTCSE0203 / BTEE0203 / BTECE0203 / BTIT0203 / BTAI0203 / BTMRE0203)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three of the following. **09**

a) Solve $\left[y\left(1+\frac{1}{x}\right)+\cos y\right]dx+[x+\log x-x\sin y]\,dy=0$

b) Solve $(2x-2y+5)\frac{dy}{dx}=(x-y+3)$

c) Solve $x^{\frac{4}{3}}=\left(\frac{1}{2}+i\frac{\sqrt{3}}{2}\right)$ and show that continued product of all values is 1.

d) Test the convergence of: $\frac{1}{1.2.3}+\frac{3}{2.3.4}+\frac{5}{3.4.5}+\cdots+\frac{2n-1}{n(n+1)(n+2)}+\ldots$

e) Determine k such that $f(z)=\frac{1}{2}\log(x^2+y^2)+i\tan^{-1}\left(\frac{kx}{y}\right)$ is an analytic function.

Q.3 Attempt Any Three of the following. **09**

a) Solve $(2y-x^2)dx+xdy=0$

b) Find the orthogonal trajectories of the curve $r=a(1+\cos\theta)$

c) Show that $u=e^x\cos y$ is a harmonic function. Find its corresponding analytic function $f(z)$.

d) Test the convergence of $\frac{1.2}{3^2.4^2}+\frac{3.4}{5^2.6^2}+\frac{5.6}{7^2.8^2}+\ldots$

e) Test the convergence of: $\sum_{n=1}^{n=\infty}\frac{4^n+5^n}{6^n}$

Q.4 Attempt Any Two of the following. **10**

a) Apply De-Movire's to simplify $\left(\frac{1+\sin\frac{\pi}{8}+i\cos\frac{\pi}{8}}{1+\sin\frac{\pi}{8}-i\cos\frac{\pi}{8}}\right)^8$

b) Define the Absolute and Conditional Convergence and examine for the absolute and conditional convergence, $\sum_{n=1}^{n=\infty}(-1)^n\ \frac{(n+1)^n}{(2n)^n}$

c) When a switch is closed, the current built up in an electric circuit is given by $L\frac{di}{dt}+Ri=E$ if $L=640, R=250, E=500$, and $i=0$ when $t=0$. Show the current will approach 2 amp. when $t\to\infty$.

SECTION – II

Q.5 Attempt Any Three of the following. **09**

a) Evaluate $\int_0^4 x^2\sqrt{4x-x^2}dx$

b) Evaluate $\int_0^{\frac{\pi}{2}}\int_0^{a\sin\theta}\int_0^{\frac{a^2-r^2}{a}} rd\,\theta dr dz$

c) Express the following integral in polar coordinates and evaluate.
$\int_0^a \int_{\sqrt{(ax-x^2)}}^{\sqrt{(a^2-x^2)}} \frac{dx\,dy}{\sqrt{(a^2-x^2-y^2)}}$

d) Show that $\int_0^\infty \frac{\tan^{-1}\left(\frac{x}{a}\right)-\tan^{-1}\left(\frac{x}{b}\right)}{x}dx=\frac{\pi}{2}\log\left(\frac{b}{a}\right)$

e) Trace the curve $x=a(t+\sin t), y=a(1-\cos t)$

Q.6 Attempt Any Three of the following. **09**

a) Find the area included between the curves $y=x^2$ & $y=x^3$

b) Evaluate $\int_0^{\frac{\pi}{4}}\sin^4 4x\cos^3 2x dx$

c) Evaluate $\iint \frac{xy}{\sqrt{1-y^2}}\,dxdy$ over the positive quadrant of the circle $x^2+y^2=1$

d) Trace the curve $r=a(1+\cos\theta)$

e) Change to polar and evaluate $\int_0^\infty\int_0^\infty e^{-(x^2+y^2)}\,dxdy$

Q.7 Attempt Any Two of the following. **10**

a) Trace the curve with full justification $ay^2 = x.(a^2 - x^2)$

b) State and Prove duplication formula.

c) Find the mass of the wire in the shape of the cardioid $r = a(1 - \cos\theta)$,
if the density at any point of the wire is K times its distance from the Pole.

SLR-QH-11

Seat No.		Set	S

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mathematics – II
(BTCE0203 / BTME0203 / BTETE0203 / BTCSE0203 / BTEE0203 / BTECE0203 / BTIT0203 / BTAI0203 / BTMRE0203)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) C-R equations for $f(z)$ to be analytic use _____.

a) $u_x = v_y, u_y = -v_x$ b) $u_x = -v_x, u_y = -v_y$

c) $u_x = -v_x, u_y = -v_x$ d) $u_x = -v_y, u_y = v_x$

2) The orthogonal trajectories of the curves $r = a(1 + \cos\theta)$ is _____.

a) $r = c(1 + \cos\theta)$ b) $r = c(1 - \cos\theta)$

c) $r = c(1 + \sin\theta)$ d) $r = c(1 - \sin\theta)$

3) $\lceil n . \lceil 1 - n =$ _____.

a) $B(n, n)$ b) $B(n, 1 - n)$

c) $B(1 - n, 1 - n)$ d) $B(n, 1 + n)$

4) If the density ρ at any point of the lamina $y = f(x)$ bounded by $x = a, x = b, y = c, y = d$ varies as the product of the square of the ordinate.

a) kx^2 b) ky^2

c) kxy d) kx^2y^2

5) $\int_0^a \int_0^b dxdy =$ _____.

a) ab b) $\frac{a}{2}$

c) $\frac{b}{2}$ d) $-ab$

6) The curve $r^2 = a^2 \cos 2\theta$ is symmetrical about _____.

a) $\theta = 0$ b) $\theta = \frac{\pi}{3}$

c) $\theta = \frac{\pi}{6}$ d) None of these

7) The tangents to the curve $x = a(\cos t + \frac{1}{2}\log \tan^2 \frac{t}{2})$, $y = a \sin t$ at $t = \frac{\pi}{2}$ is _____.

a) Parallel to the x-axis b) Parallel to the y-axis

c) The line $y = x$ d) The line $y = -x$

8) $B(2,3) =$ _____.

a) $1/2$ b) $\frac{1}{3}$

c) $\frac{1}{6}$ d) $\frac{1}{12}$

9) $\left[\frac{1}{2} =$ _____.

a) π b) $\frac{\pi}{2}$

c) 2π d) $\sqrt{\pi}$

10) The series $a + ar + ar^2 + \ldots\ldots$ is convergent, if $|r| < 1$ and converges to _____.

a) $\frac{a}{1-r}$ b) $\frac{a}{1+r}$

c) $\frac{1}{1-r}$ d) $\frac{1}{1+r}$

11) The series $\sum_{n=1}^{n=\infty} \frac{1}{n^p}, p > 1$ is _____.

a) convergent b) divergent

c) oscillatory d) conditionally convergent

12) In Leibnitz test, an alternating series $u_1 - u_2 + u_3 - u_4 + \ldots\ldots$ is convergent if

i) each term is numerically less than the preceding term and

ii) $\log_{n\to\infty} u_n =$ _____.

a) 1 b) -1

c) 0 d) 2

13) Integrating factor of the differential equation $\frac{dx}{dy} + P'x = Q'$ is _____.

a) $e^{\int P' dx}$ b) $e^{\int Q' dy}$

c) $e^{\int Q' dx}$ d) $e^{\int P' dy}$

14) $\cos\ (x + iy) =$ _____.

a) $\cos x \cos y + \sin x \sin y$

b) $\cos x \cosh y + i \sin x\ \ x \sinh y$

c) $\cos x \cosh y - i \sin x \sinh y$

d) $\cosh x \sinh y + \sinh x \cosh y$

Seat No.	

Set **S**

F.Y. (B.Tech.) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Engineering Mathematics – II
(BTCE0203 / BTME0203 / BTETE0203 / BTCSE0203 / BTEE0203 / BTECE0203 / BTIT0203 / BTAI0203 / BTMRE0203)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three of the following. **09**

a) Solve $\left[y\left(1+\frac{1}{x}\right)+\cos y\right]dx+[x+\log x-x\sin y]\,dy=0$

b) Solve $(2x-2y+5)\frac{dy}{dx}=(x-y+3)$

c) Solve $x^{\frac{4}{3}}=\left(\frac{1}{2}+i\frac{\sqrt{3}}{2}\right)$ and show that continued product of all values is 1.

d) Test the convergence of: $\frac{1}{1.2.3}+\frac{3}{2.3.4}+\frac{5}{3.4.5}+\cdots+\frac{2n-1}{n(n+1)(n+2)}+\ldots$

e) Determine k such that $f(z)=\frac{1}{2}\log(x^2+y^2)+i\tan^{-1}\left(\frac{kx}{y}\right)$ is an analytic function.

Q.3 Attempt Any Three of the following. **09**

a) Solve $(2y-x^2)dx+xdy=0$

b) Find the orthogonal trajectories of the curve $r=a(1+\cos\theta)$

c) Show that $u=e^x\cos y$ is a harmonic function. Find its corresponding analytic function $f(z)$.

d) Test the convergence of $\frac{1.2}{3^2.4^2}+\frac{3.4}{5^2.6^2}+\frac{5.6}{7^2.8^2}+\ldots$

e) Test the convergence of: $\sum_{n=1}^{n=\infty}\frac{4^n+5^n}{6^n}$

Q.4 Attempt Any Two of the following. **10**

a) Apply De-Movire's to simplify $\left(\frac{1+\sin\frac{\pi}{8}+i\cos\frac{\pi}{8}}{1+\sin\frac{\pi}{8}-i\cos\frac{\pi}{8}}\right)^8$

b) Define the Absolute and Conditional Convergence and examine for the absolute and conditional convergence, $\sum_{n=1}^{n=\infty}(-1)^n\ \frac{(n+1)^n}{(2n)^n}$

c) When a switch is closed, the current built up in an electric circuit is given by $L\frac{di}{dt}+Ri=E$ if $L=640, R=250, E=500$, and $i=0$ when $t=0$. Show the current will approach 2 amp. when $t\to\infty$.

SECTION – II

Q.5 Attempt Any Three of the following. **09**

a) Evaluate $\int_0^4 x^2\sqrt{4x-x^2}dx$

b) Evaluate $\int_0^{\frac{\pi}{2}}\int_0^{a\sin\theta}\int_0^{\frac{a^2-r^2}{a}} rd\,\theta dr dz$

c) Express the following integral in polar coordinates and evaluate.
$\int_0^a \int_{\sqrt{(ax-x^2)}}^{\sqrt{(a^2-x^2)}} \frac{dx\,dy}{\sqrt{(a^2-x^2-y^2)}}$

d) Show that $\int_0^\infty \frac{\tan^{-1}\left(\frac{x}{a}\right)-\tan^{-1}\left(\frac{x}{b}\right)}{x}dx=\frac{\pi}{2}\log\left(\frac{b}{a}\right)$

e) Trace the curve $x=a(t+\sin t), y=a(1-\cos t)$

Q.6 Attempt Any Three of the following. **09**

a) Find the area included between the curves $y=x^2$ & $y=x^3$

b) Evaluate $\int_0^{\frac{\pi}{4}}\sin^4 4x\cos^3 2x dx$

c) Evaluate $\iint \frac{xy}{\sqrt{1-y^2}}\,dxdy$ over the positive quadrant of the circle $x^2+y^2=1$

d) Trace the curve $r=a(1+\cos\theta)$

e) Change to polar and evaluate $\int_0^\infty\int_0^\infty e^{-(x^2+y^2)}\,dxdy$

Q.7 Attempt Any Two of the following. **10**

a) Trace the curve with full justification $ay^2 = x.(a^2 - x^2)$

b) State and Prove duplication formula.

c) Find the mass of the wire in the shape of the cardioid $r = a(1 - \cos\theta)$,
if the density at any point of the wire is K times its distance from the Pole.

SLR-QH-12

Seat No.	

Set P

F.Y. (B.Tech.) (Semester - II) (CBCS) Examination: March/April – 2026
Engineering Graphics & CAD (BTN10206)

Day & Date: Sunday, 10-05-2026 Max. Marks: 70
Time: 03:00 PM To 07:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Retain all construction lines.
4) Assume suitable dimensions, wherever required and mention it clearly.
5) All dimensions are in 'mm'.

Note: Objective type question paper must be returned after first 40 minutes strictly.

Section – I

Duration:40 Minutes **Marks:14**

Q.1 Solve Any Four objective type question from the following. **14**

1. Attempt any two questions from a) to d)
2. Questions e) & f) are compulsory.

a) Refer Fig. (a): Find Distance between Point D, and line AB. **03**

b) Refer Fig. (b): Complete projections of Line CR parallel line AB. **03**

c) Refer Fig. (c): Complete projection of line AB and find its true length if **03**
i) Grade is +70% w.r.to 'A'
ii) Bearing is S 40 E w.r.to 'A'
iii) Top view of line measures 80 mm.

d) Refer Fig. (d): Find out grade and bearing of line AB, if **03**
i) Its inclination with horizontal Reference plane is 40^0
ii) Inclination of the line with Frontal reference Plane is 45^0
iii) True length is 75 mm.

e) Refer Fig. (e): Complete projections of plane PQR, if it strikes N60W w.r.to P and dips 50^0 North Easterly. **04**

f) Refer Fig. (f): Find the strike and Dip of given Plane ABC. **04**

Descriptive Type Questions

Q.2 Solve the following. **11**

a) A line AB has its Front view length of 60 mm with a true length of 100 mm. The inclination with Horizontal reference plane is 30^0. Draw the projections of AB & find its true inclination with horizontal reference plane. Consider point A 20 mm above horizontal reference plane and 15 mm in front of vertical plane. **04**

b) A line PQ has plan length of 50 mm and apparent inclination of 45^0 with FRP. The line carries a true inclination of 30^0 with HRP. Complete the projections of the line and determine the true inclination with vertical reference plane. Consider point A 15 mm above horizontal reference plane and 20 mm in front of vertical plane. **03**

c) A Square of sides 60 mm long has its one of the sides in the horizontal reference plane. The plane is inclined at 30^0 to HP. Complete the projections of the plane. **04**

Q.3 A Triangle of 75 mm side has its side AB in horizontal reference plane (HP). The surface of the plane makes an angle of 45^0 with the horizontal reference plane and the resting edge makes 45^0 to frontal reference plane (VP). Complete the projections of the plane. **07**

Q.4 A Hexagonal pyramid, side of base 30 mm & axis 80 mm long, has a corner of base in Horizontal reference plane (HP) and the axis is inclined at 50^0 to horizontal reference plane. The top view of the axis makes 35^0 to vertical reference plane (VP). Complete its projections considering apex nearer to observer. **10**

OR

A Hexagonal prism, base 30 mm side & axis 80 mm long, has its one of the sides of base in horizontal reference plane & inclined at 45^0 to vertical reference plane. The axis of the solid is inclined at 40^0 to horizontal reference plane. Complete its projections.

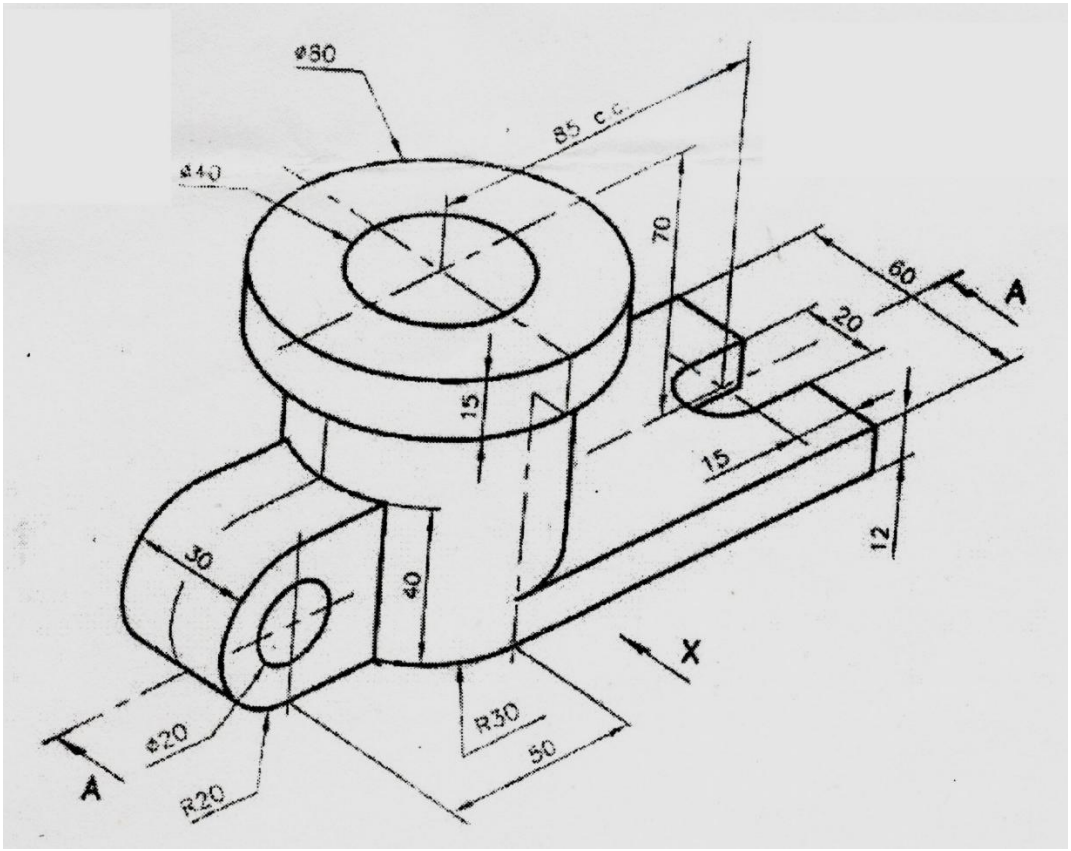
Section – II

Q.5 Figure shows isometric view of machine component, Draw the following views: **18**

a) Sectional F. V. along A-A looking in the direction X

b) Left hand side view

c) Top View



Q.6 A Square pyramid, base 50 mm side and axis 70 mm long, stands vertically on the ground (HP) with two parallel sides parallel to vertical plane. It is cut by a section plane perpendicular to vertical reference plane and inclined at 45^0 to horizontal reference plane which passing through a point on axis 20 mm from apex. Draw the front view, sectional top view and true shape of section. **10**

OR

A cylinder diameter of base 60 mm & height 60 mm has its base in horizontal reference plane. It is cut by an auxiliary inclined plane passing through extreme right hand side point of the base and inclined at 45^0 to HP. Draw front view, sectional top view and true shape of section.

SLR-QH-13

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Structural Mechanics – I (CIVPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternatives: **14**

1) The relation between modulus of elasticity (E), modulus of rigidity (G) and bulk modulus (K) is given as _____.
a) K+G / (3K+G) b) 3KG / (3K+G)
c) 3KG / (9K+G) d) 9KG / (3K+G)

2) The ratio of stress and strain is known as _____.
a) Modulus of elasticity b) Young's modulus
c) Both a) and b) d) None of the above

3) If the cantilever beam is subjected to a point load at its free end, then the shear force under the point load is _____.
a) zero b) less than a load
c) equal to load d) more than the load

4) A column under eccentric loading is subjected to _____.
a) direct stress only b) direct and bending stress
c) bending stress only d) shear stress only

5) Shear force diagram of a cantilever beam with point load at free end is represented by _____.
a) Triangular b) Semi-circular
c) Rectangular d) Parabolic curve

6) The point of contra flexure is the point where _____.
a) B.M. changes its sign b) B.M. is minimum
c) S.F. is zero d) B.M. is maximum

7) The degree of Static indeterminacy of three hinged arch is _____.
a) 1 b) 2
c) 0 d) 3

8) If principal stresses in a two-dimensional case are -10 MPa and 20 MPa respectively, then maximum shear stress at the point is _____.
a) 10 MPa b) 15 MPa
c) 20 MPa d) 30 MPa

9) Modulus of rigidity is equal to _____.
a) linear stress/linear strain
b) bending stress/bending strain
c) bending strain/bending stress
d) shear stress/shear strain

10) The value on shear stress on principal plane is _____.
a) Zero b) Maximum
c) Minimum but positive d) Average value

11) For drawing ILD, what value of test load is assumed?
a) 1 unit b) Arbitrary
c) Depends upon structure d) 0

12) Shape of three hinged arch is always _____.
a) Hyperbolic b) Circular
c) Parabolic d) Can be any arbitrary curve

13) When a beam is subjected to a bending moment the bending stress in a layer is _____ the distance from the neutral axis.
a) Independent of b) Directly proportional to
c) Inversely proportional to d) None of these

14) What will be the shape of the ILD curve for vertical reaction at left support for a simply supported beam?
a) Triangular b) Rectangular
c) Trapezoidal d) Cubic curve

Seat No.	

Set **P**

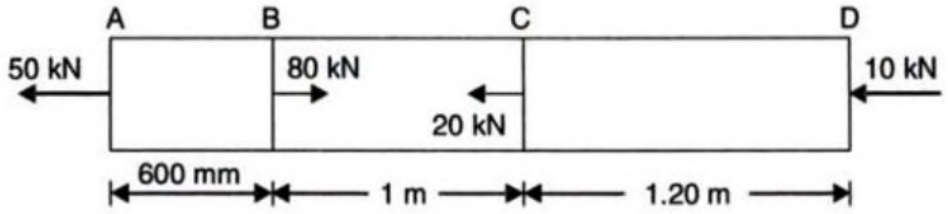
S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Structural Mechanics – I (CIVPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

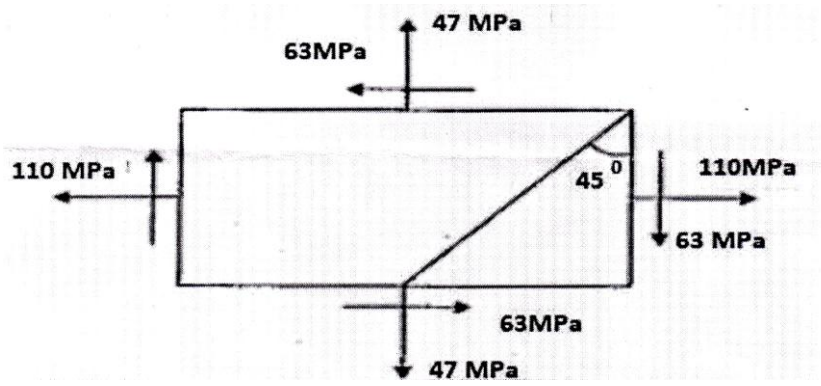
Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 A brass bar having a cross-section area 1000 m^3 is subjected to axial forces as shown in fig. **10**
Find the elongation of the bar. Take E = 1.05×10^5

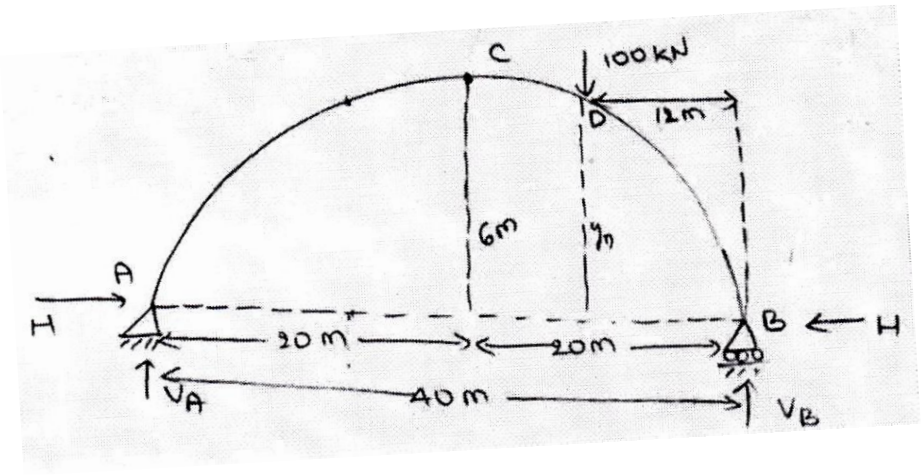


Q.3 A rectangular block of material is subjected to a tensile stress of 110 MPa on one plane and tensile stress of 47 MPa on the plane at right angles to the former. Each of the above stresses is accompanied by a shear stress of 63 MPa and that associated with the former tensile stress tends to rotate the block anticlockwise. **09**
determine the following
i) the direction and magnitude of each principal stress
ii) the magnitude of greatest shear stress.



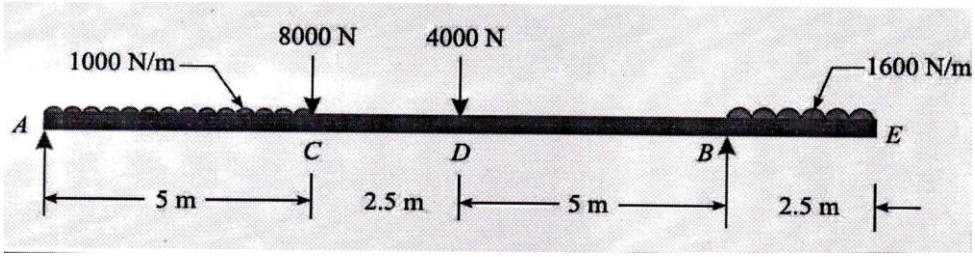
Q.4 A solid shaft of diameter 100 mm is subjected to a twisting moment of 90 MN mm and bending moment 10 MN mm at a point to determine Principal stresses and position of the plane on which they act. **09**

Q.5 A three hinged parabolic arch of span 40 meters and rise 6 meters carries a point load of 100 KN at a distance of 12m from right support. Find horizontal thrust, support reactions, Normal Thrust and Radial Shear. Normal Thrust and Radial Shear. **09**

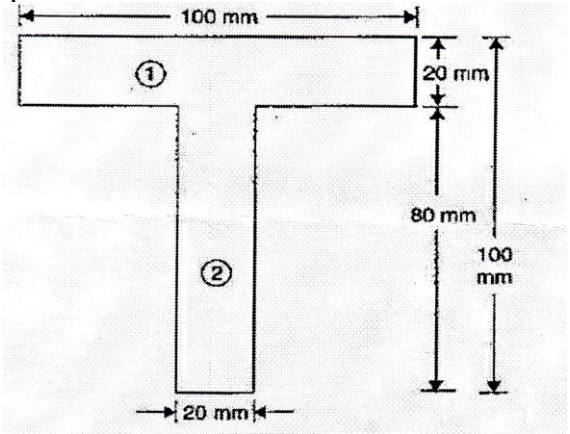


SECTION – II

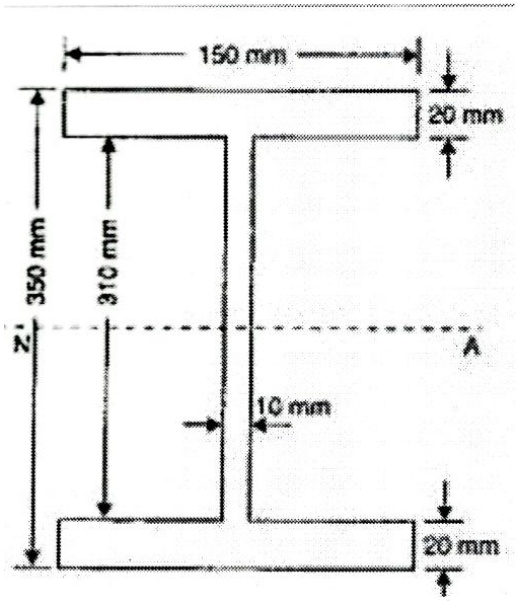
Q.6 Calculate shear force and bending moment and draw SFD and BMD. **10**



Q.7 A cast iron beam is of T-section as shown in Fig.7.21. The beam is simply supported on a span of 8 m. The beam carries a uniformly distributed load of 1.5 kN/m length on the entire span. Determine the maximum tensile and maximum compressive stresses. **09**



Q.8 An I-section beam 350 mm × 150 mm has a web thickness of 10 mm and a flange thickness of 20 mm. It carries a shearing force of 40 kN at a section. Sketch the shear stress distribution across the section. **09**



Q.9 A beam of AB of length 10 m is partly loaded with U.D.L. of 20 kN/m up to 3 m from A and a point load of 60 kN is acting at 6 m from A. Find the reaction at A and B by using an influence line diagram. **09**

SLR-QH-13

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Structural Mechanics – I (CIVPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternatives: **14**

1) If principal stresses in a two-dimensional case are -10 MPa and 20 MPa respectively, then maximum shear stress at the point is _____.
a) 10 MPa b) 15 MPa
c) 20 MPa d) 30 MPa

2) Modulus of rigidity is equal to _____.
a) linear stress/linear strain
b) bending stress/bending strain
c) bending strain/bending stress
d) shear stress/shear strain

3) The value on shear stress on principal plane is _____.
a) Zero b) Maximum
c) Minimum but positive d) Average value

4) For drawing ILD, what value of test load is assumed?
a) 1 unit b) Arbitrary
c) Depends upon structure d) 0

5) Shape of three hinged arch is always _____.
a) Hyperbolic b) Circular
c) Parabolic d) Can be any arbitrary curve

6) When a beam is subjected to a bending moment the bending stress in a layer is _____ the distance from the neutral axis.
a) Independent of b) Directly proportional to
c) Inversely proportional to d) None of these

7) What will be the shape of the ILD curve for vertical reaction at left support for a simply supported beam?

a) Triangular b) Rectangular
c) Trapezoidal d) Cubic curve

8) The relation between modulus of elasticity (E), modulus of rigidity (G) and bulk modulus (K) is given as _____.

a) K+G / (3K+G) b) 3KG / (3K+G)
c) 3KG / (9K+G) d) 9KG / (3K+G)

9) The ratio of stress and strain is known as _____.

a) Modulus of elasticity b) Young's modulus
c) Both a) and b) d) None of the above

10) If the cantilever beam is subjected to a point load at its free end, then the shear force under the point load is _____.

a) zero b) less than a load
c) equal to load d) more than the load

11) A column under eccentric loading is subjected to _____.

a) direct stress only b) direct and bending stress
c) bending stress only d) shear stress only

12) Shear force diagram of a cantilever beam with point load at free end is represented by _____.

a) Triangular b) Semi-circular
c) Rectangular d) Parabolic curve

13) The point of contra flexure is the point where _____.

a) B.M. changes its sign b) B.M. is minimum
c) S.F. is zero d) B.M. is maximum

14) The degree of Static indeterminacy of three hinged arch is _____.

a) 1 b) 2
c) 0 d) 3

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Structural Mechanics – I (CIVPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
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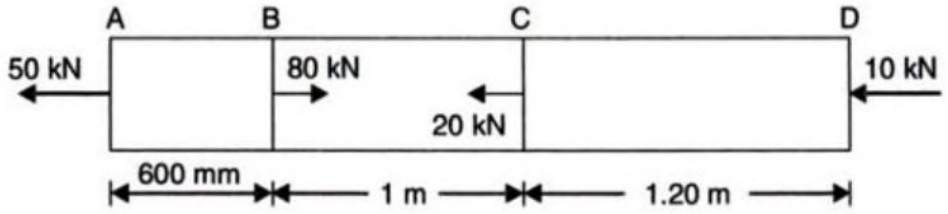
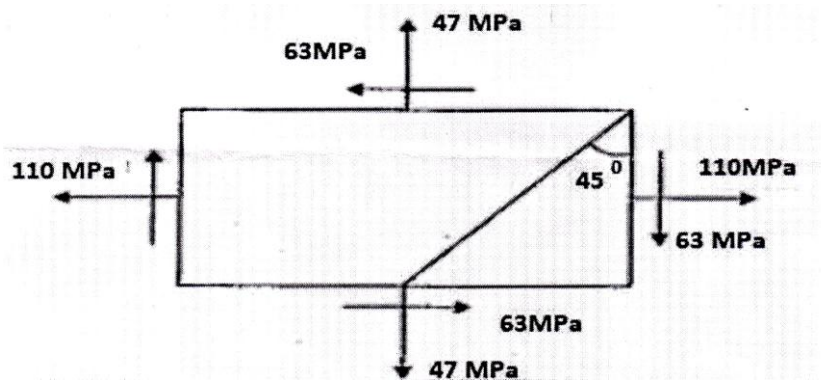
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 A brass bar having a cross-section area 1000 m^3 is subjected to axial forces as shown in fig. **10**
Find the elongation of the bar. Take E = 1.05×10^5

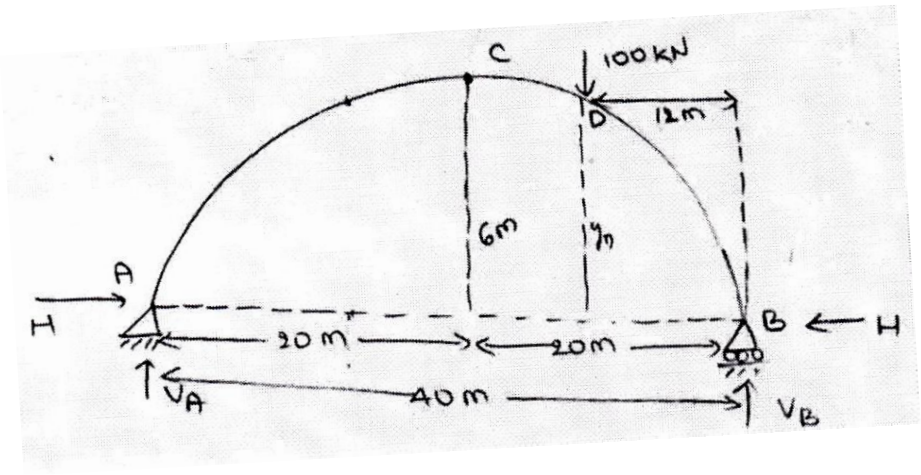


Q.3 A rectangular block of material is subjected to a tensile stress of 110 MPa on one plane and tensile stress of 47 MPa on the plane at right angles to the former. Each of the above stresses is accompanied by a shear stress of 63 MPa and that associated with the former tensile stress tends to rotate the block anticlockwise. **09**
determine the following
i) the direction and magnitude of each principal stress
ii) the magnitude of greatest shear stress.



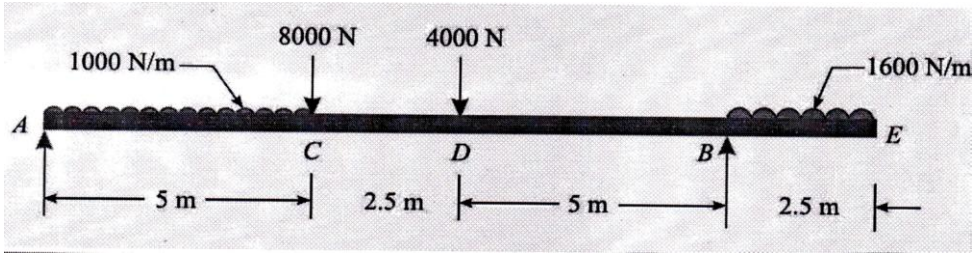
Q.4 A solid shaft of diameter 100 mm is subjected to a twisting moment of 90 MN mm and bending moment 10 MN mm at a point to determine Principal stresses and position of the plane on which they act. **09**

Q.5 A three hinged parabolic arch of span 40 meters and rise 6 meters carries a point load of 100 KN at a distance of 12m from right support. Find horizontal thrust, support reactions, Normal Thrust and Radial Shear. Normal Thrust and Radial Shear. **09**

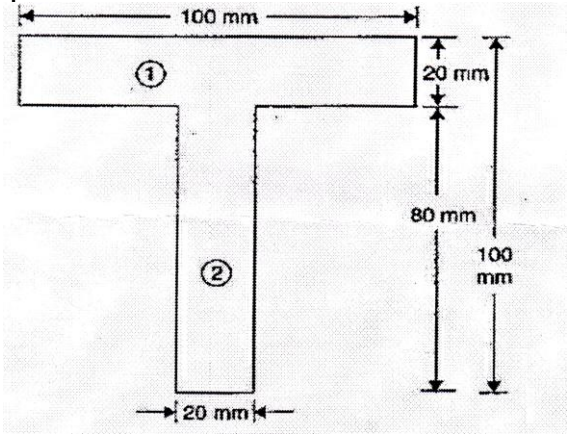


SECTION – II

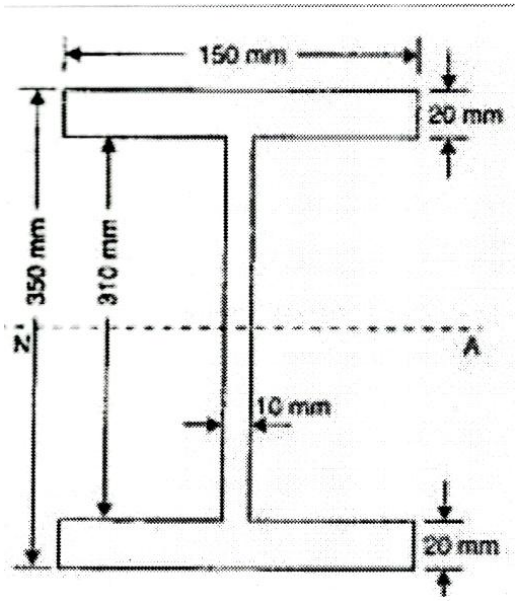
Q.6 Calculate shear force and bending moment and draw SFD and BMD. **10**



Q.7 A cast iron beam is of T-section as shown in Fig.7.21. The beam is simply supported on a span of 8 m. The beam carries a uniformly distributed load of 1.5 kN/m length on the entire span. Determine the maximum tensile and maximum compressive stresses. **09**



Q.8 An I-section beam 350 mm × 150 mm has a web thickness of 10 mm and a flange thickness of 20 mm. It carries a shearing force of 40 kN at a section. Sketch the shear stress distribution across the section. **09**



Q.9 A beam of AB of length 10 m is partly loaded with U.D.L. of 20 kN/m up to 3 m from A and a point load of 60 kN is acting at 6 m from A. Find the reaction at A and B by using an influence line diagram. **09**

SLR-QH-13

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Structural Mechanics – I (CIVPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
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5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternatives: **14**

1) For drawing ILD, what value of test load is assumed?
a) 1 unit b) Arbitrary
c) Depends upon structure d) 0

2) Shape of three hinged arch is always _____.
a) Hyperbolic b) Circular
c) Parabolic d) Can be any arbitrary curve

3) When a beam is subjected to a bending moment the bending stress in a layer is _____ the distance from the neutral axis.
a) Independent of b) Directly proportional to
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4) What will be the shape of the ILD curve for vertical reaction at left support for a simply supported beam?
a) Triangular b) Rectangular
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5) The relation between modulus of elasticity (E), modulus of rigidity (G) and bulk modulus (K) is given as _____.
a) K+G / (3K+G) b) 3KG / (3K+G)
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6) The ratio of stress and strain is known as _____.
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7) If the cantilever beam is subjected to a point load at its free end, then the shear force under the point load is _____.

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c) Minimum but positive
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Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Structural Mechanics – I (CIVPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
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SECTION – I

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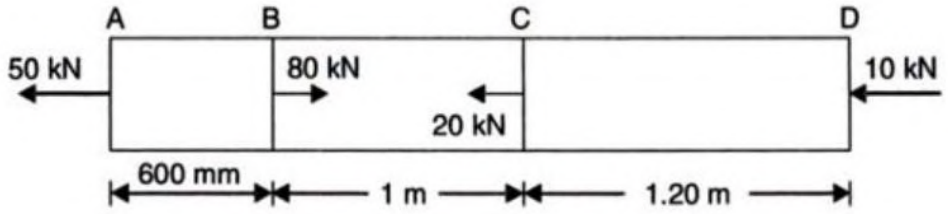

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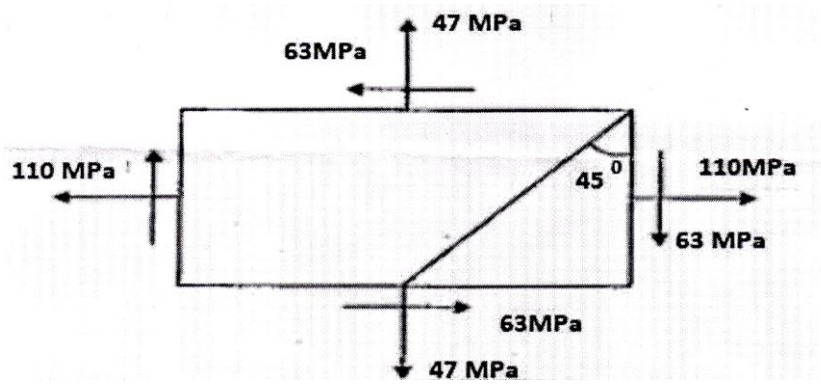

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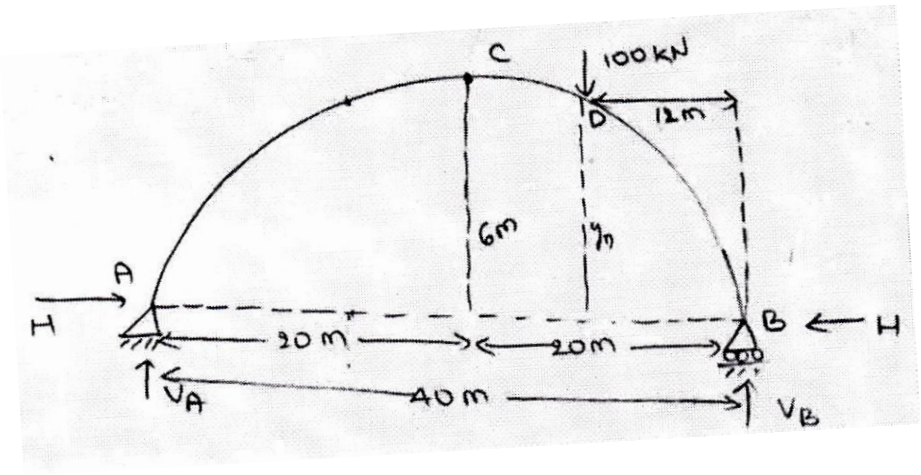
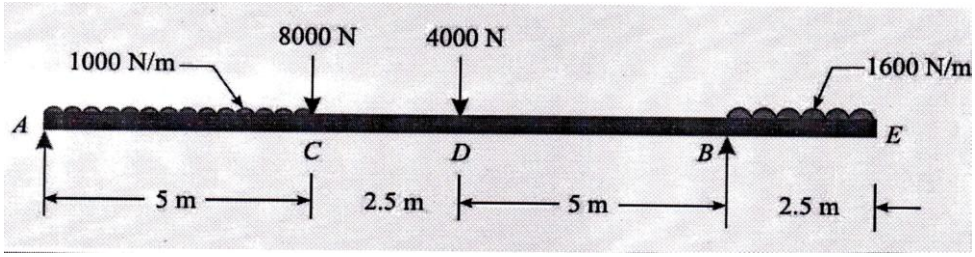


SECTION – II

Q.6 Calculate shear force and bending moment and draw SFD and BMD. **10**



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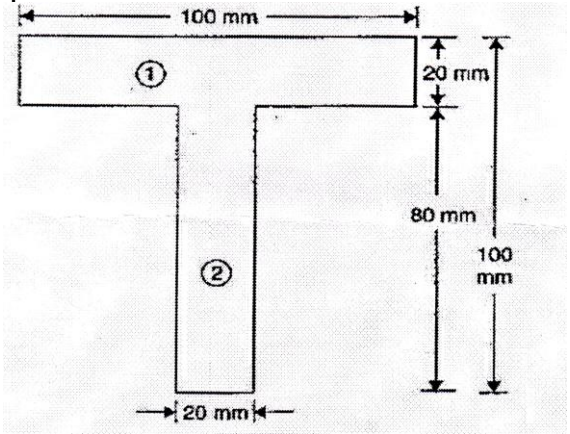

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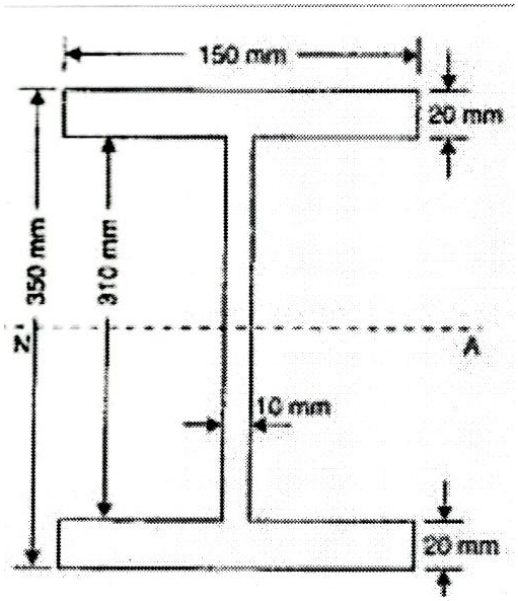

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SLR-QH-13

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Structural Mechanics – I (CIVPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct alternatives: **14**

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SLR-QH-13

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Structural Mechanics – I (CIVPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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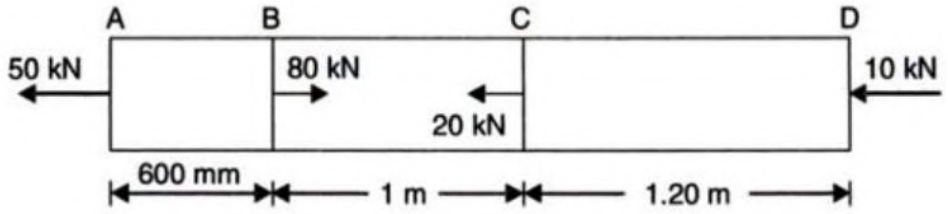

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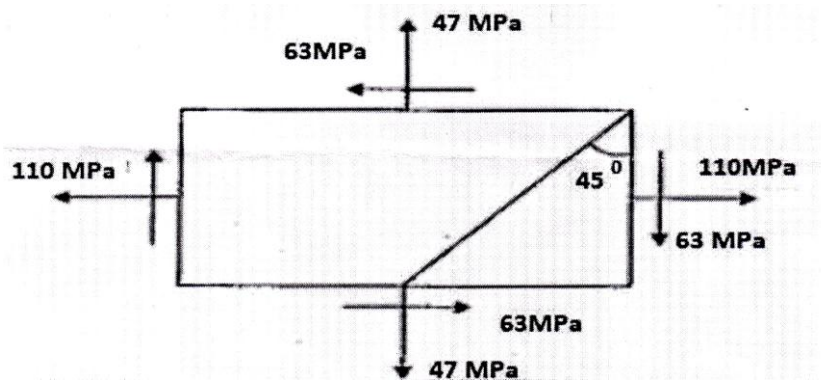

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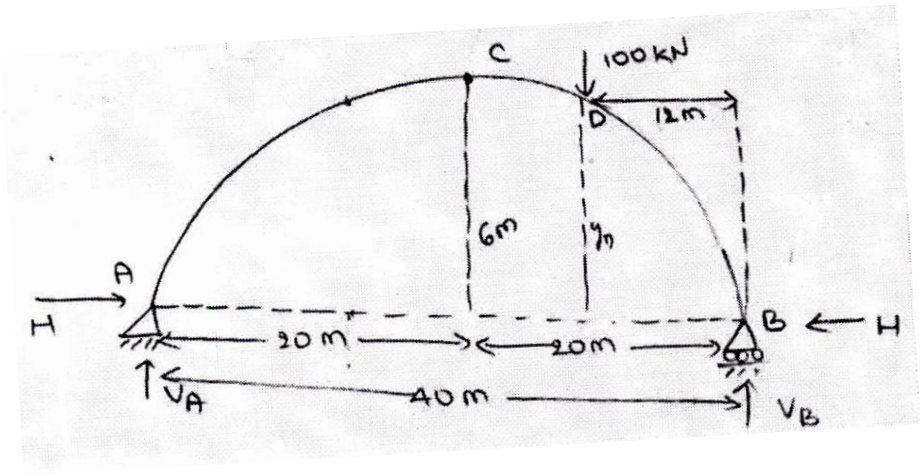
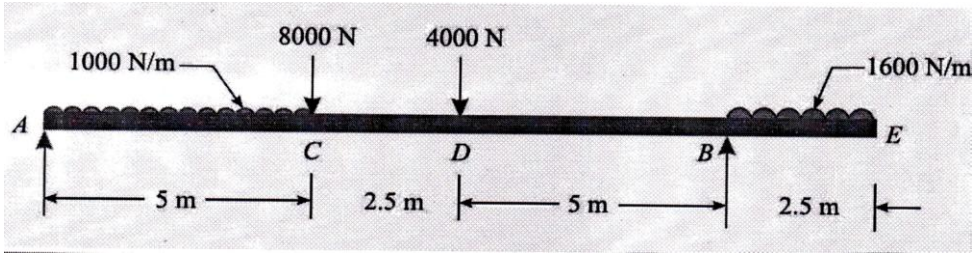


SECTION – II

Q.6 Calculate shear force and bending moment and draw SFD and BMD. **10**



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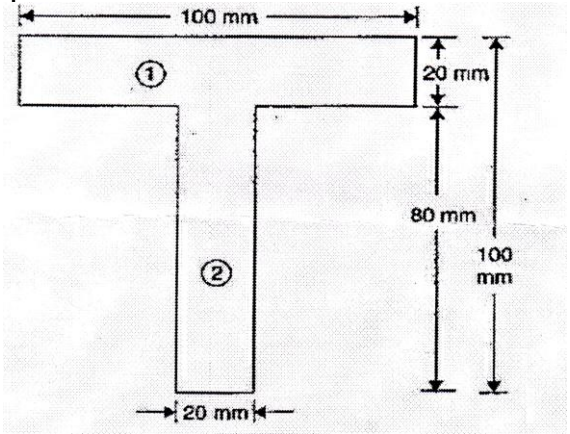

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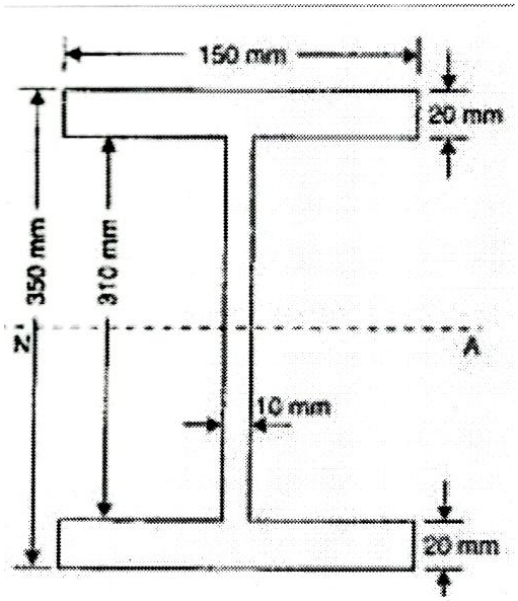

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SLR-QH-14

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fluid Mechanics and Machines (CIVPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Choose the correct statement ____.
a) All liquids are fluids but all fluids are not liquids.
b) All fluids are liquids but all liquids are not fluids.
c) All liquids are compressible.
d) All fluids are compressible.

2) If volume of fluid is increased by 2 times, then its density _____.
a) increases by 2 timers b) decreases by 2 timers
c) increase by 4 times d) decreases by 4 timers

3) A substance which can flow at its own is called _____.
a) Liquid b) Fluid
c) Gas d) All of these

4) The value of bulk modulus of elasticity _____ with increase of pressure.
a) increases b) decreases
c) either of the above d) None of the above

5) A floating body is in stable equilibrium when _____.
a) the metacentre is below its centre of gravity
b) the metacentre is above its centre of gravity
c) the metacentric height is zero.
d) its centre of gravity is below the centre of buoyancy

6) When a body is immersed in a fluid, partially or completely, the force of buoyancy is equal to _____.
a) the weight of the body
b) the weight of the volume of the fluid equal to the volume of body
c) the weight of the fluid displaced by the body
d) None of the above

7) For measurement of pressure between two points _____ is used.
a) U- tube differential manometer
b) U- tube inverted differential manometer
c) simple U- tube manometer
d) both a and b

8) The velocity with which the water approaches a notch is called _____.
a) velocity of flow
b) velocity of approach
c) velocity of whirl
d) velocity of jet

9) The growth of boundary layer is supported when _____.
a) $(\partial p/\partial x)$ is positive
b) $(\partial p/\partial x)$ is zero
c) $(\partial p/\partial x)$ is negative
d) $(\partial p/\partial x)$ is constant

10) Darcy-Weisbach equation is used to find loss of head due to _____.
a) sudden enlargement
b) sudden contraction
c) bend
d) friction

11) An error of 1% in measuring H will produce _____ error in discharge over a rectangular notch or weir.
a) 1%
b) 1.5%
c) 2%
d) 2.5%

12) Clinging nappe results due to _____.
a) Propper ventilation
b) Inadequate ventilation
c) High Flow
d) Low Flow

13) _____ of a turbine is defined as the ratio of power available at the turbine shaft to the power supplied by the water jet.
a) Mechanical efficiency
b) Hydraulic efficiency
c) Overall efficiency
d) Volumetric efficiency

14) A centrifugal pump is taking much of power, the probable reason may be _____.
a) liquid being pumped is heavy
b) speed of the pump is low
c) there is leakage of air
d) ineffective strainer and foot valve arrangement

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fluid Mechanics and Machines (CIVPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 from section I is compulsory. Solve any Two questions from Q.3, 4, and 5.
2) Q.6 from section II is compulsory. Solve any Two questions from Q.7, 8, and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and state it clearly.

SECTION – I

Q.2 **a)** Enlist and explain different properties of fluid. **05**

b) A wooden block of rectangular section 1.25 m wide, 2 m deep, 4 m long floats horizontally in sea water. If the specific gravity of wood is 0.64 and water weighs 1 025 kg(f)/m^3, find the volume of liquid displaced and the position of the centre of buoyancy. **05**

Q.3 **a)** State and deriver Bernoulli's Theorem. Also, give its Limitations and Applications **04**

b) Calculate the capillary effect in mm in a glass tube 3 mm in diameter when immersed in (a) water (b) mercury. Both the liquids are at 20°C and the values of the surface tensions for water and mercury at 20°C in contact with air are respectively 0.0736 N/m and 0.51 N/m. Contact angle for water = 0° and for mercury = 130°. **05**

Q.4 **a)** Explain different types of pressures with neat sketch. **04**

b) Horizontal venturi meter with inlet diameter 200 mm and throat diameter 100 mm is used to measure the flow of water. The pressure at inlet is 0.18 N/mm^2 and the vacuum pressure at the throat is 280 mm of mercury. Find the rate of flow. Consider the value of Cd as 0.98. **05**

Q.5 **a)** Define and differentiate between Pascal's Law and Hydrostatic Law. **04**

b) For a two-dimensional flow $\varphi = 3xy$ and $\psi = \frac{3}{2}(y^2 - x^2)$. Determine the velocity components at the points (1, 3) and (3, 3). Also find the discharge passing between the streamlines passing through the points given above. **05**

SECTION – II

Q.6 **a)** Derive an equation for discharge through broad crested weir. Show that, for broad crested weir, maximum discharge can occur when flow depth over crest is critical. Also give advantages of triangular notch over rectangular notch **05**

b) A horizontal pipe 150 mm in diameter is joined by sudden enlargement to a 225 mm diameter pipe. Water is flowing through it at the rate of 0.05 m^3/s. determine: **05**

i) Loss of head due to abrupt expansion.
ii) Pressure difference in the two pipes, and
iii) Change in pressure if the change of section is gradual without any loss

Q.7 **a)** Explain concept of Mult staging of pump for high discharge with neat sketch. **03**

b) Find the discharge through a trapezoidal notch which is 1.2 m wide at the top and 0.50 m at the bottom and is 0.4 m in height. The head of water on the notch is 0.3 m. Assume Cd for rectangular portion = 0.62, while for triangular portion = 0.60. **06**

Q.8 **a)** Explain the concept of HGL and TEL with neat sketch. **03**

b) For the following data design, a Pelton wheel: **06**

Heat = 80 m; Speed of wheel = 280 rpm.; Shaft power of wheel = 130 kW; Speed ratio = 0.48; Co-efficient of velocity = 0.97; Overall efficiency = 82%. Design the Pelton wheel.

Q.9 **a)** Define the terms displacement thickness, momentum thickness and energy thickness. **03**

b) A 50 mm diameter jet having a velocity of 25 m/s, strikes a flat plate, the normal of which is inclined at 30° to the axis of the jet. Calculate the normal force exerted on the plate (a) when the plate is stationary, (b) when the plate is moving with a velocity of 10 m/s in the direction of the jet. **06**

SLR-QH-14

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fluid Mechanics and Machines (CIVPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) The velocity with which the water approaches a notch is called _____.
a) velocity of flow b) velocity of approach
c) velocity of whirl d) velocity of jet

2) The growth of boundary layer is supported when _____.
a) $(\partial p/\partial x)$ is positive b) $(\partial p/\partial x)$ is zero
c) $(\partial p/\partial x)$ is negative d) $(\partial p/\partial x)$ is constant

3) Darcy-Weisbach equation is used to find loss of head due to _____.
a) sudden enlargement b) sudden contraction
c) bend d) friction

4) An error of 1% in measuring H will produce _____ error in discharge over a rectangular notch or weir.
a) 1% b) 1.5%
c) 2% d) 2.5%

5) Clinging nappe results due to _____.
a) Propper ventilation b) Inadequate ventilation
c) High Flow d) Low Flow

6) _____ of a turbine is defined as the ratio of power available at the turbine shaft to the power supplied by the water jet.
a) Mechanical efficiency b) Hydraulic efficiency
c) Overall efficiency d) Volumetric efficiency

7) A centrifugal pump is taking much of power, the probable reason may be _____.
   a) liquid being pumped is heavy
   b) speed of the pump is low
   c) there is leakage of air
   d) ineffective strainer and foot valve arrangement

8) Choose the correct statement ____.
   a) All liquids are fluids but all fluids are not liquids.
   b) All fluids are liquids but all liquids are not fluids.
   c) All liquids are compressible.
   d) All fluids are compressible.

9) If volume of fluid is increased by 2 times, then its density _____.
   a) increases by 2 timers
   b) decreases by 2 timers
   c) increase by 4 times
   d) decreases by 4 timers

10) A substance which can flow at its own is called _____.
   a) Liquid
   b) Fluid
   c) Gas
   d) All of these

11) The value of bulk modulus of elasticity _____ with increase of pressure.
   a) increases
   b) decreases
   c) either of the above
   d) None of the above

12) A floating body is in stable equilibrium when _____.
   a) the metacentre is below its centre of gravity
   b) the metacentre is above its centre of gravity
   c) the metacentric height is zero.
   d) its centre of gravity is below the centre of buoyancy

13) When a body is immersed in a fluid, partially or completely, the force of buoyancy is equal to _____.
   a) the weight of the body
   b) the weight of the volume of the fluid equal to the volume of body
   c) the weight of the fluid displaced by the body
   d) None of the above

14) For measurement of pressure between two points _____ is used.
   a) U- tube differential manometer
   b) U- tube inverted differential manometer
   c) simple U- tube manometer
   d) both a and b

SLR-QH-14

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fluid Mechanics and Machines (CIVPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 from section I is compulsory. Solve any Two questions from Q.3, 4, and 5.
2) Q.6 from section II is compulsory. Solve any Two questions from Q.7, 8, and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and state it clearly.

SECTION – I

Q.2 **a)** Enlist and explain different properties of fluid. **05**

b) A wooden block of rectangular section 1.25 m wide, 2 m deep, 4 m long floats horizontally in sea water. If the specific gravity of wood is 0.64 and water weighs 1 025 kg(f)/m^3, find the volume of liquid displaced and the position of the centre of buoyancy. **05**

Q.3 **a)** State and deriver Bernoulli's Theorem. Also, give its Limitations and Applications **04**

b) Calculate the capillary effect in mm in a glass tube 3 mm in diameter when immersed in (a) water (b) mercury. Both the liquids are at 20°C and the values of the surface tensions for water and mercury at 20°C in contact with air are respectively 0.0736 N/m and 0.51 N/m. Contact angle for water = 0° and for mercury = 130°. **05**

Q.4 **a)** Explain different types of pressures with neat sketch. **04**

b) Horizontal venturi meter with inlet diameter 200 mm and throat diameter 100 mm is used to measure the flow of water. The pressure at inlet is 0.18 N/mm^2 and the vacuum pressure at the throat is 280 mm of mercury. Find the rate of flow. Consider the value of Cd as 0.98. **05**

Q.5 **a)** Define and differentiate between Pascal's Law and Hydrostatic Law. **04**

b) For a two-dimensional flow $\varphi = 3xy$ and $\psi = \frac{3}{2}(y^2 - x^2)$. Determine the velocity components at the points (1, 3) and (3, 3). Also find the discharge passing between the streamlines passing through the points given above. **05**

SECTION – II

Q.6 **a)** Derive an equation for discharge through broad crested weir. Show that, for broad crested weir, maximum discharge can occur when flow depth over crest is critical. Also give advantages of triangular notch over rectangular notch **05**

b) A horizontal pipe 150 mm in diameter is joined by sudden enlargement to a 225 mm diameter pipe. Water is flowing through it at the rate of 0.05 m^3/s. determine: **05**

i) Loss of head due to abrupt expansion.
ii) Pressure difference in the two pipes, and
iii) Change in pressure if the change of section is gradual without any loss

Q.7 **a)** Explain concept of Mult staging of pump for high discharge with neat sketch. **03**

b) Find the discharge through a trapezoidal notch which is 1.2 m wide at the top and 0.50 m at the bottom and is 0.4 m in height. The head of water on the notch is 0.3 m. Assume Cd for rectangular portion = 0.62, while for triangular portion = 0.60. **06**

Q.8 **a)** Explain the concept of HGL and TEL with neat sketch. **03**

b) For the following data design, a Pelton wheel: **06**

Heat = 80 m; Speed of wheel = 280 rpm.; Shaft power of wheel = 130 kW; Speed ratio = 0.48; Co-efficient of velocity = 0.97; Overall efficiency = 82%. Design the Pelton wheel.

Q.9 **a)** Define the terms displacement thickness, momentum thickness and energy thickness. **03**

b) A 50 mm diameter jet having a velocity of 25 m/s, strikes a flat plate, the normal of which is inclined at 30° to the axis of the jet. Calculate the normal force exerted on the plate (a) when the plate is stationary, (b) when the plate is moving with a velocity of 10 m/s in the direction of the jet. **06**

SLR-QH-14

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fluid Mechanics and Machines (CIVPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) An error of 1% in measuring H will produce _____ error in discharge over a rectangular notch or weir.
a) 1% b) 1.5%
c) 2% d) 2.5%

2) Clinging nappe results due to _____.
a) Propper ventilation b) Inadequate ventilation
c) High Flow d) Low Flow

3) _____ of a turbine is defined as the ratio of power available at the turbine shaft to the power supplied by the water jet.
a) Mechanical efficiency b) Hydraulic efficiency
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4) A centrifugal pump is taking much of power, the probable reason may be _____.
a) liquid being pumped is heavy
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5) Choose the correct statement ____.
a) All liquids are fluids but all fluids are not liquids.
b) All fluids are liquids but all liquids are not fluids.
c) All liquids are compressible.
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6) If volume of fluid is increased by 2 times, then its density _____.
a) increases by 2 timers
b) decreases by 2 timers
c) increase by 4 times
d) decreases by 4 timers

7) A substance which can flow at its own is called _____.
a) Liquid
b) Fluid
c) Gas
d) All of these

8) The value of bulk modulus of elasticity _____ with increase of pressure.
a) increases
b) decreases
c) either of the above
d) None of the above

9) A floating body is in stable equilibrium when _____.
a) the metacentre is below its centre of gravity
b) the metacentre is above its centre of gravity
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10) When a body is immersed in a fluid, partially or completely, the force of buoyancy is equal to _____.
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b) the weight of the volume of the fluid equal to the volume of body
c) the weight of the fluid displaced by the body
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11) For measurement of pressure between two points _____ is used.
a) U- tube differential manometer
b) U- tube inverted differential manometer
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12) The velocity with which the water approaches a notch is called _____.
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13) The growth of boundary layer is supported when _____.
a) $(\partial p/\partial x)$ is positive
b) $(\partial p/\partial x)$ is zero
c) $(\partial p/\partial x)$ is negative
d) $(\partial p/\partial x)$ is constant

14) Darcy-Weisbach equation is used to find loss of head due to _____.
a) sudden enlargement
b) sudden contraction
c) bend
d) friction

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fluid Mechanics and Machines (CIVPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 from section I is compulsory. Solve any Two questions from Q.3, 4, and 5.
2) Q.6 from section II is compulsory. Solve any Two questions from Q.7, 8, and 9.
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SECTION – I

Q.2 **a)** Enlist and explain different properties of fluid. **05**

b) A wooden block of rectangular section 1.25 m wide, 2 m deep, 4 m long floats horizontally in sea water. If the specific gravity of wood is 0.64 and water weighs 1 025 kg(f)/m^3, find the volume of liquid displaced and the position of the centre of buoyancy. **05**

Q.3 **a)** State and deriver Bernoulli's Theorem. Also, give its Limitations and Applications **04**

b) Calculate the capillary effect in mm in a glass tube 3 mm in diameter when immersed in (a) water (b) mercury. Both the liquids are at 20°C and the values of the surface tensions for water and mercury at 20°C in contact with air are respectively 0.0736 N/m and 0.51 N/m. Contact angle for water = 0° and for mercury = 130°. **05**

Q.4 **a)** Explain different types of pressures with neat sketch. **04**

b) Horizontal venturi meter with inlet diameter 200 mm and throat diameter 100 mm is used to measure the flow of water. The pressure at inlet is 0.18 N/mm^2 and the vacuum pressure at the throat is 280 mm of mercury. Find the rate of flow. Consider the value of Cd as 0.98. **05**

Q.5 **a)** Define and differentiate between Pascal's Law and Hydrostatic Law. **04**

b) For a two-dimensional flow $\varphi = 3xy$ and $\psi = \frac{3}{2}(y^2 - x^2)$. Determine the velocity components at the points (1, 3) and (3, 3). Also find the discharge passing between the streamlines passing through the points given above. **05**

SECTION – II

Q.6 **a)** Derive an equation for discharge through broad crested weir. Show that, for broad crested weir, maximum discharge can occur when flow depth over crest is critical. Also give advantages of triangular notch over rectangular notch **05**

b) A horizontal pipe 150 mm in diameter is joined by sudden enlargement to a 225 mm diameter pipe. Water is flowing through it at the rate of 0.05 m^3/s. determine: **05**

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Q.7 **a)** Explain concept of Mult staging of pump for high discharge with neat sketch. **03**

b) Find the discharge through a trapezoidal notch which is 1.2 m wide at the top and 0.50 m at the bottom and is 0.4 m in height. The head of water on the notch is 0.3 m. Assume Cd for rectangular portion = 0.62, while for triangular portion = 0.60. **06**

Q.8 **a)** Explain the concept of HGL and TEL with neat sketch. **03**

b) For the following data design, a Pelton wheel: **06**

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Q.9 **a)** Define the terms displacement thickness, momentum thickness and energy thickness. **03**

b) A 50 mm diameter jet having a velocity of 25 m/s, strikes a flat plate, the normal of which is inclined at 30° to the axis of the jet. Calculate the normal force exerted on the plate (a) when the plate is stationary, (b) when the plate is moving with a velocity of 10 m/s in the direction of the jet. **06**

SLR-QH-14

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fluid Mechanics and Machines (CIVPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) When a body is immersed in a fluid, partially or completely, the force of buoyancy is equal to _____.
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3) The velocity with which the water approaches a notch is called _____.
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4) The growth of boundary layer is supported when _____.
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5) Darcy-Weisbach equation is used to find loss of head due to _____.
a) sudden enlargement b) sudden contraction
c) bend d) friction

6) An error of 1% in measuring H will produce _____ error in discharge over a rectangular notch or weir.
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c) 2% d) 2.5%

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Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fluid Mechanics and Machines (CIVPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 from section I is compulsory. Solve any Two questions from Q.3, 4, and 5.
2) Q.6 from section II is compulsory. Solve any Two questions from Q.7, 8, and 9.
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SECTION – I

Q.2 **a)** Enlist and explain different properties of fluid. **05**

b) A wooden block of rectangular section 1.25 m wide, 2 m deep, 4 m long floats horizontally in sea water. If the specific gravity of wood is 0.64 and water weighs 1 025 kg(f)/m^3, find the volume of liquid displaced and the position of the centre of buoyancy. **05**

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b) Calculate the capillary effect in mm in a glass tube 3 mm in diameter when immersed in (a) water (b) mercury. Both the liquids are at 20°C and the values of the surface tensions for water and mercury at 20°C in contact with air are respectively 0.0736 N/m and 0.51 N/m. Contact angle for water = 0° and for mercury = 130°. **05**

Q.4 **a)** Explain different types of pressures with neat sketch. **04**

b) Horizontal venturi meter with inlet diameter 200 mm and throat diameter 100 mm is used to measure the flow of water. The pressure at inlet is 0.18 N/mm^2 and the vacuum pressure at the throat is 280 mm of mercury. Find the rate of flow. Consider the value of Cd as 0.98. **05**

Q.5 **a)** Define and differentiate between Pascal's Law and Hydrostatic Law. **04**

b) For a two-dimensional flow $\varphi = 3xy$ and $\psi = \frac{3}{2}(y^2 - x^2)$. Determine the velocity components at the points (1, 3) and (3, 3). Also find the discharge passing between the streamlines passing through the points given above. **05**

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b) A 50 mm diameter jet having a velocity of 25 m/s, strikes a flat plate, the normal of which is inclined at 30° to the axis of the jet. Calculate the normal force exerted on the plate (a) when the plate is stationary, (b) when the plate is moving with a velocity of 10 m/s in the direction of the jet. **06**

SLR-QH-15

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Surveying and Geomatics (CIVPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable data wherever needed and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) At what angle does a ridge line intersect contours?
a) 90° b) 45°
c) 30° d) 0°

2) For mountainous region, a suitable contour interval may be _____.
a) 0.2 m b) 2 m
c) 20 m d) 200 m

3) In a closed traverse, the algebraic sum of departure and latitude must be equal to _____.
a) 90° b) 180°
c) 0° d) 270°

4) The characteristic of Gale's table is that the independent coordinates of all points are brought to the _____.
a) Fourth quadrant b) First quadrant
c) Third quadrant d) Second quadrant

5) Which of the following indicates the correct set of the combination of total station?
a) Theodolite, compass b) Theodolite, EDM
c) Electronic theodolite, EDM d) EDM, GPS

6) Which property of an electromagnetic wave, depends on the medium in which it is travelling?
a) Velocity b) Frequency
c) Time period d) Wave length

7) The speed of light is _____.
a) 3×10^8 m/s
b) 2×10^8 m/s
c) 3×10^9 m/s
d) 2×10^9 m/s

8) Satellite on-board _____.
a) quartz clock
b) atomic clock
c) stop watch
d) digital clock

9) Vertical photographs do not represent the true plan of the ground because of _____.
a) variation in speed of aircraft
b) ground relief
c) tilt displacement
d) image displacement

10) Which of the following factors does not contribute towards accurate photo-interpretation?
a) Knowledge of the area
b) Skill and ingenuity
c) Incorrect interpretation of size
d) None

11) Cell-like units are characteristic of _____.
a) raster data structures
b) cellular data structures
c) both a) and b)
d) vector data structures

12) The graphical elements of vector data structures are _____.
a) point
b) arc
c) area
d) All of these

13) Setting out is done ____.
a) prior to the preparation of plans
b) along with the preparation of plans
c) after the preparation of plans
d) if obstructions are there

14) Microprocessor controls working of a total station through _____.
a) measurements
b) data collector
c) control panel
d) memory

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Surveying and Geomatics (CIVPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) In Section – I, All questions compulsory.
2) In Section – II, All questions compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.

SECTION – I

Q.2 Describe a detailed note on. **12**

a) Difference between Direct and Indirect methods of Contouring

b) The Construction of Digital level

c) The temporary adjustments of theodolite

Q.3 Answer any Four from the following. **16**

a) With a neat diagram explain repetition method in theodolite.

b) Explain field work of theodolite traversing.

c) Elaborate the properties of electromagnetic waves.

d) Describe the Construction (components) of Total station.

e) Discuss the procedure for Area Measurement using a Total Station.

f) Describe the Construction (components) of Laser level.

SECTION – II

Q.4 Describe a detailed note on. **12**

a) GPS receivers and their comparison

b) Flight Planning

c) Difference between Digitizer and Scanner

Q.5 Answer any Four from the following. **16**

a) Differentiate between Static GPS and Differential GPS methods.

b) With the help diagram, explain the process of satellite remote sensing.

c) Describe in detail the Project Survey for Canal.

d) Write a short note on Unmanned Aerial Vehicle (Drone) used in Remote sensing.

e) Explain Project Survey for Building Lineout.

f) What are the different Application of GIS?

SLR-QH-15

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Surveying and Geomatics (CIVPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) Satellite on-board _____.
a) quartz clock b) atomic clock
c) stop watch d) digital clock

2) Vertical photographs do not represent the true plan of the ground because of _____.
a) variation in speed of aircraft b) ground relief
c) tilt displacement d) image displacement

3) Which of the following factors does not contribute towards accurate photo-interpretation?
a) Knowledge of the area
b) Skill and ingenuity
c) Incorrect interpretation of size
d) None

4) Cell-like units are characteristic of _____.
a) raster data structures b) cellular data structures
c) both a) and b) d) vector data structures

5) The graphical elements of vector data structures are _____.
a) point b) arc
c) area d) All of these

6) Setting out is done ____.
a) prior to the preparation of plans
b) along with the preparation of plans
c) after the preparation of plans
d) if obstructions are there

7) Microprocessor controls working of a total station through _____.
a) measurements b) data collector
c) control panel d) memory

8) At what angle does a ridge line intersect contours?
a) 90° b) 45°
c) 30° d) 0°

9) For mountainous region, a suitable contour interval may be _____.
a) 0.2 m b) 2 m
c) 20 m d) 200 m

10) In a closed traverse, the algebraic sum of departure and latitude must be equal to _____.
a) 90° b) 180°
c) 0° d) 270°

11) The characteristic of Gale's table is that the independent coordinates of all points are brought to the _____.
a) Fourth quadrant b) First quadrant
c) Third quadrant d) Second quadrant

12) Which of the following indicates the correct set of the combination of total station?
a) Theodolite, compass b) Theodolite, EDM
c) Electronic theodolite, EDM d) EDM, GPS

13) Which property of an electromagnetic wave, depends on the medium in which it is travelling?
a) Velocity b) Frequency
c) Time period d) Wave length

14) The speed of light is _____.
a) 3×10^8 m/s b) 2×10^8 m/s
c) 3×10^9 m/s d) 2×10^9 m/s

SLR-QH-15

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
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SECTION – I

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a) Difference between Direct and Indirect methods of Contouring

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SLR-QH-15

Seat No.	

Set R

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-QH-15

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
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SLR-QH-15

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Surveying and Geomatics (CIVPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-QH-15

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
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SECTION – I

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SLR-QH-16

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

2) $\frac{1}{D-a} X$ is equal to _____.

a) $\int Xe^{ax}dx$ b) $e^{ax}\int X.e^{-ax}dx$

c) $\int Xe^{-ax}dx$ d) $e^{-ax}\int Xe^{-ax}dx$

3) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

4) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

5) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

6) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

7) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

8) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

9) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

10) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

11) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78

c) 0.81 d) 0.95

12) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1

c) ± 1 d) 1

13) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$

b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2

d) μ, and $\frac{\sigma^2}{n}$

14) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$

b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$

d) $\sum \frac{(O-E)^2}{E}$

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March-April/2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
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SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

SLR-QH-16

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
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Advanced Mathematics and Statistics (OE-01A)

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Duration: 30 Minutes Marks: 14

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c) -1.2 d) -4

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a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

7) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

8) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

9) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

10) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

11) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

12) The solution of $p + q = 1$ is _____.

a) $z = ax + (1-a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1-y) + c$ d) $z = a(1-x) + b(1-y) + c$

13) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

14) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$

b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$

d) $\frac{\mu_4}{\mu_2^3}$

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March-April/2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78
c) 0.81 d) 0.95

2) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1
c) ± 1 d) 1

3) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

4) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$
c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

5) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

6) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

7) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

8) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

9) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

10) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

11) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

12) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

13) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

14) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March-April/2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $\nu = 9$ degrees of freedom is 1.86 for one tailed test)

SLR-QH-16

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

2) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

3) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

4) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

5) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

6) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78

c) 0.81 d) 0.95

7) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1

c) ± 1 d) 1

8) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

9) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

10) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

11) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

12) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

13) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

14) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March-April/2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

SLR-QH-17

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: 14

1) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com b) e-bay
c) Rentalic.com d) All of the above

2) Which type of E - Commerce is Amazon?
a) B2B b) B2C
c) G2B d) G2C

3) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model b) Business model
c) Business plan d) Revenue model

4) All of the following are major B2C business models except _____.
a) content provider b) industry consortium
c) transaction broker d) service provider

5) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

6) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling b) Connectivity
c) Communication d) Customer

7) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business
b) Business to Government
c) Consumer to Business
d) Business to Consumer

8) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo
b) regret
c) provide rating for
d) forget

9) Digital Cash has the following characteristics _____.
a) Anonymity
b) Security
c) Confidentiality
d) All of the Above

10) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

11) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack
b) Brute force attack
c) Phlashing
d) Smurf attack

12) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business
b) Business to Consumer
c) Business to Business
d) Consumer to Consumer

13) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway
b) E - E-Commerce gateway
c) Software gateway
d) E-Wallets

14) What is another name called PDoS?
a) Brute force attack
b) Non-technical attack
c) Phlashing
d) Smurf attack

SLR-QH-17

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-17

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: 14

1) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo b) regret
c) provide rating for d) forget

2) Digital Cash has the following characteristics _____.
a) Anonymity b) Security
c) Confidentiality d) All of the Above

3) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

4) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

5) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business b) Business to Consumer
c) Business to Business d) Consumer to Consumer

6) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway b) E - E-Commerce gateway
c) Software gateway d) E-Wallets

7) What is another name called PDoS?
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8) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com
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9) Which type of E - Commerce is Amazon?
a) B2B
b) B2C
c) G2B
d) G2C

10) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model
b) Business model
c) Business plan
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11) All of the following are major B2C business models except _____.
a) content provider
b) industry consortium
c) transaction broker
d) service provider

12) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
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c) Collect it directly from a store
d) Wait till the delivery of the product

13) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling
b) Connectivity
c) Communication
d) Customer

14) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business
b) Business to Government
c) Consumer to Business
d) Business to Consumer

SLR-QH-17

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-17

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: 14

1) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

2) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business b) Business to Consumer
c) Business to Business d) Consumer to Consumer

3) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway b) E - E-Commerce gateway
c) Software gateway d) E-Wallets

4) What is another name called PDoS?
a) Brute force attack b) Non-technical attack
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5) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com b) e-bay
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6) Which type of E - Commerce is Amazon?
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c) G2B d) G2C

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b) regret
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c) ability to buy products not available in the local market
d) All of them

SLR-QH-17

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-17

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: 14

1) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling b) Connectivity
c) Communication d) Customer

2) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business b) Business to Government
c) Consumer to Business d) Business to Consumer

3) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo b) regret
c) provide rating for d) forget

4) Digital Cash has the following characteristics _____.
a) Anonymity b) Security
c) Confidentiality d) All of the Above

5) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

6) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

7) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business
b) Business to Consumer
c) Business to Business
d) Consumer to Consumer

8) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway
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9) What is another name called PDoS?
a) Brute force attack
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c) Rentalic.com
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11) Which type of E - Commerce is Amazon?
a) B2B
b) B2C
c) G2B
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12) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
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13) All of the following are major B2C business models except _____.
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a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

SLR-QH-17

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-18

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. 14

1) History is best defined as the study of _____.
a) Future events b) Past human activities
c) Natural phenomena d) Scientific experiments

2) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

3) Which of the following disciplines deals with political systems and governance?
a) Economics b) Political Science
c) Sociology d) Cultural Studies

4) Urbanization is best described as _____.
a) Decline of rural population b) Growth of cities and towns
c) Spread of agriculture d) Industrial decline

5) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

6) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

7) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

8) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

9) Socialization refers to _____.
a) Economic growth
b) Learning social norms
c) Political participation
d) Cultural diffusion

10) The study of language structure and its evolution is called _____.
a) Sociology
b) Linguistics
c) Psychology
d) Anthropology

11) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women’s rights
c) Political ideologies
d) Technological advancements

12) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science
b) Psychoanalysis
c) Economic theory
d) Structural linguistics

13) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology
b) Political Science
c) Economics
d) History

14) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

SLR-QH-18

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

SLR-QH-18

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

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c) Aesthetics and beauty
d) Scientific discovery

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b) Past human activities
c) Natural phenomena
d) Scientific experiments

9) The archaeology focuses on _____.
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b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

10) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

11) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

12) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

13) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

14) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

SLR-QH-18

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women's rights
c) Political ideologies
d) Technological advancements

2) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science b) Psychoanalysis
c) Economic theory d) Structural linguistics

3) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology b) Political Science
c) Economics d) History

4) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning b) Moral principles and conduct
c) Aesthetics and beauty d) Scientific discovery

5) History is best defined as the study of _____.
a) Future events b) Past human activities
c) Natural phenomena d) Scientific experiments

6) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

7) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

8) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

9) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

10) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

11) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

12) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

13) Socialization refers to _____.
a) Economic growth
b) Learning social norms
c) Political participation
d) Cultural diffusion

14) The study of language structure and its evolution is called _____.
a) Sociology
b) Linguistics
c) Psychology
d) Anthropology

SLR-QH-18

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

SLR-QH-18

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

2) In which ancient civilization did the term "democracy" originate?
a) Ancient Egypt b) Ancient Greece
c) Ancient Rome d) Mesopotamia

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a) Increase in employment
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b) Gender equality and women's rights
c) Political ideologies
d) Technological advancements

7) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science
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c) Economic theory
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8) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology
b) Political Science
c) Economics
d) History

9) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

10) History is best defined as the study of _____.
a) Future events
b) Past human activities
c) Natural phenomena
d) Scientific experiments

11) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

12) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

13) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

14) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

SLR-QH-18

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

SLR-QH-19

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

2) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing b) Controlling
c) Planning d) Leading

3) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

4) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

5) Which is the first step in the planning process?
a) Developing alternatives b) Evaluating alternatives
c) Setting objectives d) Selecting the best alternative

6) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

7) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

8) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs
b) Social needs
c) Esteem needs
d) Self-actualization

9) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

10) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

11) Which of the following is not typically considered an element of quality?
a) Performance
b) Reliability
c) Advertising
d) Durability

12) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

13) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

14) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

SLR-QH-19

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-19

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs b) Social needs
c) Esteem needs d) Self-actualization

2) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

3) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

4) Which of the following is not typically considered an element of quality?
a) Performance b) Reliability
c) Advertising d) Durability

5) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

6) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

7) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

8) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

9) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

10) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

11) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

12) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

13) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

14) What is the main purpose of employee training and development?

a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

SLR-QH-19

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: **14**

1) Which of the following is not typically considered an element of quality?
a) Performance b) Reliability
c) Advertising d) Durability

2) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

3) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

4) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

5) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

6) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

7) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
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8) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
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d) To increase profits quickly

9) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
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10) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

11) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

12) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs
b) Social needs
c) Esteem needs
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13) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

14) Which of the following best defines “quality” in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

SLR-QH-19

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
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SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-19

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

2) What is the main purpose of employee training and development?
a) To penalize poor performance
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3) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
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c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

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b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

10) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

11) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing b) Controlling
c) Planning d) Leading

12) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

13) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

14) Which is the first step in the planning process?
a) Developing alternatives b) Evaluating alternatives
c) Setting objectives d) Selecting the best alternative

SLR-QH-19

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-20

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$
c) $(C_1 + C_2x)e^x$ d) x^2e^x

2) The general solution of $(D^2 - 4)^2y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$
b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$
c) $y = C_1\cos 2x + C_2\sin 2x + (C_3 + C_4x)e^{2x}$
d) None of these

3) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$
c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

4) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$
c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

5) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

6) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^k d) 3^{-k-1}

7) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

8) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2

c) 3 and 4 d) 0 and 1

9) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$

c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

10) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.

a) 0 b) $\frac{1}{2}$

c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

11) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

12) For the function $f(x) \begin{matrix} = & 0, & -\pi < x < 0 \\ = & x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

13) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

14) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \ \ (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2
c) 3 and 4 d) 0 and 1

2) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$
c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

3) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.

a) 0 b) $\frac{1}{2}$
c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

4) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$
c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

5) For the function $f(x) \begin{matrix} = & 0, & -\pi < x < 0 \\ = & x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

6) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

7) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

8) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

9) The general solution of $(D^2 - 4)^2 y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1 \cos 2x + C_2 \sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

10) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

11) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

12) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

13) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^{k} d) 3^{-k-1}

14) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \quad (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\, \cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

2) For the function $f(x) \begin{matrix} = \\ = \end{matrix} \begin{matrix} 0, & -\pi < x < 0 \\ x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

3) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

4) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

5) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

6) The general solution of $(D^2 - 4)^2y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1\cos 2x + C_2\sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

7) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

8) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

9) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

10) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^k d) 3^{-k-1}

11) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

12) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2

c) 3 and 4 d) 0 and 1

13) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$

c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

14) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.

a) 0 b) $\frac{1}{2}$

c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \quad (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\, \cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}
c) 3^{k} d) 3^{-k-1}

2) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2
c) $\sqrt{2}$ d) 3

3) A positive real root of the equation $xe^{x} - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2
c) 3 and 4 d) 0 and 1

4) Since $z\{1\} = \frac{z}{z-1}, z\{a^{k}\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$
c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

5) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^{2}$ is _____.

a) 0 b) $\frac{1}{2}$
c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

6) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

7) For the function $f(x) \begin{matrix} = \\ = \end{matrix} \begin{matrix} 0, & -\pi < x < 0 \\ x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

8) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

9) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

10) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

11) The general solution of $(D^2 - 4)^2 y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1 \cos 2x + C_2 \sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

12) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

13) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

14) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

SLR-QH-20

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \ \ (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\, \cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

SLR-QH-21

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

2) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

3) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

4) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

5) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

6) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

7) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

8) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

9) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

10) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

11) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

12) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

13) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

14) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

SLR-QH-21

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-21

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

2) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

3) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

4) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

5) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

6) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

7) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

8) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

9) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

10) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

11) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

12) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

13) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

14) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

SLR-QH-21

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-21

Seat No.		Set	R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

2) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

3) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

4) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

5) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

6) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

7) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

8) Stress is defined as _____.
   a) A physical or emotional reaction to challenges or demands
   b) A type of disease
   c) Only physical pain
   d) A mental disorder

9) Time management means _____.
   a) Doing work very quickly
   b) Planning and organizing how to spend time effectively
   c) Wasting time
   d) Avoiding responsibilities

10) Effective non-verbal communication in presentations helps to _____.
   a) Confuse the audience
   b) Improve understanding and engagement
   c) Reduce communication
   d) Replace verbal communication

11) Which of the following helps in effective presentation?
   a) Organizing ideas clearly b) Using complex language
   c) Ignoring the audience d) All of the above

12) The main purpose of an interview is to _____.
   a) Test physical strength
   b) Assess a candidate's suitability
   c) Conduct training
   d) Provide entertainment

13) Which of the following is part of presentation etiquette?
   a) Clear speaking b) Good posture
   c) Proper visual aids d) All of the above

14) Good posture during a presentation indicates _____.
   a) Confidence b) Nervousness
   c) Disinterest d) Laziness

SLR-QH-21

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-21

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

2) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

3) The main purpose of an interview is to _____.
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c) Conduct training
d) Provide entertainment

4) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
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5) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

6) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

7) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

8) Procrastination means _____.
a) Completing work early
b) Delaying tasks unnecessarily
c) Planning work
d) Finishing tasks on time

9) Taking short breaks during work helps to _____.
a) Reduce efficiency
b) Improve focus
c) Waste time
d) Increase stress

10) In the process of communication, _____ is the person who encodes the message.
a) Receiver
b) Driver
c) Cleaner
d) Sender

11) Which among the following barriers is related to fault in the channel?
a) Physical
b) Mechanical
c) Psychological
d) All of above

12) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy
b) Self-awareness
c) Emotional intelligence
d) Relationship management

13) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

14) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

SLR-QH-21

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-22

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Environmental Laws and Impact Assessment (CIVHON-01C)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) The Forest (Conservation) Act, 1980 primarily aims to _____.
a) Promote commercial forestry.
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3) The Environment (Protection) Act, 1986 was passed in the aftermath of _____.
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12) The main outcome of a well-conducted LCA is to _____.

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13) The 'Use/Reuse/Maintenance' stage of an LCA for a car would primarily account for _____.

a) Mining of iron ore.
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SLR-QH-22

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Environmental Laws and Impact Assessment (CIVHON-01C)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question No. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question No. 6 is compulsory in section II, and solve any two questions from the remaining
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4) Assume suitable data wherever necessary and mention it clearly.
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Section – I

Q.2	**a)**	Critically analyze the key provisions and objectives of the Indian Forest Act.	**05**
	b)	What are the main features of the Wildlife (Protection) Act.	**05**
Q.3	**a)**	Discuss the Environment (Protection) Act, 1986 as an 'umbrella legislation'. What are its strengths and weaknesses?	**05**
	b)	What are Coastal Regulation Zone (CRZ) notifications? Explain their importance in protecting India's coastal ecology.	**04**
Q.4	**a)**	How are 'Network Methods' used in EIA to identify secondary and tertiary impacts?	**05**
	b)	Explain the 'Overlay Method' in EIA and its connection to modern GIS techniques.	**04**
Q.5	**a)**	What are the essential components that must be included in a comprehensive EIA report?	**05**
	b)	Discuss the role of various stakeholders (project proponent, regulatory authority, public) in the EIA process.	**04**

SECTION – II

Q.6	**a)**	Discuss the application of Remote Sensing (RS) in various stages of the EIA process.	**05**
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	b)	What is the procedural framework for conducting a Life-cycle Inventory analysis as per international standards?	**04**

SLR-QH-22

Seat No.		Set	Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Environmental Laws and Impact Assessment (CIVHON-01C)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-QH-22

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Environmental Laws and Impact Assessment (CIVHON-01C)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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SLR-QH-22

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Environmental Laws and Impact Assessment (CIVHON-01C)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-QH-22

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Environmental Laws and Impact Assessment (CIVHON-01C)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
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SLR-QH-22

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Environmental Laws and Impact Assessment (CIVHON-01C)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-QH-22

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Environmental Laws and Impact Assessment (CIVHON-01C)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question No. 2 is compulsory in section I, and solve any two questions from the remaining.
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SECTION – II

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SLR-QH-23

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Applications of Information Technology and Information Systems (CIVHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) _____ is a civil engineering drafting software with design and simulation tools.
a) Civil 3D b) Grammarly
c) MSP d) Primavera

2) Minimization problems are mainly used for _____.
a) Loss calculations b) Outgoings
c) Manufacturing cost d) All of the above

3) Every optimization problem consists of _____.
a) Objective function and constraints
b) Decision variables only
c) Guided path only
d) Distribution system

4) Major goals of automated highway systems include _____.
a) Improved safety b) Optimized investment
c) Improved mobility d) All of these

5) Graphical method of Linear Programming is useful up to _____.
a) 1 variable b) 2 variables
c) 4 variables d) 6 variables

6) The 'Objective Function' in optimization aims to _____.
a) Define constraints
b) Ensure feasibility
c) Maximize or minimize a quantity
d) Identify variables

7) Which of the following is NOT an IT application in construction management?
a) Scheduling
b) Communication
c) Concrete mix design
d) Document management

8) EOQ model helps in determining _____.
a) Project duration
b) Optimal order quantity
c) Concrete strength
d) Labour requirement

9) GIS is used to _____.
a) Analyse structures
b) Manage schedules
c) Capture and analyze spatial data
d) Create 3D models

10) Deterministic inventory model assumes _____.
a) Variable demand
b) Unknown demand
c) Known and constant demand
d) Seasonal demand

11) Benefits of computer applications in construction include _____.
a) Flexibility
b) Efficient communication
c) Consistent estimating
d) All of these

12) Which technology overlays digital data on the real world?
a) Virtual Reality
b) GIS
c) Augmented Reality
d) 3D Printing

13) Constraints in optimization represent _____.
a) Goals
b) Variables
c) Limitations
d) Final solution

14) Information technology mainly focuses on _____.
a) Hardware only
b) Software only
c) Data processing and management
d) Manual operations

SLR-QH-23

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Applications of Information Technology and Information Systems (CIVHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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5) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Discuss the impact of computerization on planning, execution, and control of construction projects. **05**

b) Explain the concept of 'Decision Variables' in optimization problems. **05**

Q.3 Solve the following Linear programming problem using Graphical method. **09**
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30;$
$X_1 - X_2 \geq 0;$
$X_2 \geq 3;$
$0 \leq X_1 \leq 20;$
$0 \leq X_2 \leq 2;$

Q.4 **a)** Explain in detail Dynamic Programming and enlist steps of Dynamic programming. **05**

b) Explain the role of information technology in improving efficiency of construction processes. **04**

Q.5 **a)** Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site. **09**

SECTION – II

Q.6	**a)**	Explain the importance of project scheduling in construction projects with reference to IT tools.	**05**
	b)	Discuss the role of sensors and loT in monitoring structural health of buildings.	**05**
Q.7	**a)**	What is project? Explain in detail Steps involved in managing the project.	**05**
	b)	What are the advantages and limitations of using 3D Printing in construction?	**04**
Q.8		Explain how automation helps in reducing human error and improving productivity in construction.	**09**
Q.9		Discuss how BIM improves coordination among architects, engineers, and contractors.	**09**

SLR-QH-23

Seat No.		Set	Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Applications of Information Technology and Information Systems (CIVHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) EOQ model helps in determining _____.
a) Project duration b) Optimal order quantity
c) Concrete strength d) Labour requirement

2) GIS is used to _____.
a) Analyse structures
b) Manage schedules
c) Capture and analyze spatial data
d) Create 3D models

3) Deterministic inventory model assumes _____.
a) Variable demand
b) Unknown demand
c) Known and constant demand
d) Seasonal demand

4) Benefits of computer applications in construction include _____.
a) Flexibility b) Efficient communication
c) Consistent estimating d) All of these

5) Which technology overlays digital data on the real world?
a) Virtual Reality b) GIS
c) Augmented Reality d) 3D Printing

6) Constraints in optimization represent _____.
a) Goals b) Variables
c) Limitations d) Final solution

7) Information technology mainly focuses on _____.
a) Hardware only
b) Software only
c) Data processing and management
d) Manual operations

8) _____ is a civil engineering drafting software with design and simulation tools.
a) Civil 3D
b) Grammarly
c) MSP
d) Primavera

9) Minimization problems are mainly used for _____.
a) Loss calculations
b) Outgoings
c) Manufacturing cost
d) All of the above

10) Every optimization problem consists of _____.
a) Objective function and constraints
b) Decision variables only
c) Guided path only
d) Distribution system

11) Major goals of automated highway systems include _____.
a) Improved safety
b) Optimized investment
c) Improved mobility
d) All of these

12) Graphical method of Linear Programming is useful up to _____.
a) 1 variable
b) 2 variables
c) 4 variables
d) 6 variables

13) The 'Objective Function' in optimization aims to _____.
a) Define constraints
b) Ensure feasibility
c) Maximize or minimize a quantity
d) Identify variables

14) Which of the following is NOT an IT application in construction management?
a) Scheduling
b) Communication
c) Concrete mix design
d) Document management

SLR-QH-23

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Applications of Information Technology and Information Systems (CIVHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Discuss the impact of computerization on planning, execution, and control of construction projects. **05**

b) Explain the concept of 'Decision Variables' in optimization problems. **05**

Q.3 Solve the following Linear programming problem using Graphical method. **09**
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30;$
$X_1 - X_2 \geq 0;$
$X_2 \geq 3;$
$0 \leq X_1 \leq 20;$
$0 \leq X_2 \leq 2;$

Q.4 **a)** Explain in detail Dynamic Programming and enlist steps of Dynamic programming. **05**

b) Explain the role of information technology in improving efficiency of construction processes. **04**

Q.5 **a)** Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site. **09**

SECTION – II

Q.6	**a)**	Explain the importance of project scheduling in construction projects with reference to IT tools.	**05**
	b)	Discuss the role of sensors and loT in monitoring structural health of buildings.	**05**
Q.7	**a)**	What is project? Explain in detail Steps involved in managing the project.	**05**
	b)	What are the advantages and limitations of using 3D Printing in construction?	**04**
Q.8		Explain how automation helps in reducing human error and improving productivity in construction.	**09**
Q.9		Discuss how BIM improves coordination among architects, engineers, and contractors.	**09**

SLR-QH-23

Seat No.		Set	R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Applications of Information Technology and Information Systems (CIVHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. **14**

1) Benefits of computer applications in construction include _____.
a) Flexibility b) Efficient communication
c) Consistent estimating d) All of these

2) Which technology overlays digital data on the real world?
a) Virtual Reality b) GIS
c) Augmented Reality d) 3D Printing

3) Constraints in optimization represent _____.
a) Goals b) Variables
c) Limitations d) Final solution

4) Information technology mainly focuses on _____.
a) Hardware only
b) Software only
c) Data processing and management
d) Manual operations

5) _____ is a civil engineering drafting software with design and simulation tools.
a) Civil 3D b) Grammarly
c) MSP d) Primavera

6) Minimization problems are mainly used for _____.
a) Loss calculations b) Outgoings
c) Manufacturing cost d) All of the above

7) Every optimization problem consists of _____.
a) Objective function and constraints
b) Decision variables only
c) Guided path only
d) Distribution system

8) Major goals of automated highway systems include _____.
a) Improved safety b) Optimized investment
c) Improved mobility d) All of these

9) Graphical method of Linear Programming is useful up to _____.
a) 1 variable b) 2 variables
c) 4 variables d) 6 variables

10) The 'Objective Function' in optimization aims to _____.
a) Define constraints
b) Ensure feasibility
c) Maximize or minimize a quantity
d) Identify variables

11) Which of the following is NOT an IT application in construction management?
a) Scheduling b) Communication
c) Concrete mix design d) Document management

12) EOQ model helps in determining _____.
a) Project duration b) Optimal order quantity
c) Concrete strength d) Labour requirement

13) GIS is used to _____.
a) Analyse structures
b) Manage schedules
c) Capture and analyze spatial data
d) Create 3D models

14) Deterministic inventory model assumes _____.
a) Variable demand
b) Unknown demand
c) Known and constant demand
d) Seasonal demand

SLR-QH-23

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Applications of Information Technology and Information Systems (CIVHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Discuss the impact of computerization on planning, execution, and control of construction projects. **05**

b) Explain the concept of 'Decision Variables' in optimization problems. **05**

Q.3 Solve the following Linear programming problem using Graphical method. **09**
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30;$
$X_1 - X_2 \geq 0;$
$X_2 \geq 3;$
$0 \leq X_1 \leq 20;$
$0 \leq X_2 \leq 2;$

Q.4 **a)** Explain in detail Dynamic Programming and enlist steps of Dynamic programming. **05**

b) Explain the role of information technology in improving efficiency of construction processes. **04**

Q.5 **a)** Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site. **09**

SECTION – II

Q.6	**a)**	Explain the importance of project scheduling in construction projects with reference to IT tools.	**05**
	b)	Discuss the role of sensors and loT in monitoring structural health of buildings.	**05**
Q.7	**a)**	What is project? Explain in detail Steps involved in managing the project.	**05**
	b)	What are the advantages and limitations of using 3D Printing in construction?	**04**
Q.8		Explain how automation helps in reducing human error and improving productivity in construction.	**09**
Q.9		Discuss how BIM improves coordination among architects, engineers, and contractors.	**09**

SLR-QH-23

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Applications of Information Technology and Information Systems (CIVHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) The 'Objective Function' in optimization aims to _____.
a) Define constraints
b) Ensure feasibility
c) Maximize or minimize a quantity
d) Identify variables

2) Which of the following is NOT an IT application in construction management?
a) Scheduling b) Communication
c) Concrete mix design d) Document management

3) EOQ model helps in determining _____.
a) Project duration b) Optimal order quantity
c) Concrete strength d) Labour requirement

4) GIS is used to _____.
a) Analyse structures
b) Manage schedules
c) Capture and analyze spatial data
d) Create 3D models

5) Deterministic inventory model assumes _____.
a) Variable demand
b) Unknown demand
c) Known and constant demand
d) Seasonal demand

6) Benefits of computer applications in construction include _____.
a) Flexibility b) Efficient communication
c) Consistent estimating d) All of these

7) Which technology overlays digital data on the real world?
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c) Augmented Reality d) 3D Printing

8) Constraints in optimization represent _____.
a) Goals b) Variables
c) Limitations d) Final solution

9) Information technology mainly focuses on _____.
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b) Software only
c) Data processing and management
d) Manual operations

10) _____ is a civil engineering drafting software with design and simulation tools.
a) Civil 3D b) Grammarly
c) MSP d) Primavera

11) Minimization problems are mainly used for _____.
a) Loss calculations b) Outgoings
c) Manufacturing cost d) All of the above

12) Every optimization problem consists of _____.
a) Objective function and constraints
b) Decision variables only
c) Guided path only
d) Distribution system

13) Major goals of automated highway systems include _____.
a) Improved safety b) Optimized investment
c) Improved mobility d) All of these

14) Graphical method of Linear Programming is useful up to _____.
a) 1 variable b) 2 variables
c) 4 variables d) 6 variables

SLR-QH-23

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Applications of Information Technology and Information Systems (CIVHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Discuss the impact of computerization on planning, execution, and control of construction projects. **05**

b) Explain the concept of 'Decision Variables' in optimization problems. **05**

Q.3 Solve the following Linear programming problem using Graphical method. **09**
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30;$
$X_1 - X_2 \geq 0;$
$X_2 \geq 3;$
$0 \leq X_1 \leq 20;$
$0 \leq X_2 \leq 2;$

Q.4 **a)** Explain in detail Dynamic Programming and enlist steps of Dynamic programming. **05**

b) Explain the role of information technology in improving efficiency of construction processes. **04**

Q.5 **a)** Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site. **09**

SECTION – II

Q.6	**a)**	Explain the importance of project scheduling in construction projects with reference to IT tools.	**05**
	b)	Discuss the role of sensors and loT in monitoring structural health of buildings.	**05**
Q.7	**a)**	What is project? Explain in detail Steps involved in managing the project.	**05**
	b)	What are the advantages and limitations of using 3D Printing in construction?	**04**
Q.8		Explain how automation helps in reducing human error and improving productivity in construction.	**09**
Q.9		Discuss how BIM improves coordination among architects, engineers, and contractors.	**09**

SLR-QH-24

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Design Thinking (CIVHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What are the steps of the design thinking process?
a) Understand > Draw > Ideate > Create > Test> Implement
b) Empathize > Define > Ideate > Prototype > Test> Implement
c) Empathize > Design > Implement > Produce > Test
d) Understand > Define > Ideate > Produce > Try

2) Design Thinking is a Linear Process True or False?
a) True b) False

3) After you define the problem, the next step is to _____.
a) Test b) Prototype
c) Ideate d) Empathize

4) Design Thinking Skills _____.
a) Emotional Intelligence b) Consensus Building
c) Both a) and b) d) None of these

5) Establishing the relative importance of customer need can be done only after _____.
a) Organizing data into a hierarchy of customer needs
b) Collecting raw data from customers
c) Reflecting on the results and the process of identifying customer need
d) None of the above

6) Focus groups are one of the methods for _____.
   a) Interpreting raw data collected from customers
   b) Organizing data into a hierarchy of customer needs
   c) Gathering raw data from customers
   d) Reflecting on the results and the process of identifying customer need

7) Brainstorming is one of the problem-solving techniques True or False?
   a) TRUE b) FALSE

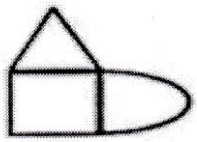
8) Types of Brainstorming _____.
   a) Electronic Brainstorming b) Verbal Brainstorming
   c) Nominal Group Techniques d) All of Above

9) What is an aspect of service design?
   a) Resources to connect people and/or machines
   b) Environmental
   c) Process and experience
   d) All of above

10) What is a service?
   a) A provided way for performing a task
   b) How the user interacts with a product
   c) When a person helps the user buys something
   d) A way to evaluate whether a task is achieved or not

11) Design Service Process dependencies should be kept to a _____.
   a) Minimum b) Maximum
   c) Equal d) None of above

12) Figure shows the conceptual drawing of a (n) _____ architecture.



   a) Slot-modular b) Bus-modular
   c) Sectional-modular d) Integral

13) Environmental impact that affects the product life cycle.
   a) Global warming b) Solid waste
   c) Water pollution d) All of These

14) Design for Environment (DFE) is a method to _____ environmental impact of product over its life cycle.
   a) Maximize b) Minimize
   c) Equal d) None of above

SLR-QH-24

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Design Thinking (CIVHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Section II is compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2	**a)**	Difference between design thinking and other traditional approaches.	**06**
	b)	What do you meant by design thinking and explain in brief with diagram of the different stages of design thinking?	**04**
Q.3	**a)**	What are the different goals of customer needs identification?	**04**
	b)	What are the different methods to identify the customer need and explain in brief?	**05**
Q.4	**a)**	What do you meant by the prototype? Explain the different methods of prototype.	**04**
	b)	What do you meant by Concept Generation? Draw a five step generation method and explain in short.	**05**
Q.5	**a)**	Enlist and explain in short of various design thinking skills.	**04**
	b)	Explain the term of brainstorming.	**05**

SECTION – II

Q.6 Attempt Following Questions. (Any Two) **10**

a) What are the different tools used in the service design & explain the tools of the service design in brief?

b) Explain the term Service Design.

c) What is the service design & explain the term of service design in brief?

Q.7 Write a note on (Any Two) **10**

a) Financial analysis and needs of financial analysis.

b) Different aspect of the product architecture.

c) Product Architecture and its types.

Q.8 Write a note on (Any Two) **08**

a) Spiral Product Development Process.

b) Draw & explain in short, the design for environment process.

c) Design for Environment term.

SLR-QH-24

Seat No.		Set	Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Design Thinking (CIVHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

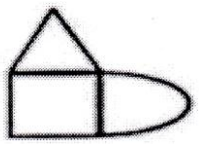
1) Types of Brainstorming _____.
a) Electronic Brainstorming b) Verbal Brainstorming
c) Nominal Group Techniques d) All of Above

2) What is an aspect of service design?
a) Resources to connect people and/or machines
b) Environmental
c) Process and experience
d) All of above

3) What is a service?
a) A provided way for performing a task
b) How the user interacts with a product
c) When a person helps the user buys something
d) A way to evaluate whether a task is achieved or not

4) Design Service Process dependencies should be kept to a _____.
a) Minimum b) Maximum
c) Equal d) None of above

5) Figure shows the conceptual drawing of a (n) _____ architecture.



a) Slot-modular b) Bus-modular
c) Sectional-modular d) Integral

6) Environmental impact that affects the product life cycle.
a) Global warming b) Solid waste
c) Water pollution d) All of These

7) Design for Environment (DFE) is a method to _____ environmental impact of product over its life cycle.
a) Maximize b) Minimize
c) Equal d) None of above

8) What are the steps of the design thinking process?
a) Understand > Draw > Ideate > Create > Test> Implement
b) Empathize > Define > Ideate > Prototype > Test> Implement
c) Empathize > Design > Implement > Produce > Test
d) Understand > Define > Ideate > Produce > Try

9) Design Thinking is a Linear Process True or False?
a) True b) False

10) After you define the problem, the next step is to _____.
a) Test b) Prototype
c) Ideate d) Empathize

11) Design Thinking Skills _____.
a) Emotional Intelligence b) Consensus Building
c) Both a) and b) d) None of these

12) Establishing the relative importance of customer need can be done only after _____.
a) Organizing data into a hierarchy of customer needs
b) Collecting raw data from customers
c) Reflecting on the results and the process of identifying customer need
d) None of the above

13) Focus groups are one of the methods for _____.
a) Interpreting raw data collected from customers
b) Organizing data into a hierarchy of customer needs
c) Gathering raw data from customers
d) Reflecting on the results and the process of identifying customer need

14) Brainstorming is one of the problem-solving techniques True or False?
a) TRUE b) FALSE

SLR-QH-24

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Design Thinking (CIVHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Section II is compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2	**a)**	Difference between design thinking and other traditional approaches.	**06**
	b)	What do you meant by design thinking and explain in brief with diagram of the different stages of design thinking?	**04**
Q.3	**a)**	What are the different goals of customer needs identification?	**04**
	b)	What are the different methods to identify the customer need and explain in brief?	**05**
Q.4	**a)**	What do you meant by the prototype? Explain the different methods of prototype.	**04**
	b)	What do you meant by Concept Generation? Draw a five step generation method and explain in short.	**05**
Q.5	**a)**	Enlist and explain in short of various design thinking skills.	**04**
	b)	Explain the term of brainstorming.	**05**

SECTION – II

Q.6 Attempt Following Questions. (Any Two) **10**

a) What are the different tools used in the service design & explain the tools of the service design in brief?

b) Explain the term Service Design.

c) What is the service design & explain the term of service design in brief?

Q.7 Write a note on (Any Two) **10**

a) Financial analysis and needs of financial analysis.

b) Different aspect of the product architecture.

c) Product Architecture and its types.

Q.8 Write a note on (Any Two) **08**

a) Spiral Product Development Process.

b) Draw & explain in short, the design for environment process.

c) Design for Environment term.

SLR-QH-24

Seat No.		Set	R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Design Thinking (CIVHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

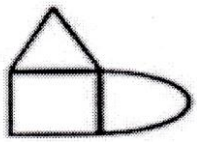
MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) Design Service Process dependencies should be kept to a _____.
a) Minimum b) Maximum
c) Equal d) None of above

2) Figure shows the conceptual drawing of a (n) _____ architecture.



a) Slot-modular b) Bus-modular
c) Sectional-modular d) Integral

3) Environmental impact that affects the product life cycle.
a) Global warming b) Solid waste
c) Water pollution d) All of These

4) Design for Environment (DFE) is a method to _____ environmental impact of product over its life cycle.
a) Maximize b) Minimize
c) Equal d) None of above

5) What are the steps of the design thinking process?
a) Understand > Draw > Ideate > Create > Test> Implement
b) Empathize > Define > Ideate > Prototype > Test> Implement
c) Empathize > Design > Implement > Produce > Test
d) Understand > Define > Ideate > Produce > Try

6) Design Thinking is a Linear Process True or False?
a) True b) False

7) After you define the problem, the next step is to _____.
a) Test b) Prototype
c) Ideate d) Empathize

8) Design Thinking Skills _____.
a) Emotional Intelligence b) Consensus Building
c) Both a) and b) d) None of these

9) Establishing the relative importance of customer need can be done only after _____.
a) Organizing data into a hierarchy of customer needs
b) Collecting raw data from customers
c) Reflecting on the results and the process of identifying customer need
d) None of the above

10) Focus groups are one of the methods for _____.
a) Interpreting raw data collected from customers
b) Organizing data into a hierarchy of customer needs
c) Gathering raw data from customers
d) Reflecting on the results and the process of identifying customer need

11) Brainstorming is one of the problem-solving techniques True or False?
a) TRUE b) FALSE

12) Types of Brainstorming _____.
a) Electronic Brainstorming b) Verbal Brainstorming
c) Nominal Group Techniques d) All of Above

13) What is an aspect of service design?
a) Resources to connect people and/or machines
b) Environmental
c) Process and experience
d) All of above

14) What is a service?
a) A provided way for performing a task
b) How the user interacts with a product
c) When a person helps the user buys something
d) A way to evaluate whether a task is achieved or not

SLR-QH-24

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Design Thinking (CIVHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Section II is compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2	**a)**	Difference between design thinking and other traditional approaches.	**06**
	b)	What do you meant by design thinking and explain in brief with diagram of the different stages of design thinking?	**04**
Q.3	**a)**	What are the different goals of customer needs identification?	**04**
	b)	What are the different methods to identify the customer need and explain in brief?	**05**
Q.4	**a)**	What do you meant by the prototype? Explain the different methods of prototype.	**04**
	b)	What do you meant by Concept Generation? Draw a five step generation method and explain in short.	**05**
Q.5	**a)**	Enlist and explain in short of various design thinking skills.	**04**
	b)	Explain the term of brainstorming.	**05**

SECTION – II

Q.6 Attempt Following Questions. (Any Two) **10**

a) What are the different tools used in the service design & explain the tools of the service design in brief?

b) Explain the term Service Design.

c) What is the service design & explain the term of service design in brief?

Q.7 Write a note on (Any Two) **10**

a) Financial analysis and needs of financial analysis.

b) Different aspect of the product architecture.

c) Product Architecture and its types.

Q.8 Write a note on (Any Two) **08**

a) Spiral Product Development Process.

b) Draw & explain in short, the design for environment process.

c) Design for Environment term.

SLR-QH-24

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Design Thinking (CIVHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) Focus groups are one of the methods for _____.
a) Interpreting raw data collected from customers
b) Organizing data into a hierarchy of customer needs
c) Gathering raw data from customers
d) Reflecting on the results and the process of identifying customer need

2) Brainstorming is one of the problem-solving techniques True or False?
a) TRUE b) FALSE

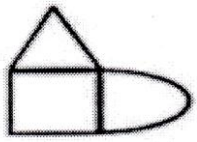
3) Types of Brainstorming _____.
a) Electronic Brainstorming b) Verbal Brainstorming
c) Nominal Group Techniques d) All of Above

4) What is an aspect of service design?
a) Resources to connect people and/or machines
b) Environmental
c) Process and experience
d) All of above

5) What is a service?
a) A provided way for performing a task
b) How the user interacts with a product
c) When a person helps the user buys something
d) A way to evaluate whether a task is achieved or not

6) Design Service Process dependencies should be kept to a _____.
a) Minimum b) Maximum
c) Equal d) None of above

7) Figure shows the conceptual drawing of a (n) _____ architecture.



a) Slot-modular b) Bus-modular
c) Sectional-modular d) Integral

8) Environmental impact that affects the product life cycle.
a) Global warming b) Solid waste
c) Water pollution d) All of These

9) Design for Environment (DFE) is a method to _____ environmental impact of product over its life cycle.
a) Maximize b) Minimize
c) Equal d) None of above

10) What are the steps of the design thinking process?
a) Understand > Draw > Ideate > Create > Test> Implement
b) Empathize > Define > Ideate > Prototype > Test> Implement
c) Empathize > Design > Implement > Produce > Test
d) Understand > Define > Ideate > Produce > Try

11) Design Thinking is a Linear Process True or False?
a) True b) False

12) After you define the problem, the next step is to _____.
a) Test b) Prototype
c) Ideate d) Empathize

13) Design Thinking Skills _____.
a) Emotional Intelligence b) Consensus Building
c) Both a) and b) d) None of these

14) Establishing the relative importance of customer need can be done only after _____.
a) Organizing data into a hierarchy of customer needs
b) Collecting raw data from customers
c) Reflecting on the results and the process of identifying customer need
d) None of the above

SLR-QH-24

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Design Thinking (CIVHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Section II is compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2	**a)**	Difference between design thinking and other traditional approaches.	**06**
	b)	What do you meant by design thinking and explain in brief with diagram of the different stages of design thinking?	**04**
Q.3	**a)**	What are the different goals of customer needs identification?	**04**
	b)	What are the different methods to identify the customer need and explain in brief?	**05**
Q.4	**a)**	What do you meant by the prototype? Explain the different methods of prototype.	**04**
	b)	What do you meant by Concept Generation? Draw a five step generation method and explain in short.	**05**
Q.5	**a)**	Enlist and explain in short of various design thinking skills.	**04**
	b)	Explain the term of brainstorming.	**05**

SECTION – II

Q.6 Attempt Following Questions. (Any Two) **10**

a) What are the different tools used in the service design & explain the tools of the service design in brief?

b) Explain the term Service Design.

c) What is the service design & explain the term of service design in brief?

Q.7 Write a note on (Any Two) **10**

a) Financial analysis and needs of financial analysis.

b) Different aspect of the product architecture.

c) Product Architecture and its types.

Q.8 Write a note on (Any Two) **08**

a) Spiral Product Development Process.

b) Draw & explain in short, the design for environment process.

c) Design for Environment term.

SLR-QH-25

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Railway Track Structure (CIVHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentences. **14**

1) Which body is responsible for ensuring safety in Indian Railways?
a) Railway Board
b) Ministry of Transport
c) Commission of Railway Safety (CRS)
d) Indian Railway Finance Corporation

2) What is the primary source of revenue for Indian Railways?
a) Sale of land b) Advertising
c) Passenger and freight traffic d) Donations

3) Which of the following is not a function of the Indian Railway Finance Corporation (IRFC)?
a) Leasing rolling stock b) Safety inspection
c) Raising funds d) Financing railway projects

4) What is the purpose of a traffic survey in railway planning?
a) To locate underground utilities
b) To estimate soil bearing capacity
c) To assess current and future transportation demand
d) To identify forest land

5) What does a reconnaissance survey involve?
a) Detailed alignment marking
b) Collection of topographical and geological data through visual inspection
c) Final construction drawings
d) Construction of embankments

6) The necessity of providing curves in a railway track is mainly due to _____.
   a) To increase train speed
   b) To avoid obstructions and follow terrain
   c) To reduce construction cost only
   d) To decrease the gradient

7) A simple curve in railway alignment is defined as _____.
   a) A curve composed of two or more arcs of different radii
   b) A curve consisting of a single arc of a circle
   c) A curve used for changing gradient
   d) A curve used only in yards

8) The degree of curve is defined as _____.
   a) The angle subtended at the center by a chord of 30 m
   b) The angle subtended at the center by a chord of 20 m
   c) The angle subtended at the center by a chord of 25 m
   d) The angle subtended at the center by a chord of 50 m

9) The most used rail type for high-speed tracks is _____.
   a) Flat-bottomed rail b) Bullhead rail
   c) Double-headed rail d) Grooved rail

10) Bullhead rails are mainly used in _____.
   a) Modern high-speed lines b) Old Indian Railway tracks
   c) Tramways d) Metro rail systems

11) Blanket in railway track refers to _____.
   a) Layer above ballast b) Layer below ballast
   c) Layer in the middle of ballast d) Ballast itself

12) Which is NOT a function of blanket material in railway embankment?
   a) Improve drainage b) Distribute load
   c) Prevent capillary rise d) Provide aesthetics

13) Grade compensation on curves is provided to _____.
   a) Increase train speed
   b) Reduce resistance due to curvature
   c) Compensate for worn out rails
   d) Increase the track length

14) Superelevation or cant on curved tracks is provided to _____.
   a) Increase friction between rails and wheels
   b) Counteract centrifugal force on curves
   c) Flatten the curve for high speed
   d) Reduce gradient effects

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Railway Track Structure (CIVHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 and Q.6 are compulsory questions, solve any two main questions from Section – I & any two main questions from Section – II
2) Figures to the right indicate full marks.
3) Assume additional data if required and mention it clearly.

SECTION – I

Q.2 Solve the following questions. **08**

a) What is the Long-Term Corporate Plan of Indian Railways, and how does it align with national transport policy and infrastructure development goals?

b) Classify the railway lines in India and discuss the various gauges used globally and in India. What are the technical and operational challenges caused by gauge variation, and how does the Uni-gauge policy address them?

Q.3 Solve of the following questions. **10**

a) Write the importance of surveying in construction of Railway line.

b) What are the Modern Surveying techniques for Difficult Terrain?

Q.4 Solve the following questions. **10**

a) What is Superelevation, Safe/Permissible Speed on Curves?

b) What are the Different Gauges on Indian Railways? Explain in detail.

Q.5 Solve of the following questions. **10**

a) Explain horizontal and Vertical curves.

b) Write a short not on ‘Preliminary Investigations for a New Railway Line.

SECTION – II

Q.6 Solve the following questions. **08**

a) What are the Laboratory Tests for Physical Properties of Ballast?

b) What are the Functions and Requirements of Sleepers?

Q.7 Solve the following questions. **10**

a) Explain the methods and challenges involved in the execution of earthwork in embankments and cuttings for railway tracks.

b) Describe the various types of rail fastenings and fittings used for wooden, steel trough, and cast- iron sleepers.

Q.8 Solve the following questions. **10**

a) Explain Necessity and objectives of geometric design of Railway Track.

b) What are the cautions considered in inspection and Maintenance of Points and Crossings?

Q.9 Solve the following questions. **10**

a) What is the Rail? Write Functions of Rails, and Types of Rails.

b) Write a note on Blanket and Blanketing Material.

SLR-QH-25

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Railway Track Structure (CIVHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentences. **14**

1) The degree of curve is defined as _____.
a) The angle subtended at the center by a chord of 30 m
b) The angle subtended at the center by a chord of 20 m
c) The angle subtended at the center by a chord of 25 m
d) The angle subtended at the center by a chord of 50 m

2) The most used rail type for high-speed tracks is _____.
a) Flat-bottomed rail b) Bullhead rail
c) Double-headed rail d) Grooved rail

3) Bullhead rails are mainly used in _____.
a) Modern high-speed lines b) Old Indian Railway tracks
c) Tramways d) Metro rail systems

4) Blanket in railway track refers to _____.
a) Layer above ballast b) Layer below ballast
c) Layer in the middle of ballast d) Ballast itself

5) Which is NOT a function of blanket material in railway embankment?
a) Improve drainage b) Distribute load
c) Prevent capillary rise d) Provide aesthetics

6) Grade compensation on curves is provided to _____.
a) Increase train speed
b) Reduce resistance due to curvature
c) Compensate for worn out rails
d) Increase the track length

7) Superelevation or cant on curved tracks is provided to _____.
   a) Increase friction between rails and wheels
   b) Counteract centrifugal force on curves
   c) Flatten the curve for high speed
   d) Reduce gradient effects

8) Which body is responsible for ensuring safety in Indian Railways?
   a) Railway Board
   b) Ministry of Transport
   c) Commission of Railway Safety (CRS)
   d) Indian Railway Finance Corporation

9) What is the primary source of revenue for Indian Railways?
   a) Sale of land
   b) Advertising
   c) Passenger and freight traffic
   d) Donations

10) Which of the following is not a function of the Indian Railway Finance Corporation (IRFC)?
   a) Leasing rolling stock
   b) Safety inspection
   c) Raising funds
   d) Financing railway projects

11) What is the purpose of a traffic survey in railway planning?
   a) To locate underground utilities
   b) To estimate soil bearing capacity
   c) To assess current and future transportation demand
   d) To identify forest land

12) What does a reconnaissance survey involve?
   a) Detailed alignment marking
   b) Collection of topographical and geological data through visual inspection
   c) Final construction drawings
   d) Construction of embankments

13) The necessity of providing curves in a railway track is mainly due to _____.
   a) To increase train speed
   b) To avoid obstructions and follow terrain
   c) To reduce construction cost only
   d) To decrease the gradient

14) A simple curve in railway alignment is defined as _____.
   a) A curve composed of two or more arcs of different radii
   b) A curve consisting of a single arc of a circle
   c) A curve used for changing gradient
   d) A curve used only in yards

SLR-QH-25

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Railway Track Structure (CIVHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 and Q.6 are compulsory questions, solve any two main questions from Section – I & any two main questions from Section – II
2) Figures to the right indicate full marks.
3) Assume additional data if required and mention it clearly.

SECTION – I

Q.2 Solve the following questions. **08**

a) What is the Long-Term Corporate Plan of Indian Railways, and how does it align with national transport policy and infrastructure development goals?

b) Classify the railway lines in India and discuss the various gauges used globally and in India. What are the technical and operational challenges caused by gauge variation, and how does the Uni-gauge policy address them?

Q.3 Solve of the following questions. **10**

a) Write the importance of surveying in construction of Railway line.

b) What are the Modern Surveying techniques for Difficult Terrain?

Q.4 Solve the following questions. **10**

a) What is Superelevation, Safe/Permissible Speed on Curves?

b) What are the Different Gauges on Indian Railways? Explain in detail.

Q.5 Solve of the following questions. **10**

a) Explain horizontal and Vertical curves.

b) Write a short not on ‘Preliminary Investigations for a New Railway Line.

SECTION – II

Q.6 Solve the following questions. **08**

a) What are the Laboratory Tests for Physical Properties of Ballast?

b) What are the Functions and Requirements of Sleepers?

Q.7 Solve the following questions. **10**

a) Explain the methods and challenges involved in the execution of earthwork in embankments and cuttings for railway tracks.

b) Describe the various types of rail fastenings and fittings used for wooden, steel trough, and cast- iron sleepers.

Q.8 Solve the following questions. **10**

a) Explain Necessity and objectives of geometric design of Railway Track.

b) What are the cautions considered in inspection and Maintenance of Points and Crossings?

Q.9 Solve the following questions. **10**

a) What is the Rail? Write Functions of Rails, and Types of Rails.

b) Write a note on Blanket and Blanketing Material.

SLR-QH-25

Seat No.		Set	R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Railway Track Structure (CIVHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentences. **14**

1) Blanket in railway track refers to _____.
a) Layer above ballast b) Layer below ballast
c) Layer in the middle of ballast d) Ballast itself

2) Which is NOT a function of blanket material in railway embankment?
a) Improve drainage b) Distribute load
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3) Grade compensation on curves is provided to _____.
a) Increase train speed
b) Reduce resistance due to curvature
c) Compensate for worn out rails
d) Increase the track length

4) Superelevation or cant on curved tracks is provided to _____.
a) Increase friction between rails and wheels
b) Counteract centrifugal force on curves
c) Flatten the curve for high speed
d) Reduce gradient effects

5) Which body is responsible for ensuring safety in Indian Railways?
a) Railway Board
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6) What is the primary source of revenue for Indian Railways?
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7) Which of the following is not a function of the Indian Railway Finance Corporation (IRFC)?
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8) What is the purpose of a traffic survey in railway planning?
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b) To estimate soil bearing capacity
c) To assess current and future transportation demand
d) To identify forest land

9) What does a reconnaissance survey involve?
a) Detailed alignment marking
b) Collection of topographical and geological data through visual inspection
c) Final construction drawings
d) Construction of embankments

10) The necessity of providing curves in a railway track is mainly due to _____.
a) To increase train speed
b) To avoid obstructions and follow terrain
c) To reduce construction cost only
d) To decrease the gradient

11) A simple curve in railway alignment is defined as _____.
a) A curve composed of two or more arcs of different radii
b) A curve consisting of a single arc of a circle
c) A curve used for changing gradient
d) A curve used only in yards

12) The degree of curve is defined as _____.
a) The angle subtended at the center by a chord of 30 m
b) The angle subtended at the center by a chord of 20 m
c) The angle subtended at the center by a chord of 25 m
d) The angle subtended at the center by a chord of 50 m

13) The most used rail type for high-speed tracks is _____.
a) Flat-bottomed rail b) Bullhead rail
c) Double-headed rail d) Grooved rail

14) Bullhead rails are mainly used in _____.
a) Modern high-speed lines b) Old Indian Railway tracks
c) Tramways d) Metro rail systems

SLR-QH-25

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Railway Track Structure (CIVHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 and Q.6 are compulsory questions, solve any two main questions from Section – I & any two main questions from Section – II
2) Figures to the right indicate full marks.
3) Assume additional data if required and mention it clearly.

SECTION – I

Q.2 Solve the following questions. **08**

a) What is the Long-Term Corporate Plan of Indian Railways, and how does it align with national transport policy and infrastructure development goals?

b) Classify the railway lines in India and discuss the various gauges used globally and in India. What are the technical and operational challenges caused by gauge variation, and how does the Uni-gauge policy address them?

Q.3 Solve of the following questions. **10**

a) Write the importance of surveying in construction of Railway line.

b) What are the Modern Surveying techniques for Difficult Terrain?

Q.4 Solve the following questions. **10**

a) What is Superelevation, Safe/Permissible Speed on Curves?

b) What are the Different Gauges on Indian Railways? Explain in detail.

Q.5 Solve of the following questions. **10**

a) Explain horizontal and Vertical curves.

b) Write a short not on ‘Preliminary Investigations for a New Railway Line.

SECTION – II

Q.6 Solve the following questions. **08**

a) What are the Laboratory Tests for Physical Properties of Ballast?

b) What are the Functions and Requirements of Sleepers?

Q.7 Solve the following questions. **10**

a) Explain the methods and challenges involved in the execution of earthwork in embankments and cuttings for railway tracks.

b) Describe the various types of rail fastenings and fittings used for wooden, steel trough, and cast- iron sleepers.

Q.8 Solve the following questions. **10**

a) Explain Necessity and objectives of geometric design of Railway Track.

b) What are the cautions considered in inspection and Maintenance of Points and Crossings?

Q.9 Solve the following questions. **10**

a) What is the Rail? Write Functions of Rails, and Types of Rails.

b) Write a note on Blanket and Blanketing Material.

SLR-QH-25

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Railway Track Structure (CIVHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentences. **14**

1) The necessity of providing curves in a railway track is mainly due to _____.
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c) A curve used for changing gradient
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3) The degree of curve is defined as _____.
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c) The angle subtended at the center by a chord of 25 m
d) The angle subtended at the center by a chord of 50 m

4) The most used rail type for high-speed tracks is _____.
a) Flat-bottomed rail b) Bullhead rail
c) Double-headed rail d) Grooved rail

5) Bullhead rails are mainly used in _____.
a) Modern high-speed lines b) Old Indian Railway tracks
c) Tramways d) Metro rail systems

6) Blanket in railway track refers to _____.
a) Layer above ballast b) Layer below ballast
c) Layer in the middle of ballast d) Ballast itself

7) Which is NOT a function of blanket material in railway embankment?
a) Improve drainage b) Distribute load
c) Prevent capillary rise d) Provide aesthetics

8) Grade compensation on curves is provided to _____.
a) Increase train speed
b) Reduce resistance due to curvature
c) Compensate for worn out rails
d) Increase the track length

9) Superelevation or cant on curved tracks is provided to _____.
a) Increase friction between rails and wheels
b) Counteract centrifugal force on curves
c) Flatten the curve for high speed
d) Reduce gradient effects

10) Which body is responsible for ensuring safety in Indian Railways?
a) Railway Board
b) Ministry of Transport
c) Commission of Railway Safety (CRS)
d) Indian Railway Finance Corporation

11) What is the primary source of revenue for Indian Railways?
a) Sale of land b) Advertising
c) Passenger and freight traffic d) Donations

12) Which of the following is not a function of the Indian Railway Finance Corporation (IRFC)?
a) Leasing rolling stock b) Safety inspection
c) Raising funds d) Financing railway projects

13) What is the purpose of a traffic survey in railway planning?
a) To locate underground utilities
b) To estimate soil bearing capacity
c) To assess current and future transportation demand
d) To identify forest land

14) What does a reconnaissance survey involve?
a) Detailed alignment marking
b) Collection of topographical and geological data through visual inspection
c) Final construction drawings
d) Construction of embankments

SLR-QH-25

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Railway Track Structure (CIVHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q.2 and Q.6 are compulsory questions, solve any two main questions from Section – I & any two main questions from Section – II
2) Figures to the right indicate full marks.
3) Assume additional data if required and mention it clearly.

SECTION – I

Q.2 Solve the following questions. **08**

a) What is the Long-Term Corporate Plan of Indian Railways, and how does it align with national transport policy and infrastructure development goals?

b) Classify the railway lines in India and discuss the various gauges used globally and in India. What are the technical and operational challenges caused by gauge variation, and how does the Uni-gauge policy address them?

Q.3 Solve of the following questions. **10**

a) Write the importance of surveying in construction of Railway line.

b) What are the Modern Surveying techniques for Difficult Terrain?

Q.4 Solve the following questions. **10**

a) What is Superelevation, Safe/Permissible Speed on Curves?

b) What are the Different Gauges on Indian Railways? Explain in detail.

Q.5 Solve of the following questions. **10**

a) Explain horizontal and Vertical curves.

b) Write a short not on ‘Preliminary Investigations for a New Railway Line.

SECTION – II

Q.6 Solve the following questions. **08**

a) What are the Laboratory Tests for Physical Properties of Ballast?

b) What are the Functions and Requirements of Sleepers?

Q.7 Solve the following questions. **10**

a) Explain the methods and challenges involved in the execution of earthwork in embankments and cuttings for railway tracks.

b) Describe the various types of rail fastenings and fittings used for wooden, steel trough, and cast- iron sleepers.

Q.8 Solve the following questions. **10**

a) Explain Necessity and objectives of geometric design of Railway Track.

b) What are the cautions considered in inspection and Maintenance of Points and Crossings?

Q.9 Solve the following questions. **10**

a) What is the Rail? Write Functions of Rails, and Types of Rails.

b) Write a note on Blanket and Blanketing Material.

SLR-QH-26

Seat No.		Set	P

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Value education enables us _____.
a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

2) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

3) _____ is the basic unit of any human society.
a) Group b) Individual
c) Nature d) Society

4) Natural acceptance & _____ are the two processes of knowing.
a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

5) Present Education system gives more focus to skills.
a) True b) False
c) May be d) None of the above

6) Value of an entity is _____.
a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

7) _____ are as Basic Human Aspirations.
a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

8) Any course content on value education needs to be _____.
a) Universal b) Rational
c) Natural d) All of above

9) When we live with correct understanding of values, we feel _____.
a) Deprived b) Frustrated
c) Happy d) Unhappy

10) Following are the basic guidelines for value education except _____.
a) Universal b) Personal
c) Rational d) Natural

11) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

12) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

13) Right Understanding and Physical Facilities leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

14) ____ are the content of self-exploration.
a) Program b) Desire
c) Both a and b d) None of the above

15) To be in state of liking is _____.
a) Happy b) Unhappy
c) Both a and b d) None of the above

16) _____ helps the human being to transform from Animal consciousness to human consciousness.
a) Physical Facility b) Right understanding
c) Relationship d) All of above

17) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.

a) Value b) Skill
c) Technology d) All of above

18) _____ means physical facilities more than to satisfy my needs.

a) Health b) Prosperity
c) Happiness d) None of above

19) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

a) naturally acceptable b) pushed
c) common d) None of above

20) Physical facilities are necessary and complete for _____.

a) Animal b) Human being
c) Nature d) All of the above

21) Beside physical facilities human being want _____.

a) Name b) Fame
c) Relationship d) None of the above

22) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.

a) Swatantra b) Partantra
c) Prosperous d) None of the above

23) To be in state of _____ is unhappiness.

a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

24) Which of following leads to variety of problems at different levels of our living?

a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

25) Working only for physical facilities in living is called _____.

a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

26) Self and _____ are different in nature, materiality, needs and activities.

a) Trust b) Body
c) Belief d) None of the above

27) Sukh and _____ both are needed and can't replace each other.

a) Self b) Body
c) Suvidha d) Belief

28) In value education Sanyama means _____.

a) Self-regulation b) Health
c) Happiness d) Prosperity

29) Sadupyog of the Body mean _____ of the Body.

a) Self-regulation b) Care
c) Happiness d) Right utilization

30) Knowing means having the _____.

a) Assumption b) Right understanding
c) Right feeling d) None of the above

31) Each human being is co-existence of the _____ and the _____.

a) self, self b) body, body
c) self, body d) None of the above

32) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.

a) Swasthya b) Sanyam
c) Prosperity d) None of the above

33) The system of the body works in a _____ way.

a) Happy b) Self organized
c) Random d) Independent

34) The self is _____ in nature while body is _____ in nature.

a) Unconscious, Physico-chemical
b) Conscious, Physico-chemical
c) Physico-chemical, Conscious
d) Physico-chemical, Unconscious

35) The activity of desire, thought and expecting together is called as _____.

a) Body b) Health
c) Imagination d) Future

36) Harmony should be maintained in _____.

a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

37) Sah-astitva means _____.

a) Co-existence b) Co-operation
c) Co-ordination d) Corporate identity

38) The process of education and right living leads to _____ in the individual.

a) Right understanding b) Health
c) Prosperity d) None of the above

39) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness b) Confusion
c) Confidence d) Fear

40) _____ is the foundational value in relationship.

a) Respect b) Love
c) Trust d) Glory

41) To be assured of others at all time is the feeling of _____.

a) Respect b) Love
c) Trust d) Glory

42) _____ is the feeling for someone who has made efforts for excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

43) _____ is the feeling of acceptance for those who have made efforts for my excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

44) The feeling of relatedness to all human beings is called _____.

a) Love b) Affection
c) Gratitude d) Respect

45) All the units of nature can be classified into _____ orders.

a) Two b) Three
c) Four d) Six

46) Which of the following does not form an order in nature?

a) Bio b) Animal
c) Consciousness d) Human

47) Which of the following statement is not true?

a) There is interconnectedness in nature
b) There is recyclability and self-regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

48) Harmony in the family is the building block for harmony in the _____.

a) society b) individual
c) friend d) relative

49) _____ in the family means that the family is able to identify its needs.

a) wealth
b) prosperity
c) harmony
d) happiness

50) _____ means right evaluation.

a) Respect
b) Love
c) Trust
d) Glory

SLR-QH-26

Seat No.		Set	Q

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Beside physical facilities human being want _____.
a) Name b) Fame
c) Relationship d) None of the above

2) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.
a) Swatantra b) Partantra
c) Prosperous d) None of the above

3) To be in state of _____ is unhappiness.
a) Disharmony b) Contradiction
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4) Which of following leads to variety of problems at different levels of our living?
a) Lack of right understanding of happiness
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5) Working only for physical facilities in living is called _____.
a) Animal Consciousness b) Human Consciousness
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6) Self and _____ are different in nature, materiality, needs and activities.
a) Trust b) Body
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7) Sukh and _____ both are needed and can't replace each other.
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b) Visualize our goals correctly
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35) Present Education system gives more focus to skills.

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49) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

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SLR-QH-26

Seat No.		Set	R

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

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a) Trust b) Body
c) Belief d) None of the above

37) Sukh and _____ both are needed and can't replace each other.
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38) In value education Sanyama means _____.
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c) Happiness d) Prosperity

39) Sadupyog of the Body mean _____ of the Body.
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40) Knowing means having the _____.
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a) Body b) Health
c) Imagination d) Future

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a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

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a) Right understanding b) Health
c) Prosperity d) None of the above

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a) Fearlessness
b) Confusion
c) Confidence
d) Fear

50) _____ is the foundational value in relationship.

a) Respect
b) Love
c) Trust
d) Glory

SLR-QH-26

Seat No.		Set	S

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

2) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

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7) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.

a) Value b) Skill
c) Technology d) All of above

8) _____ means physical facilities more than to satisfy my needs.

a) Health b) Prosperity
c) Happiness d) None of above

9) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

a) naturally acceptable b) pushed
c) common d) None of above

10) Physical facilities are necessary and complete for _____.

a) Animal b) Human being
c) Nature d) All of the above

11) Beside physical facilities human being want _____.

a) Name b) Fame
c) Relationship d) None of the above

12) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.

a) Swatantra b) Partantra
c) Prosperous d) None of the above

13) To be in state of _____ is unhappiness.

a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

14) Which of following leads to variety of problems at different levels of our living?

a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

15) Working only for physical facilities in living is called _____.

a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

16) Self and _____ are different in nature, materiality, needs and activities.

a) Trust b) Body
c) Belief d) None of the above

17) Sukh and _____ both are needed and can't replace each other.

a) Self b) Body
c) Suvidha d) Belief

18) In value education Sanyama means _____.

a) Self-regulation b) Health
c) Happiness d) Prosperity

19) Sadupyog of the Body mean _____ of the Body.

a) Self-regulation b) Care
c) Happiness d) Right utilization

20) Knowing means having the _____.

a) Assumption b) Right understanding
c) Right feeling d) None of the above

21) Each human being is co-existence of the _____ and the _____.

a) self, self b) body, body
c) self, body d) None of the above

22) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.

a) Swasthya b) Sanyam
c) Prosperity d) None of the above

23) The system of the body works in a _____ way.

a) Happy b) Self organized
c) Random d) Independent

24) The self is _____ in nature while body is _____ in nature.

a) Unconscious, Physico-chemical
b) Conscious, Physico-chemical
c) Physico-chemical, Conscious
d) Physico-chemical, Unconscious

25) The activity of desire, thought and expecting together is called as _____.

a) Body b) Health
c) Imagination d) Future

26) Harmony should be maintained in _____.

a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

27) Sah-astitva means _____.

a) Co-existence b) Co-operation
c) Co-ordination d) Corporate identity

28) The process of education and right living leads to _____ in the individual.

a) Right understanding b) Health
c) Prosperity d) None of the above

29) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness b) Confusion
c) Confidence d) Fear

30) _____ is the foundational value in relationship.

a) Respect b) Love
c) Trust d) Glory

31) To be assured of others at all time is the feeling of _____.

a) Respect b) Love
c) Trust d) Glory

32) _____ is the feeling for someone who has made efforts for excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

33) _____ is the feeling of acceptance for those who have made efforts for my excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

34) The feeling of relatedness to all human beings is called _____.

a) Love b) Affection
c) Gratitude d) Respect

35) All the units of nature can be classified into _____ orders.

a) Two b) Three
c) Four d) Six

36) Which of the following does not form an order in nature?

a) Bio b) Animal
c) Consciousness d) Human

37) Which of the following statement is not true?

a) There is interconnectedness in nature
b) There is recyclability and self-regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

38) Harmony in the family is the building block for harmony in the _____.

a) society b) individual
c) friend d) relative

39) _____ in the family means that the family is able to identify its needs.

a) wealth b) prosperity
c) harmony d) happiness

40) _____ means right evaluation.

a) Respect b) Love
c) Trust d) Glory

41) Value education enables us _____.

a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

42) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

43) _____ is the basic unit of any human society.

a) Group b) Individual
c) Nature d) Society

44) Natural acceptance & _____ are the two processes of knowing.

a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

45) Present Education system gives more focus to skills.

a) True b) False
c) May be d) None of the above

46) Value of an entity is _____.

a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

47) _____ are as Basic Human Aspirations.

a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

48) Any course content on value education needs to be _____.

a) Universal b) Rational
c) Natural d) All of above

49) When we live with correct understanding of values, we feel _____.

a) Deprived
b) Frustrated
c) Happy
d) Unhappy

50) Following are the basic guidelines for value education except _____.

a) Universal
b) Personal
c) Rational
d) Natural

SLR-QH-27

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Structural Mechanics - II (CIVPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Stress may be expressed in Newtons _____.
a) per millimetre square (N/mm^2)
b) per centimetre square (N/cm^2)
c) per metre square (N/m^2)
d) All of the above

2) Direct and bending stress occurs due to _____.
a) Axial loading b) Concentric loading
c) Eccentric loading d) Any of the above

3) The equivalent length is equal to half the actual length of a column with _____.
a) One end fixed and other end free
b) Both end fixed
c) Both end hinged
d) One end fixed and other end hinged

4) Euler's formula is applicable for _____.
a) Short columns b) Long columns
c) Intermediate columns d) All columns

5) Moment area method is primarily used for finding _____.
a) Shear force b) Slope & Deflection
c) Bending stress d) Axial stress

6) In conjugate beam method, shear force in conjugate beam represents _____.
a) Bending moment b) Slope
c) Deflection d) Shear force

7) Unit of deflection is _____.
a) kNm b) kN/m
c) Kn d) m

8) The number of independent equations to be satisfied for static equilibrium of a plane structure is _____.
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9) A structure is statically indeterminate when _____.
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b) Unknown reactions > equilibrium equations
c) No deformation occurs
d) Material is elastic

10) Flexibility matrix is always _____.
a) Rectangular b) Diagonal
c) Symmetric d) Singular

11) Sum of distribution factors at a joint is always _____.
a) 0 b) 1
c) 0.5 d) Depends on loading

12) Moment distribution method is _____.
a) A force method b) A displacement method
c) A graphical method d) An approximate method

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c) Symmetric d) Rectangular

14) The Size of stiffness matrix is equals to _____.
a) DSI b) DKI
c) DSI + DKI d) DSI − DKI

SLR-QH-27

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
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Day & Date: Saturday, 16-05-2026 Max. Marks: 56
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5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Determine the maximum and minimum stresses at the base of a vertical brick hollow square chimney of inside dimensions of 500 mm × 500 mm and thickness of 500 mm. The height of the chimney is 12 m. Take wind pressure perpendicular to chimney face as 1300 N/m^2 and weight density of brick is 20 kN/m^3. **10**

Q.3 A 1.5 m long column has a circular cross-section of 6 cm diameter. One of the ends of the column is fixed in direction and position and the other end is free. Taking factor of safety as 3, calculate the safe load using: **09**
i) Rankine's formula with $f_c = 560$ N/mm^2 & Rankine's constant is 1/1600
ii) Eulers formula with $E = 1.2 \times 10^5$ N/mm^2.

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Q.5 **a)** Find the kernel of the rectangular section of width b and depth d. **03**

b) Write assumptions and limitations made in Euler's theory of long columns. **03**

c) Explain moment area method. **03**

SECTION – II

Q.6 Analyze the continuous beam as shown in Fig- No. 1 by moment distribution method and draw a bending moment diagram. **10**

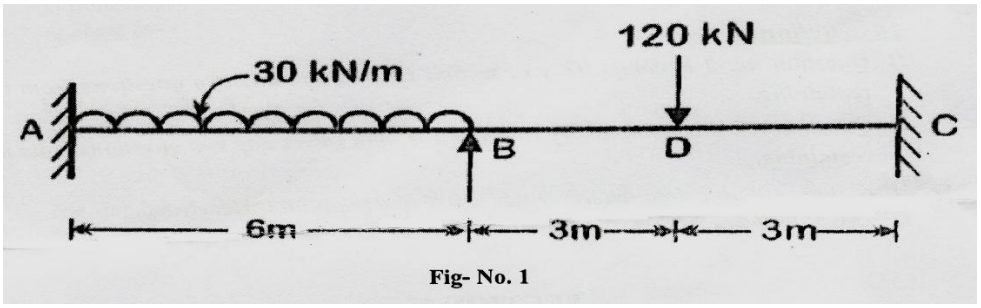

Fig- No. 1

Q.7 Analyze the continuous beam as shown in fig.No.-2 by flexibility matrix method and draw a bending moment diagram. **09**

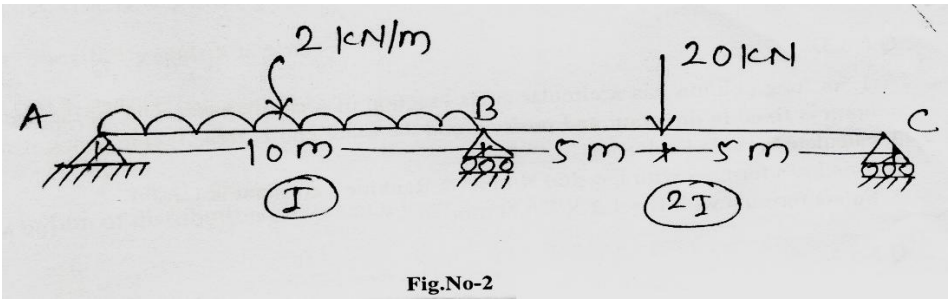

Fig.No-2

Q.8 Analyze the beam shown in Fig- No. 3 by stiffness matrix method and draw a bending moment diagram. **09**

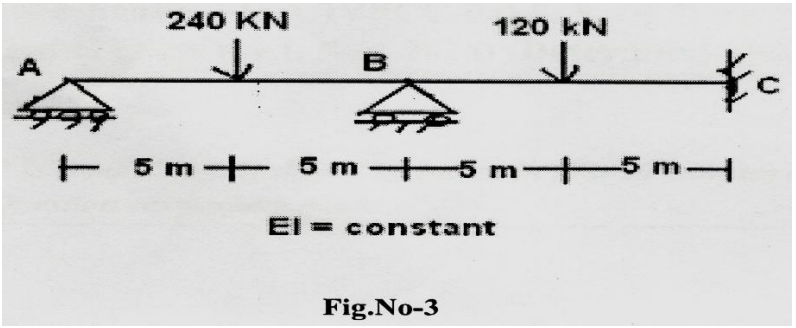

Fig.No-3

Q.9 **a)** Explain the difference between force method and displacement methods. **05**

b) Find the distribution factors of joint B & C refer Fig. No – 4 **04**

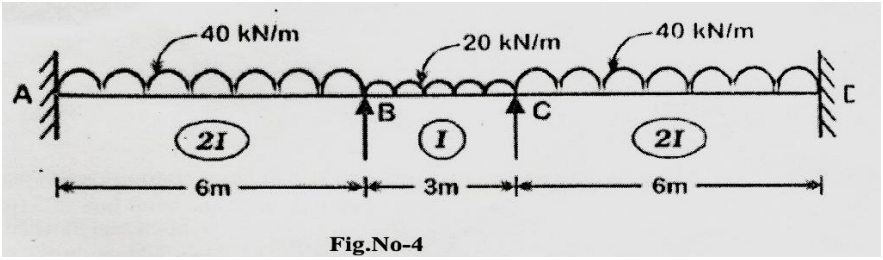

Fig.No-4

Seat No.		Set	Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Structural Mechanics - II (CIVPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The number of independent equations to be satisfied for static equilibrium of a plane structure is _____.
a) 2 b) 6
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2) A structure is statically indeterminate when _____.
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c) No deformation occurs
d) Material is elastic

3) Flexibility matrix is always _____.
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7) The Size of stiffness matrix is equals to _____.
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   d) One end fixed and other end hinged

11) Euler's formula is applicable for _____.
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   b) Long columns
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12) Moment area method is primarily used for finding _____.
   a) Shear force
   b) Slope & Deflection
   c) Bending stress
   d) Axial stress

13) In conjugate beam method, shear force in conjugate beam represents _____.
   a) Bending moment
   b) Slope
   c) Deflection
   d) Shear force

14) Unit of deflection is _____.
   a) kNm
   b) kN/m
   c) Kn
   d) m

SLR-QH-27

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Structural Mechanics - II (CIVPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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b) Write assumptions and limitations made in Euler's theory of long columns. **03**

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SECTION – II

Q.6 Analyze the continuous beam as shown in Fig- No. 1 by moment distribution method and draw a bending moment diagram. **10**

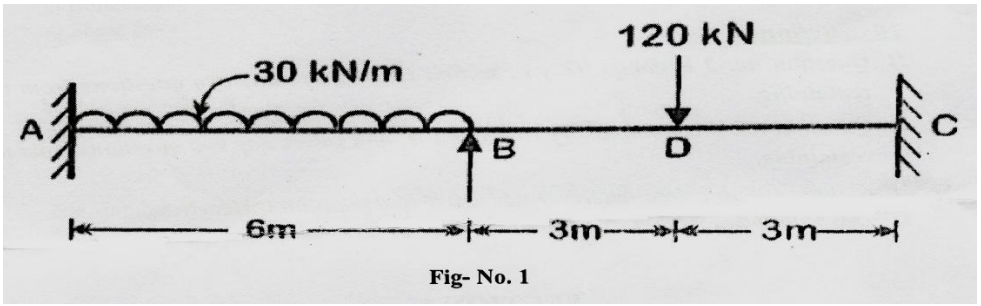

Fig- No. 1

Q.7 Analyze the continuous beam as shown in fig.No.-2 by flexibility matrix method and draw a bending moment diagram. **09**

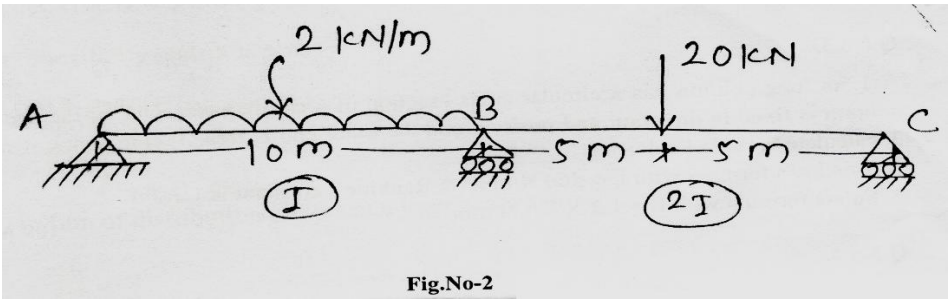

Fig.No-2

Q.8 Analyze the beam shown in Fig- No. 3 by stiffness matrix method and draw a bending moment diagram. **09**

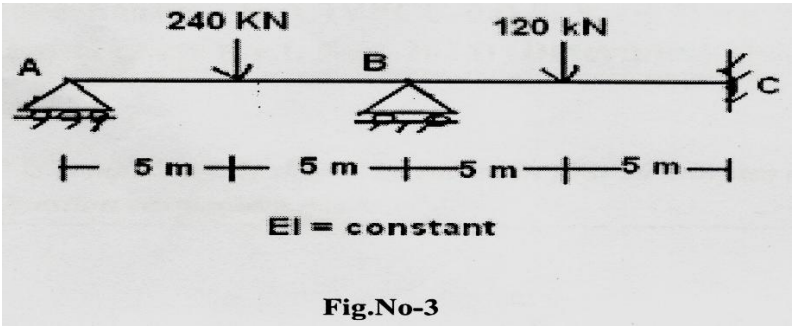

Fig.No-3

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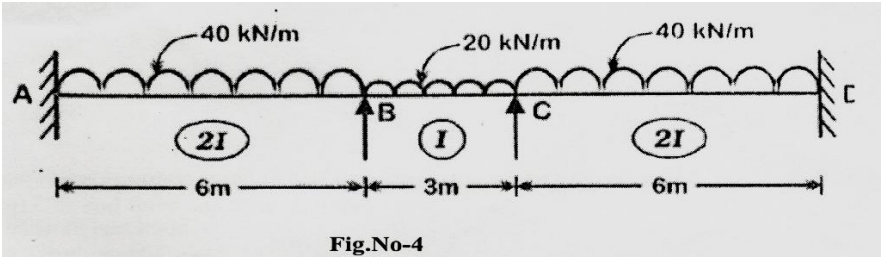

Fig.No-4

SLR-QH-27

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Structural Mechanics - II (CIVPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
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SLR-QH-27

Seat No.	

Set R

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SECTION – II

Q.6 Analyze the continuous beam as shown in Fig- No. 1 by moment distribution method and draw a bending moment diagram. **10**

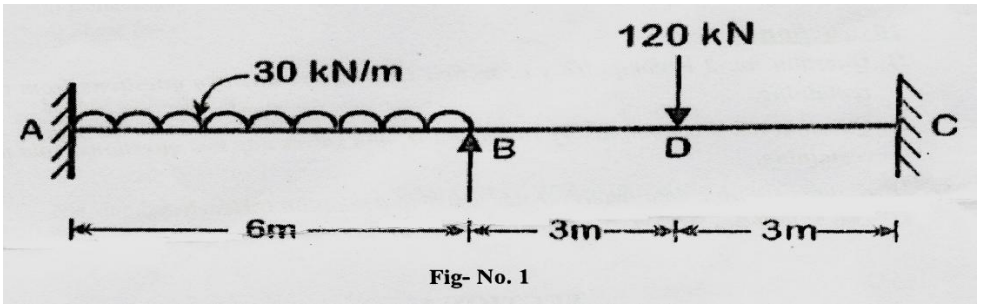

Fig- No. 1

Q.7 Analyze the continuous beam as shown in fig.No.-2 by flexibility matrix method and draw a bending moment diagram. **09**

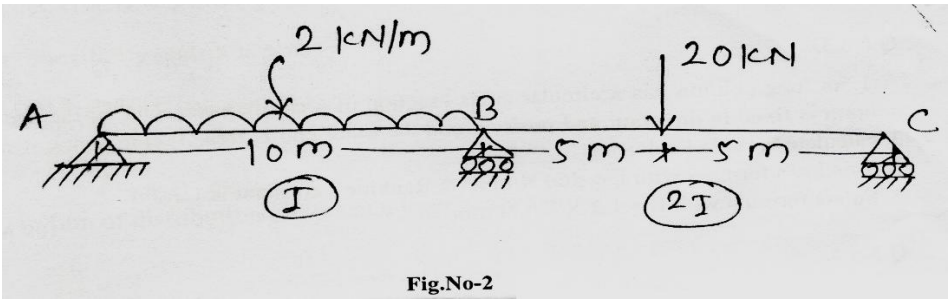

Fig.No-2

Q.8 Analyze the beam shown in Fig- No. 3 by stiffness matrix method and draw a bending moment diagram. **09**

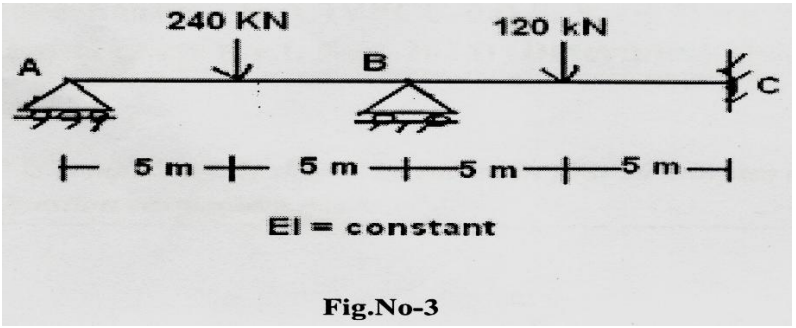

Fig.No-3

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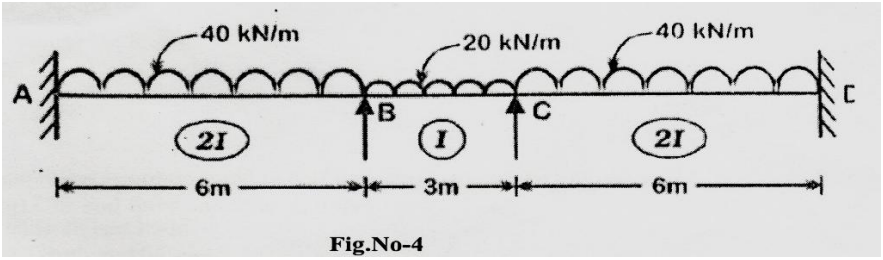

Fig.No-4

SLR-QH-27

Seat No.		Set	S

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4) Make suitable data wherever needed and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) In conjugate beam method, shear force in conjugate beam represents _____.
a) Bending moment b) Slope
c) Deflection d) Shear force

2) Unit of deflection is _____.
a) kNm b) kN/m
c) Kn d) m

3) The number of independent equations to be satisfied for static equilibrium of a plane structure is _____.
a) 2 b) 6
c) 3 d) None of these

4) A structure is statically indeterminate when _____.
a) Equations of equilibrium are sufficient
b) Unknown reactions > equilibrium equations
c) No deformation occurs
d) Material is elastic

5) Flexibility matrix is always _____.
a) Rectangular b) Diagonal
c) Symmetric d) Singular

6) Sum of distribution factors at a joint is always _____.
a) 0 b) 1
c) 0.5 d) Depends on loading

7) Moment distribution method is _____.
a) A force method
b) A displacement method
c) A graphical method
d) An approximate method

8) The stiffness matrix is always _____.
a) Asymmetric
b) Singular
c) Symmetric
d) Rectangular

9) The Size of stiffness matrix is equals to _____.
a) DSI
b) DKI
c) DSI + DKI
d) DSI − DKI

10) Stress may be expressed in Newtons _____.
a) per millimetre square (N/mm^2)
b) per centimetre square (N/cm^2)
c) per metre square (N/m^2)
d) All of the above

11) Direct and bending stress occurs due to _____.
a) Axial loading
b) Concentric loading
c) Eccentric loading
d) Any of the above

12) The equivalent length is equal to half the actual length of a column with _____.
a) One end fixed and other end free
b) Both end fixed
c) Both end hinged
d) One end fixed and other end hinged

13) Euler's formula is applicable for _____.
a) Short columns
b) Long columns
c) Intermediate columns
d) All columns

14) Moment area method is primarily used for finding _____.
a) Shear force
b) Slope & Deflection
c) Bending stress
d) Axial stress

SLR-QH-27

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Structural Mechanics - II (CIVPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In section- I Q. No. 2 is compulsory and solve any two questions from the remaining.
2) In section- II Q. No. 6 is compulsory and solve any two questions from the remaining.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed & mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Determine the maximum and minimum stresses at the base of a vertical brick hollow square chimney of inside dimensions of 500 mm × 500 mm and thickness of 500 mm. The height of the chimney is 12 m. Take wind pressure perpendicular to chimney face as 1300 N/m^2 and weight density of brick is 20 kN/m^3. **10**

Q.3 A 1.5 m long column has a circular cross-section of 6 cm diameter. One of the ends of the column is fixed in direction and position and the other end is free. Taking factor of safety as 3, calculate the safe load using: **09**
i) Rankine's formula with $f_c = 560$ N/mm^2 & Rankine's constant is 1/1600
ii) Eulers formula with $E = 1.2 \times 10^5$ N/mm^2.

Q.4 A simply supported beam of length 10 m carries a point load of 10kN at a distance of 3 m from the left end. If $E = 2 \times 10^5$ N/mm^2 and $I = 10^8$ mm^4, determine the slope at the left support and deflection under the point load using the conjugate beam method. **09**

Q.5 **a)** Find the kernel of the rectangular section of width b and depth d. **03**

b) Write assumptions and limitations made in Euler's theory of long columns. **03**

c) Explain moment area method. **03**

SECTION – II

Q.6 Analyze the continuous beam as shown in Fig- No. 1 by moment distribution method and draw a bending moment diagram. **10**

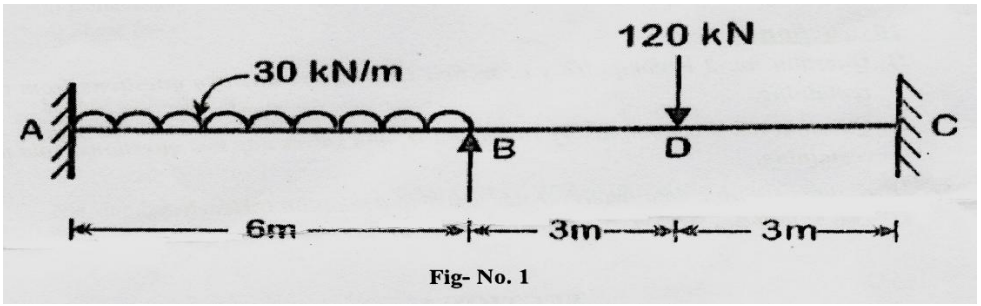

Fig- No. 1

Q.7 Analyze the continuous beam as shown in fig.No.-2 by flexibility matrix method and draw a bending moment diagram. **09**

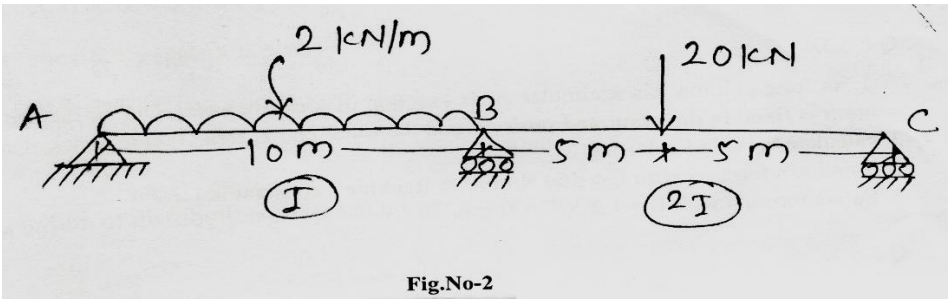

Fig.No-2

Q.8 Analyze the beam shown in Fig- No. 3 by stiffness matrix method and draw a bending moment diagram. **09**

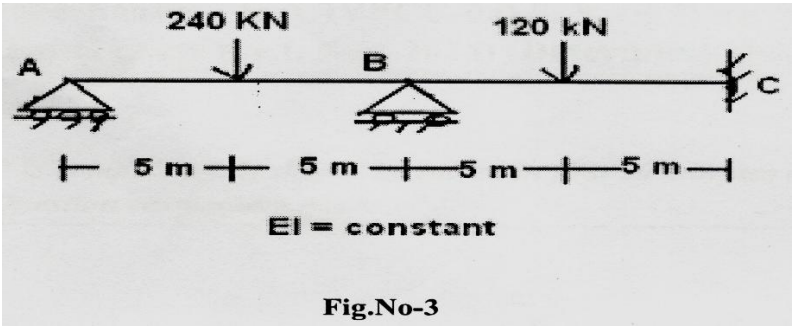

Fig.No-3

Q.9 **a)** Explain the difference between force method and displacement methods. **05**

b) Find the distribution factors of joint B & C refer Fig. No – 4 **04**

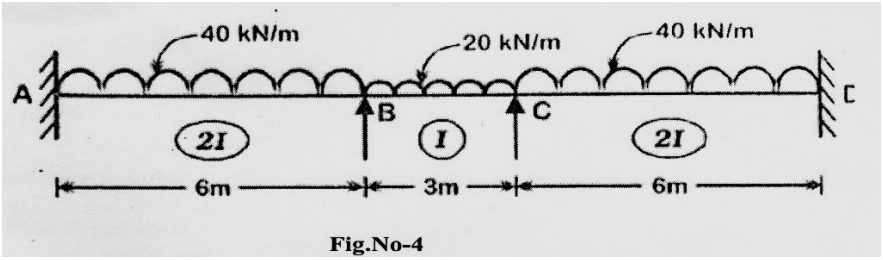

Fig.No-4

SLR-QH-28

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Building and Infrastructure Planning (CIVPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume additional data if required and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option and rewrite the sentence. **14**

1) In India, which climatic zone requires buildings to be oriented to maximize ventilation and minimize heat gain?
a) Hot and Dry Zone b) Cold Zone
c) Warm and Humid Zone d) Composite Zone

2) For a *Hot and Dry* climatic zone in India, what is the ideal orientation for a building?
a) North-South b) East-West
c) Northeast-Southwest d) Northwest-Southeast

3) What is Daylighting?
a) Artificial lighting during the day
b) Use of natural sunlight for indoor lighting
c) Nighttime artificial illumination
d) Decorative lighting only used outdoors

4) The primary objective of ventilation in buildings is to _____.
a) Reduce building height
b) Maintain air quality by removing stale air
c) Decrease the strength of building materials
d) Increase humidity unnecessarily

5) Which type of paint is most suitable for use in moist environments like kitchens and bathrooms?
a) Emulsion paint b) Distemper
c) Oil-based paint d) Enamel paint

6) What is the primary solvent used in traditional oil-based varnishes?
a) Water b) Spirit
c) Turpentine d) Alcohol

7) In tile cladding, what is the main function of the adhesive?
a) To improve colour appearance
b) To bond the tiles securely to the surface
c) To waterproof the tile surface
d) To make the tiles flexible

8) Which material is commonly used for sound absorption in auditoriums?
a) Glass b) Marble
c) Acoustic foam d) Steel

9) Sabine's formula is used to calculate which of the following?
a) Sound intensity b) Reverberation time
c) Frequency of sound d) Noise transmission

10) Which of the following is a sloped type of roof commonly used in rainy regions?
a) Flat roof b) Gable roof
c) Shell roof d) Domed roof

11) Which material is most used for domestic plumbing pipes due to its lightweight and corrosion resistance?
a) Stoneware b) Cast Iron (Cl)
c) Polyvinyl Chloride (PVC) d) Asbestos Cement (AC)

12) In plumbing systems, the trap that is typically installed below a water closet pan is called _____.
a) S-trap b) P-trap
c) Bottle trap d) Grease trap

13) Which material is generally considered most fire-resistant?
a) Wood b) Steel
c) Brick masonry d) Plastic

14) What is the term used when fire load exceeds normal limits due to unusual occupancy or storage?
a) Structural load b) Fire hazard
c) Abnormal fire load d) Passive fire protection

SLR-QH-28

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Building and Infrastructure Planning (CIVPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any four from section - I and any four from section - II.
2) Figures to the right indicate full marks.
3) Assume additional data if required and mention it clearly.

SECTION – I

Q.2 Explain the Sun Diagram (Sun Path Diagram) in detail with sketch. Also explain its importance in Planning and Design of Buildings. **07**

Q.3 What is the Parking Area Criteria for Hospital and Mercantile building? **07**

Q.4 What are the objectives of lighting, Principles of Good lighting for Building? **07**

Q.5 Explain the Air Conditioning for building. What are the different methods for Air Conditioning? **07**

Q.6 Explain the following in detail. **07**
a) Plastering
b) Pointing

Q.7 Explain the following in detail. **07**
a) Tiles cladding
b) Skirting
d) Dado work

SECTION – II

Q.8 Explain reverberation and reverberation time using Sabine's formula. **07**

Q.9 Explain the Flooring for building and types of flooring. **07**

Q.10 What are the various types of traps and Fitting Feature for building plumbing system? **07**

Q.11 Write a note on "Low-cost Housing." **07**

Q.12 Explain in brief “types of fire load.” **07**

Q.13 What is Fire resistant Structures? Explain the characteristics of fire-resistant material. **07**

SLR-QH-28

Seat No.		Set	Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Building and Infrastructure Planning (CIVPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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3) Figures to the right indicates full marks.
4) Assume additional data if required and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option and rewrite the sentence. **14**

1) Which material is commonly used for sound absorption in auditoriums?
a) Glass b) Marble
c) Acoustic foam d) Steel

2) Sabine's formula is used to calculate which of the following?
a) Sound intensity b) Reverberation time
c) Frequency of sound d) Noise transmission

3) Which of the following is a sloped type of roof commonly used in rainy regions?
a) Flat roof b) Gable roof
c) Shell roof d) Domed roof

4) Which material is most used for domestic plumbing pipes due to its lightweight and corrosion resistance?
a) Stoneware b) Cast Iron (CI)
c) Polyvinyl Chloride (PVC) d) Asbestos Cement (AC)

5) In plumbing systems, the trap that is typically installed below a water closet pan is called _____.
a) S-trap b) P-trap
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7) What is the term used when fire load exceeds normal limits due to unusual occupancy or storage?
a) Structural load
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8) In India, which climatic zone requires buildings to be oriented to maximize ventilation and minimize heat gain?
a) Hot and Dry Zone
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9) For a *Hot and Dry* climatic zone in India, what is the ideal orientation for a building?
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c) Decrease the strength of building materials
d) Increase humidity unnecessarily

12) Which type of paint is most suitable for use in moist environments like kitchens and bathrooms?
a) Emulsion paint
b) Distemper
c) Oil-based paint
d) Enamel paint

13) What is the primary solvent used in traditional oil-based varnishes?
a) Water
b) Spirit
c) Turpentine
d) Alcohol

14) In tile cladding, what is the main function of the adhesive?
a) To improve colour appearance
b) To bond the tiles securely to the surface
c) To waterproof the tile surface
d) To make the tiles flexible

SLR-QH-28

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Building and Infrastructure Planning (CIVPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any four from section - I and any four from section - II.
2) Figures to the right indicate full marks.
3) Assume additional data if required and mention it clearly.

SECTION – I

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Q.11 Write a note on "Low-cost Housing." **07**

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SLR-QH-28

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Building and Infrastructure Planning (CIVPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option and rewrite the sentence. **14**

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2) In plumbing systems, the trap that is typically installed below a water closet pan is called _____.
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d) Domed roof

SLR-QH-28

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Building and Infrastructure Planning (CIVPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any four from section - I and any four from section - II.
2) Figures to the right indicate full marks.
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SECTION – I

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Q.12 Explain in brief “types of fire load.” **07**

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Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Building and Infrastructure Planning (CIVPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume additional data if required and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option and rewrite the sentence. **14**

1) What is the primary solvent used in traditional oil-based varnishes?
a) Water b) Spirit
c) Turpentine d) Alcohol

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c) Abnormal fire load d) Passive fire protection

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14) Which type of paint is most suitable for use in moist environments like kitchens and bathrooms?
a) Emulsion paint b) Distemper
c) Oil-based paint d) Enamel paint

SLR-QH-28

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Building and Infrastructure Planning (CIVPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any four from section - I and any four from section - II.
2) Figures to the right indicate full marks.
3) Assume additional data if required and mention it clearly.

SECTION – I

Q.2 Explain the Sun Diagram (Sun Path Diagram) in detail with sketch. Also explain its importance in Planning and Design of Buildings. **07**

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b) Skirting
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SECTION – II

Q.8 Explain reverberation and reverberation time using Sabine's formula. **07**

Q.9 Explain the Flooring for building and types of flooring. **07**

Q.10 What are the various types of traps and Fitting Feature for building plumbing system? **07**

Q.11 Write a note on "Low-cost Housing." **07**

Q.12 Explain in brief “types of fire load.” **07**

Q.13 What is Fire resistant Structures? Explain the characteristics of fire-resistant material. **07**

SLR-QH-29

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Environmental Engineering (CIVPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the option and rewrite the sentence. **14**

1) Settling velocity of a spherical body in a viscous fluid is given by _____.
a) Reynolds law b) Newton's law
c) Stokes law d) Charles law

2) The purpose of aeration used in water treatment _____.
a) To increase the percentage of dissolved oxygen in water
b) To remove volatile elements
c) Remove hydrogen sulphide
d) All of above

3) Presence of fluoride in water greater than 1.5 mg/l causes _____.
a) Cardiovascular disease b) Methemoglobinemia
c) Dental Fluorosis d) None of the above

4) Color of water is determined with the help of which of the following instrument _____.
a) Tintometer b) Osmoscope
c) Potentiometer d) None of the above

5) The type of valve which allows water to flow in one direction but prevents its flow in the reverse direction is _____.
a) Reflux valve b) Sluice valve
c) Air release valve d) Air intake valve

6) The suitable layout of distribution system for a city with roads of rectangular pattern is _____.
a) Grid system b) Dead end system
c) Ring system d) Radial system

7) Standard BOD is measured at _____.
a) 20 degree - 1 day
b) 20 degree - 5 day
c) 30 degree - 3 day
d) 27 degree - 5 day

8) Sewer system is designed for _____.
a) Maximum flow only
b) Minimum flow only
c) Average flow
d) Both Maximum and minimum flow

9) Parshalli flume/ Sutro weir is installed in which of the following unit of sewage treatment?
a) Screening
b) Grit Chamber
c) ASP
d) Septic tank

10) Grit Chamber is used for the removal of _____.
a) Organic S.S.
b) Inorganic S.S.
c) Both
d) Volatile Organic S.S.

11) The minimum amount of D.O that must be present in a stream for the survival of fishes is _____.
a) 1mg/l
b) 6mg/l
c) 20mg/l
d) 4mg/l

12) Which of the following units works in anaerobic conditions?
a) Septic tank
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d) Trickling filters

13) As compared to geometrical increase method, arithmetic increase method of population forecasting gives _____.
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b) Higher value
c) Same value
d) Accurate value

14) By which of the following methods, zero hardness can be achieved _____.
a) Lime-soda method
b) Boiling method
c) Zeolite/Ion Exchange method
d) None

SLR-QH-29

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Environmental Engineering (CIVPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In section- I Q. No. 2 is compulsory and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
2) In section- II Q. No. 6 is compulsory and solve any two questions from the remaining (Q. No. 7, 8, & 9)
3) Figures to the right indicate full marks.
5) Draw neat sketch's where required and assume suitable data wherever needed & mention it clearly.

SECTION – I

Q.2 A town of present population of 50000, have average per capita water demand of 160lpcd. Water is pumped into an overhead tank at a uniform rate continuously for 24 hrs. The demand pattern is shown below. **08**

Determine the required balancing storage capacity of the overhead tank.

Hours	0-8	8-10	10-16	16-20	20-24
Demand (%)	5	40	20	25	10

Q.3 Estimate the population of the city in 2041 by geometric increase method and incremental increase method. **10**

Year	1981	1991	2001	2011	2021
Population	40,000	60,000	85,000	1,15000	2,00,000

Q.4 Write short notes on **10**
a) Turbidity of water
b) Alkalinity of water
c) Hardness of water

Q.5 Explain briefly MBBR, SBR and MBR. **10**

SECTION– II

Q.6 A waste water effluent of 560 L/s with a BOD of 50mg/l, D.O of 3.0 mg/l enters a river where the flow is 28m3/s with a BOD of 4mg/l and D.O of 8.2 mg/l. The velocity of water in stream is 0.18m/s. **08**

Determine the following:

a) Combined discharge
b) BOD mix
c) DO mix

Q.7 Design a completely mixed ASP for the following data: **10**

a) Wastewater flow = 20MLD
b) Influent BOD = 200mg/l
c) Effluent BOD = 25mg/l
d) MLSS = 2000mg/l
e) F/M = 0.2
f) SVI = 80ml/g
g) Sludge age = 10days.

Q.8 Data from an unseeded domestic waste water BOD test are: 5ml of waste in a 300ml bottle, Initial D.O of 7.8mg/l, Final D.O. after 5 days of incubation is 4.3 mg/l. **10**

Compute

a) The BOD5
b) The ultimate BOD, assuming k = 0.10 (base 10) per day

Q.9 Write short notes on: **10**

a) Sludge Volume index
b) Skimming tanks
c) F/M ratio
d) Oxidation pond
e) Operational troubles of trickling filter

SLR-QH-29

Seat No.		Set	Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Environmental Engineering (CIVPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the option and rewrite the sentence. **14**

1) Sewer system is designed for _____.
a) Maximum flow only
b) Minimum flow only
c) Average flow
d) Both Maximum and minimum flow

2) Parshalli flume/ Sutro weir is installed in which of the following unit of sewage treatment?
a) Screening b) Grit Chamber
c) ASP d) Septic tank

3) Grit Chamber is used for the removal of _____.
a) Organic S.S. b) Inorganic S.S.
c) Both d) Volatile Organic S.S.

4) The minimum amount of D.O that must be present in a stream for the survival of fishes is _____.
a) 1mg/l b) 6mg/l
c) 20mg/l d) 4mg/l

5) Which of the following units works in anaerobic conditions?
a) Septic tank b) Activated sludge treatment
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6) As compared to geometrical increase method, arithmetic increase method of population forecasting gives _____.
a) Lesser value b) Higher value
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7) By which of the following methods, zero hardness can be achieved _____.
   a) Lime-soda method
   b) Boiling method
   c) Zeolite/Ion Exchange method
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8) Settling velocity of a spherical body in a viscous fluid is given by _____.
   a) Reynolds law
   b) Newton's law
   c) Stokes law
   d) Charles law

9) The purpose of aeration used in water treatment _____.
   a) To increase the percentage of dissolved oxygen in water
   b) To remove volatile elements
   c) Remove hydrogen sulphide
   d) All of above

10) Presence of fluoride in water greater than 1.5 mg/l causes _____.
   a) Cardiovascular disease
   b) Methemoglobinemia
   c) Dental Fluorosis
   d) None of the above

11) Color of water is determined with the help of which of the following instrument _____.
   a) Tintometer
   b) Osmoscope
   c) Potentiometer
   d) None of the above

12) The type of valve which allows water to flow in one direction but prevents its flow in the reverse direction is _____.
   a) Reflux valve
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13) The suitable layout of distribution system for a city with roads of rectangular pattern is _____.
   a) Grid system
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   d) Radial system

14) Standard BOD is measured at _____.
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   c) 30 degree - 3 day
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SLR-QH-29

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Environmental Engineering (CIVPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In section- I Q. No. 2 is compulsory and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
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SECTION – I

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Determine the required balancing storage capacity of the overhead tank.

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Year	1981	1991	2001	2011	2021
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Q.4 Write short notes on **10**
a) Turbidity of water
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c) Hardness of water

Q.5 Explain briefly MBBR, SBR and MBR. **10**

SECTION– II

Q.6 A waste water effluent of 560 L/s with a BOD of 50mg/l, D.O of 3.0 mg/l enters a river where the flow is 28m3/s with a BOD of 4mg/l and D.O of 8.2 mg/l. The velocity of water in stream is 0.18m/s. **08**

Determine the following:

a) Combined discharge
b) BOD mix
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a) Wastewater flow = 20MLD
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e) F/M = 0.2
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g) Sludge age = 10days.

Q.8 Data from an unseeded domestic waste water BOD test are: 5ml of waste in a 300ml bottle, Initial D.O of 7.8mg/l, Final D.O. after 5 days of incubation is 4.3 mg/l. **10**

Compute

a) The BOD5
b) The ultimate BOD, assuming k = 0.10 (base 10) per day

Q.9 Write short notes on: **10**

a) Sludge Volume index
b) Skimming tanks
c) F/M ratio
d) Oxidation pond
e) Operational troubles of trickling filter

SLR-QH-29

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Environmental Engineering (CIVPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the option and rewrite the sentence. **14**

1) The minimum amount of D.O that must be present in a stream for the survival of fishes is _____.
a) 1mg/l b) 6mg/l
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2) Which of the following units works in anaerobic conditions?
a) Septic tank b) Activated sludge treatment
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3) As compared to geometrical increase method, arithmetic increase method of population forecasting gives _____.
a) Lesser value b) Higher value
c) Same value d) Accurate value

4) By which of the following methods, zero hardness can be achieved _____.
a) Lime-soda method
b) Boiling method
c) Zeolite/Ion Exchange method
d) None

5) Settling velocity of a spherical body in a viscous fluid is given by _____.
a) Reynolds law b) Newton's law
c) Stokes law d) Charles law

6) The purpose of aeration used in water treatment _____.
a) To increase the percentage of dissolved oxygen in water
b) To remove volatile elements
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7) Presence of fluoride in water greater than 1.5 mg/l causes _____.
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8) Color of water is determined with the help of which of the following instrument _____.
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9) The type of valve which allows water to flow in one direction but prevents its flow in the reverse direction is _____.
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SLR-QH-29

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Environmental Engineering (CIVPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In section- I Q. No. 2 is compulsory and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
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SECTION – I

Q.2 A town of present population of 50000, have average per capita water demand of 160lpcd. Water is pumped into an overhead tank at a uniform rate continuously for 24 hrs. The demand pattern is shown below. **08**

Determine the required balancing storage capacity of the overhead tank.

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Q.3 Estimate the population of the city in 2041 by geometric increase method and incremental increase method. **10**

Year	1981	1991	2001	2011	2021
Population	40,000	60,000	85,000	1,15000	2,00,000

Q.4 Write short notes on **10**
a) Turbidity of water
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SECTION– II

Q.6 A waste water effluent of 560 L/s with a BOD of 50mg/l, D.O of 3.0 mg/l enters a river where the flow is 28m3/s with a BOD of 4mg/l and D.O of 8.2 mg/l. The velocity of water in stream is 0.18m/s. **08**

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a) The BOD5
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a) Sludge Volume index
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c) F/M ratio
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SLR-QH-29

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Environmental Engineering (CIVPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the option and rewrite the sentence. **14**

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d) Air intake valve

SLR-QH-29

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Environmental Engineering (CIVPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) In section- I Q. No. 2 is compulsory and solve any two questions from the remaining. (Q. No. 3, 4 & 5)
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SECTION – I

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c) Hardness of water

Q.5 Explain briefly MBBR, SBR and MBR. **10**

SECTION– II

Q.6 A waste water effluent of 560 L/s with a BOD of 50mg/l, D.O of 3.0 mg/l enters a river where the flow is 28m3/s with a BOD of 4mg/l and D.O of 8.2 mg/l. The velocity of water in stream is 0.18m/s. **08**

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Compute

a) The BOD5
b) The ultimate BOD, assuming k = 0.10 (base 10) per day

Q.9 **Write short notes on:** **10**

a) Sludge Volume index
b) Skimming tanks
c) F/M ratio
d) Oxidation pond
e) Operational troubles of trickling filter

SLR-QH-30

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Innovation provides _____.
a) Stability b) Competitive advantage
c) Similarity d) Confusion

2) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

3) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

4) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

5) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

6) Six Thinking Hats tool was developed by _____.
a) Peter Drucker b) Steve Jobs
c) Edward de Bono d) Clayton Christensen

7) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

8) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
c) Disruptive d) Delaying

9) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

10) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

11) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

12) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

13) Legal consideration in entrepreneurship includes _____.
a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

14) Entrepreneurial process starts with _____.
a) HR hiring b) Opportunity identification
c) Revenue calculation d) Market monopoly

SLR-QH-30

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-30

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
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Entrepreneurship and Innovation (OE-02A)

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MCQ/Objective Type Questions

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SLR-QH-30

Seat No.	

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Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-30

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

2) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

3) Legal consideration in entrepreneurship includes _____.
a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

4) Entrepreneurial process starts with _____.
a) HR hiring b) Opportunity identification
c) Revenue calculation d) Market monopoly

5) Innovation provides _____.
a) Stability b) Competitive advantage
c) Similarity d) Confusion

6) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

7) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

8) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

9) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

10) Six Thinking Hats tool was developed by _____.
a) Peter Drucker b) Steve Jobs
c) Edward de Bono d) Clayton Christensen

11) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

12) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
c) Disruptive d) Delaying

13) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

14) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

SLR-QH-30

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
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SLR-QH-30

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-QH-30

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
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Entrepreneurship and Innovation (OE-02A)

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SECTION – I

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SLR-QH-32

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

2) What is a key characteristic of solar energy?
a) Utilizes sunlight for power generation
b) Requires fossil fuels for operation
c) Has no environmental benefits
d) ls non-renewable

3) Which renewable energy is best suited for coastal areas?
a) Biomass energy b) Geothermal energy
c) Wave and tidal energy d) Oil shale energy

4) What is solar radiation?
a) Radiation from the Earth b) Radiation from the Moon
c) Radiation from the Sun d) None of the above

5) What is solar radiation measured in?
a) Kilograms
b) Liters
c) Watts per square meter (W/m^2)
d) Newtons

6) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

7) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

8) What happens when electricity demand is higher than generation?
   a) Energy storage can provide additional power
   b) Renewable energy sources produce more electricity
   c) Power plants automatically increase supply
   d) Transmission lines store energy

9) Which of the following sectors benefits the most from energy storage?
   a) Agriculture
   b) Construction
   c) Transport
   d) Power generation

10) What does the efficiency of an energy storage device indicate?
   a) The time taken to store energy
   b) The total cost of the device
   c) The percentage of stored energy that can be retrieved
   d) The size of the storage system

11) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
   a) Penstock
   b) Reservoir
   c) Fore bay
   d) Spillways

12) Tidal energy is caused primarily by the _____.
   a) Moon's gravity
   b) Sun's gravity
   c) Earth's rotation
   d) Ocean currents

13) Green hydrogen is produced by _____.
   a) Coal gasification
   b) Methane reforming
   c) Water electrolysis using renewable energy
   d) Nuclear fission

14) Which is the cleanest method of hydrogen production?
   a) Electrolysis using solar/wind energy
   b) Coal gasification
   c) Nuclear thermal splitting
   d) Steam methane reforming

SLR-QH-32

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) What happens when electricity demand is higher than generation?
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2) Which of the following sectors benefits the most from energy storage?
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c) Transport d) Power generation

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9) What is a key characteristic of solar energy?
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14) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

SLR-QH-32

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
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Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
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SECTION – I

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SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
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SLR-QH-32

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
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Renewable Energy (OE-02C)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-QH-32

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
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SECTION – II

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SLR-QH-32

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
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Renewable Energy (OE-02C)

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Duration: 30 Minutes Marks:14

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6) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock
b) Reservoir
c) Fore bay
d) Spillways

7) Tidal energy is caused primarily by the _____.
a) Moon's gravity
b) Sun's gravity
c) Earth's rotation
d) Ocean currents

8) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

9) Which is the cleanest method of hydrogen production?
a) Electrolysis using solar/wind energy
b) Coal gasification
c) Nuclear thermal splitting
d) Steam methane reforming

10) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

11) What is a key characteristic of solar energy?
a) Utilizes sunlight for power generation
b) Requires fossil fuels for operation
c) Has no environmental benefits
d) ls non-renewable

12) Which renewable energy is best suited for coastal areas?
a) Biomass energy
b) Geothermal energy
c) Wave and tidal energy
d) Oil shale energy

13) What is solar radiation?
a) Radiation from the Earth
b) Radiation from the Moon
c) Radiation from the Sun
d) None of the above

14) What is solar radiation measured in?
a) Kilograms
b) Liters
c) Watts per square meter (W/m^2)
d) Newtons

SLR-QH-32

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

SLR-QH-33

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

2) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

3) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

4) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

5) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

6) In a DSO, the input signals are _____.
   a) directly applied to oscilloscope
   b) multiplexed, converted to digital form and stored and applied to oscilloscope
   c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
   d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

7) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
   a) n wattmeters
   b) (n + 1) wattmeters
   c) (n - 2) wattmeters
   d) (n - 1) wattmeters

8) Which transducer does not require any external power supply for working?
   a) Strain gauge transducer
   b) Piezoelectric Crystals
   c) Hydraulic transducer
   d) Pneumatic transducer

9) Piezoelectric accelerometer converts _____ energy to _____ energy.
   a) mechanical, sound
   b) mechanical, electrical
   c) sound, electrical
   d) None of these

10) Which factor affects the least while selection of sensor?
   a) Size
   b) Accuracy
   c) Colour
   d) Durability

11) Which sensor should be used for calculating pressure?
   a) DHT11
   b) LM335Z/NOPB
   c) HC-SR04
   d) MPX10DP

12) Which of the following represents range of frequency measured by ADC?
   a) Bandwidth
   b) Threshold frequency
   c) Peak frequency
   d) None of the mentioned

13) Thermistor is a _____.
   a) sensor
   b) ADC
   c) transducer
   d) micro controller

14) Which of the following type output is provided by ADC?
   a) Serial type
   b) Parallel type
   c) Both serial and parallel type
   d) None of the mentioned

SLR-QH-33

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

SLR-QH-33

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) Which transducer does not require any external power supply for working?
a) Strain gauge transducer b) Piezoelectric Crystals
c) Hydraulic transducer d) Pneumatic transducer

2) Piezoelectric accelerometer converts _____ energy to _____ energy.
a) mechanical, sound b) mechanical, electrical
c) sound, electrical d) None of these

3) Which factor affects the least while selection of sensor?
a) Size b) Accuracy
c) Colour d) Durability

4) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

5) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

6) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

7) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

8) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

9) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

10) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

11) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

12) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

13) In a DSO, the input signals are _____.
a) directly applied to oscilloscope
b) multiplexed, converted to digital form and stored and applied to oscilloscope
c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

14) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
a) n wattmeters b) (n + 1) wattmeters
c) (n - 2) wattmeters d) (n - 1) wattmeters

SLR-QH-33

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

SLR-QH-33

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

2) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

3) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

4) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

5) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

6) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

7) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

8) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.

a) Substitution
b) Loss of charge
c) Wheatstone bridge
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9) Instrument transformers are _____.

a) Potential transformers
b) Current transformers
c) Both (a) and (b)
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10) In a DSO, the input signals are _____.

a) directly applied to oscilloscope
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11) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.

a) n wattmeters
b) (n + 1) wattmeters
c) (n - 2) wattmeters
d) (n - 1) wattmeters

12) Which transducer does not require any external power supply for working?

a) Strain gauge transducer
b) Piezoelectric Crystals
c) Hydraulic transducer
d) Pneumatic transducer

13) Piezoelectric accelerometer converts _____ energy to _____ energy.

a) mechanical, sound
b) mechanical, electrical
c) sound, electrical
d) None of these

14) Which factor affects the least while selection of sensor?

a) Size
b) Accuracy
c) Colour
d) Durability

SLR-QH-33

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
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Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

SLR-QH-33

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) In a DSO, the input signals are _____.
a) directly applied to oscilloscope
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c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

2) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
a) n wattmeters b) (n + 1) wattmeters
c) (n - 2) wattmeters d) (n - 1) wattmeters

3) Which transducer does not require any external power supply for working?
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4) Piezoelectric accelerometer converts _____ energy to _____ energy.
a) mechanical, sound b) mechanical, electrical
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5) Which factor affects the least while selection of sensor?
a) Size b) Accuracy
c) Colour d) Durability

6) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

7) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

8) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

9) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
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10) Which of the following is not a type of systematic error?
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12) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

13) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

14) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

SLR-QH-33

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

SLR-QH-34

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

2) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
c) Simplex Method d) Integer Programming

3) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

4) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (-1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

5) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
c) Faster Solution d) Slower Solution

6) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

7) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

8) At the Break-Even Point _____.
a) Profit > Loss
b) Profit < Loss
c) Profit = Loss
d) None of these

9) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource
b) Reconciliation
c) Reconsideration
d) Review

10) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum
b) Average
c) Safety
d) Standard

11) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

12) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

13) In a project network, the critical path _____.
a) may be the shortest path
b) is the longest path
c) may be the longest path
d) is the shortest path

14) The inventory carrying costs are also called as _____.
a) Procurement costs
b) Set-up costs
c) Storage costs
d) None of the above

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
	to	tm	tp
$1-2$	1	1	7
$1-3$	1	4	7
$1-4$	2	2	8
$2-5$	1	1	1
$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

SLR-QH-34

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) At the Break-Even Point _____.
a) Profit > Loss b) Profit < Loss
c) Profit = Loss d) None of these

2) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

3) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

4) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

5) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
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6) In a project network, the critical path _____.
a) may be the shortest path b) is the longest path
c) may be the longest path d) is the shortest path

7) The inventory carrying costs are also called as _____.
a) Procurement costs b) Set-up costs
c) Storage costs d) None of the above

8) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

9) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
c) Simplex Method d) Integer Programming

10) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

11) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (−1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

12) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
c) Faster Solution d) Slower Solution

13) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

14) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
	to	tm	tp
$1-2$	1	1	7
$1-3$	1	4	7
$1-4$	2	2	8
$2-5$	1	1	1
$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

SLR-QH-34

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

2) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

3) In a project network, the critical path _____.
a) may be the shortest path b) is the longest path
c) may be the longest path d) is the shortest path

4) The inventory carrying costs are also called as _____.
a) Procurement costs b) Set-up costs
c) Storage costs d) None of the above

5) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

6) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
c) Simplex Method d) Integer Programming

7) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

8) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (-1)
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c) Both a & b
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9) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
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10) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
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11) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

12) At the Break-Even Point _____.
a) Profit $>$ Loss b) Profit $<$ Loss
c) Profit $=$ Loss d) None of these

13) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

14) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
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$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

SLR-QH-34

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

2) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

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4) The PERT in project management means Program Evaluation and _____ Technique.
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6) Optimization Means _____.
a) Maximization
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d) Must optimize the objective function

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b) is the longest path
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a) Procurement costs
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a) Balanced
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11) Which technique is used to solve Assignment Model?
a) Hungarian Method
b) Graphical Method
c) Simplex Method
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12) Allocated cells in the IBFS are also called as _____.
a) Stone Cells
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13) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (-1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

14) Advantage of VAM of transportation is _____.
a) Near to optimal Solution
b) Least Cost
c) Faster Solution
d) Slower Solution

SLR-QH-34

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
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$1-2$	1	1	7
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$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
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3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

SLR-QH-35

Seat No.		Set	P

S. Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

2) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

3) The Gauss-Seidel method is used for solving _____.
a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

4) Which of the following is a disadvantage of the Gauss-Jacobi method?
a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

5) The use of Romberg's method is _____.
a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

6) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

7) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

8) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

9) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

10) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

11) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

12) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

13) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

14) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

Seat No.	

Set **P**

S. Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

SLR-QH-35

Seat No.	

Set Q

S. Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

2) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

3) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

4) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

5) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

6) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

7) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

8) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

9) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

10) The Gauss-Seidel method is used for solving _____.
a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

11) Which of the following is a disadvantage of the Gauss-Jacobi method?
a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

12) The use of Romberg's method is _____.
a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

13) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

14) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

SLR-QH-35

Seat No.	

Set Q

S. Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

SLR-QH-35

Seat No.		Set	R

S. Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

2) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

3) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

4) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

5) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

6) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.

a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

7) The Gauss-Seidel method is used for solving _____.

a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

8) Which of the following is a disadvantage of the Gauss-Jacobi method?

a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

9) The use of Romberg's method is _____.

a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

10) The order of convergence of Newton-Raphson method is _____.

a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

11) Power Method is used to find _____.

a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

12) To find the numerically largest Eigen value using iterative method we use the equation _____.

a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

13) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.

a) 0.905 b) 1.905
c) 2.905 d) None

14) Runge-Kutta method is self-starting method _____.

a) True b) False
c) We can't say d) None

Seat No.	

Set **R**

S. Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

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e) Given the Values:

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$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.		Set	S

S. Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

2) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

3) To find the numerically largest Eigen value using iterative method we use the equation _____.
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a) 0.905 b) 1.905
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a) True b) False
c) We can't say d) None

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a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
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7) In the power method, the vector is normalized in each iteration mainly to _____.
   a) increase the determinant
   b) prevent values from becoming too large
   c) eliminate eigen values
   d) make the matrix symmetric

8) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
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   b) multiple of 3
   c) multiple of 4
   d) odd only

9) Picard's method is mainly used to solve _____.
   a) linear programming problems
   b) differential equations
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   d) interpolation problems

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   c) Both algebraic and transcendental functions
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11) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
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   b) $(0, 1)$
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12) The Gauss-Seidel method is used for solving _____.
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13) Which of the following is a disadvantage of the Gauss-Jacobi method?
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14) The use of Romberg's method is _____.
   a) To solve simultaneous linear equation
   b) To find root of linear equation
   c) To evaluate definite integration
   d) To find the Eigen values

Seat No.	

Set **S**

S. Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
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f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

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e) Given the Values:

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f) Using Newton's Backward formula, find the value of $f(2)$ if:

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$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

SLR-QH-36

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.
a) Decoding b) Encoding
c) Feedback d) Channeling

2) A message sent without words using facial expressions or gestures is called _____.
a) Written communication b) Verbal communication
c) Non-verbal communication d) Grapevine communication

3) Which channel characteristic most reduces chances of immediate feedback?
a) Face-to-face conversation b) Telephone call
c) Email d) Video conference

4) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.
a) Noise b) Semantic barrier
c) Perceptual barrier d) Channel barrier

5) Body language, eye contact and posture are examples of ____.
a) Verbal codes b) Non-verbal codes
c) Written codes d) Graphic communication

6) Upward communication flows from _____.
a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

7) An advantage of face-to-face communication over written communication is _____.
a) Permanent record
b) Easier legal reference
c) Immediate feedback
d) More formal tone

8) Which element is essential for an effective welcome speech?
a) Detailed technical data
b) Acknowledgement of guests
c) Long biographical note
d) Complex statistics

9) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
b) Summarize research findings
c) Express gratitude to contributors and audience
d) Present the event budget

10) Which is a best practice when delivering a professional presentation?
a) Reading every slide verbatim
b) Using too many small fonts
c) Maintaining eye contact and varying tone
d) Using no structure or flow

11) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
a) Enquiry letter
b) Complaint letter
c) Order letter
d) Quotation letter

12) A purchase order is principally used to _____.
a) Complain about defects
b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

13) Which part of a business letter contains the main message or details the writer wants to communicate?
a) Heading
b) Salutation
c) Body
d) Signature block

14) Which report type is typically written to describe a workplace accident and recommend corrective actions?
a) Progress report
b) Accident report
c) Sales report
d) Quotation report

SLR-QH-36

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

SLR-QH-36

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Which element is essential for an effective welcome speech?
a) Detailed technical data b) Acknowledgement of guests
c) Long biographical note d) Complex statistics

2) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
b) Summarize research findings
c) Express gratitude to contributors and audience
d) Present the event budget

3) Which is a best practice when delivering a professional presentation?
a) Reading every slide verbatim
b) Using too many small fonts
c) Maintaining eye contact and varying tone
d) Using no structure or flow

4) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
a) Enquiry letter b) Complaint letter
c) Order letter d) Quotation letter

5) A purchase order is principally used to _____.
a) Complain about defects
b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

6) Which part of a business letter contains the main message or details the writer wants to communicate?

a) Heading
b) Salutation
c) Body
d) Signature block

7) Which report type is typically written to describe a workplace accident and recommend corrective actions?

a) Progress report
b) Accident report
c) Sales report
d) Quotation report

8) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.

a) Decoding
b) Encoding
c) Feedback
d) Channeling

9) A message sent without words using facial expressions or gestures is called _____.

a) Written communication
b) Verbal communication
c) Non-verbal communication
d) Grapevine communication

10) Which channel characteristic most reduces chances of immediate feedback?

a) Face-to-face conversation
b) Telephone call
c) Email
d) Video conference

11) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.

a) Noise
b) Semantic barrier
c) Perceptual barrier
d) Channel barrier

12) Body language, eye contact and posture are examples of ____.

a) Verbal codes
b) Non-verbal codes
c) Written codes
d) Graphic communication

13) Upward communication flows from _____.

a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

14) An advantage of face-to-face communication over written communication is _____.

a) Permanent record
b) Easier legal reference
c) Immediate feedback
d) More formal tone

SLR-QH-36

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

SLR-QH-36

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
a) Enquiry letter b) Complaint letter
c) Order letter d) Quotation letter

2) A purchase order is principally used to _____.
a) Complain about defects
b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

3) Which part of a business letter contains the main message or details the writer wants to communicate?
a) Heading b) Salutation
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c) Feedback d) Channeling

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a) Verbal codes
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c) Written codes
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c) Workers to management
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SLR-QH-36

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Solve following. (Any Two) **14**

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a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

SLR-QH-36

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Upward communication flows from _____.
a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

2) An advantage of face-to-face communication over written communication is _____.
a) Permanent record b) Easier legal reference
c) Immediate feedback d) More formal tone

3) Which element is essential for an effective welcome speech?
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d) Using no structure or flow

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c) Sales report d) Quotation report

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11) A message sent without words using facial expressions or gestures is called _____.

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12) Which channel characteristic most reduces chances of immediate feedback?

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c) Email d) Video conference

13) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.

a) Noise b) Semantic barrier
c) Perceptual barrier d) Channel barrier

14) Body language, eye contact and posture are examples of ____.

a) Verbal codes b) Non-verbal codes
c) Written codes d) Graphic communication

SLR-QH-36

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

SLR-QH-37

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Managing Innovation and Entrepreneurship (CIVHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Schumpeter's theory comes under which economic theory?
a) Classical theory
b) Neo-classical theory
c) Austrian market process theory
d) All of above

2) Resilience in entrepreneurial competency is _____.
a) Relying on others to solve business challenges
b) Quitting the business when it fails
c) Persisting despite challenges and setbacks
d) Going on taking financial risks

3) In the innovation process, feasibility analysis is conducted to ____.
a) Determine if the idea is financially and technically viable
b) Launch the product with testing
c) Identify competitors for imitation
d) Making changes to the idea

4) Who introduced the concept of the seven sources of innovative opportunities?
a) Joseph Schumpeter b) Peter Drucker
c) Clayton Christensen d) Michael Porter

5) What is a key characteristic of a reactive innovation strategy?
a) The company innovates before competitors enter the market
b) It completely ignores industry changes
c) It consistently introduces radical innovations ahead of the market
d) It responds to competitors' innovations and assesses the demand

6) What does acquiring technological innovations mean for a business?
   a) Investing in any technologies to maintain consistency
   b) Acquisition only for technological advancements
   c) Being unable to produce a technology on own
   d) Adopting or purchasing new technologies to improve processes

7) A company that purchases the right to use another company's technology is engaging in _____.
   a) Technology licensing
   b) Internal R&D
   c) Purchase Order
   d) New innovations

8) What is an example of acquiring technology through strategic partnerships?
   a) Forming a joint venture with a tech company to co-develop a product
   b) To maintain independence
   c) Partnering for marketing
   d) Making research collaborations only

9) A tender notice is typically issued by _____.
   a) Private individuals only
   b) Financial institutions
   c) Organizations or government bodies seeking suppliers
   d) Customers looking for discounts

10) The cargo needs documentation of which permissions?
   a) Insurance documents
   b) Health certificate
   c) Landing bill
   d) both a) & c)

11) In the Russia-Ukraine war, Ukraine has lost control over which of the regions
   a) Crimea
   b) Kharkiv
   c) Rivne
   d) All of these

12) When was the last time China conducted military exercises and attacks on Taiwan?
   a) 2025
   b) 2024
   c) 2023
   d) 2022

13) When did Palestine and Israel war begin?
   a) 2025
   b) 2024
   c) 2023
   d) 2022

14) A well-defined problem statement should NOT include _____.
   a) The context of the problem
   b) Multiple unrelated problems
   c) The impact of the problem
   d) Clear boundaries

SLR-QH-37

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Managing Innovation and Entrepreneurship (CIVHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.
3) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Attempt Following Questions.

a) Explain economic theories in detail. **06**

b) What are the types of businesses? **04**

Q.3 Attempt Following Questions. (Any One) **08**

a) Explain the innovation process in detail.

b) Give difference between innovative strategies.

Q.4 Attempt Following Questions. (Any Two) **10**

a) Explain government grants and investors.

b) Explain the types of innovation.

c) Explain Demographics, Process need and crowd funding.

SECTION – II

Q.5 Attempt Following Questions.

a) Explain success stories of any 2 entrepreneurs. **06**

b) Explain scalability and legal laws study. **04**

Q.6 Attempt Following Questions. (Any One) **08**

a) Explain any 4 strategic issues in International Business.

b) Explain any 4 ethics in International Business.

Q.7 Attempt Following Questions. (Any Two) **10**

a) Explain the process for problem identification.

b) Explain the process for problem solving.

c) Explain diversification and changing international environment.

SLR-QH-37

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Managing Innovation and Entrepreneurship (CIVHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) What is an example of acquiring technology through strategic partnerships?
a) Forming a joint venture with a tech company to co-develop a product
b) To maintain independence
c) Partnering for marketing
d) Making research collaborations only

2) A tender notice is typically issued by _____.
a) Private individuals only
b) Financial institutions
c) Organizations or government bodies seeking suppliers
d) Customers looking for discounts

3) The cargo needs documentation of which permissions?
a) Insurance documents b) Health certificate
c) Landing bill d) both a) & c)

4) In the Russia-Ukraine war, Ukraine has lost control over which of the regions
a) Crimea b) Kharkiv
c) Rivne d) All of these

5) When was the last time China conducted military exercises and attacks on Taiwan?
a) 2025 b) 2024
c) 2023 d) 2022

6) When did Palestine and Israel war begin?
a) 2025 b) 2024
c) 2023 d) 2022

7) A well-defined problem statement should NOT include _____.
a) The context of the problem b) Multiple unrelated problems
c) The impact of the problem d) Clear boundaries

8) Schumpeter's theory comes under which economic theory?
a) Classical theory
b) Neo-classical theory
c) Austrian market process theory
d) All of above

9) Resilience in entrepreneurial competency is _____.
a) Relying on others to solve business challenges
b) Quitting the business when it fails
c) Persisting despite challenges and setbacks
d) Going on taking financial risks

10) In the innovation process, feasibility analysis is conducted to ____.
a) Determine if the idea is financially and technically viable
b) Launch the product with testing
c) Identify competitors for imitation
d) Making changes to the idea

11) Who introduced the concept of the seven sources of innovative opportunities?
a) Joseph Schumpeter b) Peter Drucker
c) Clayton Christensen d) Michael Porter

12) What is a key characteristic of a reactive innovation strategy?
a) The company innovates before competitors enter the market
b) It completely ignores industry changes
c) It consistently introduces radical innovations ahead of the market
d) It responds to competitors' innovations and assesses the demand

13) What does acquiring technological innovations mean for a business?
a) Investing in any technologies to maintain consistency
b) Acquisition only for technological advancements
c) Being unable to produce a technology on own
d) Adopting or purchasing new technologies to improve processes

14) A company that purchases the right to use another company's technology is engaging in _____.
a) Technology licensing b) Internal R&D
c) Purchase Order d) New innovations

SLR-QH-37

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Managing Innovation and Entrepreneurship (CIVHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.
3) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Attempt Following Questions.

a) Explain economic theories in detail. **06**

b) What are the types of businesses? **04**

Q.3 Attempt Following Questions. (Any One) **08**

a) Explain the innovation process in detail.

b) Give difference between innovative strategies.

Q.4 Attempt Following Questions. (Any Two) **10**

a) Explain government grants and investors.

b) Explain the types of innovation.

c) Explain Demographics, Process need and crowd funding.

SECTION – II

Q.5 Attempt Following Questions.

a) Explain success stories of any 2 entrepreneurs. **06**

b) Explain scalability and legal laws study. **04**

Q.6 Attempt Following Questions. (Any One) **08**

a) Explain any 4 strategic issues in International Business.

b) Explain any 4 ethics in International Business.

Q.7 Attempt Following Questions. (Any Two) **10**

a) Explain the process for problem identification.

b) Explain the process for problem solving.

c) Explain diversification and changing international environment.

SLR-QH-37

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Managing Innovation and Entrepreneurship (CIVHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In the Russia-Ukraine war, Ukraine has lost control over which of the regions
a) Crimea b) Kharkiv
c) Rivne d) All of these

2) When was the last time China conducted military exercises and attacks on Taiwan?
a) 2025 b) 2024
c) 2023 d) 2022

3) When did Palestine and Israel war begin?
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4) A well-defined problem statement should NOT include _____.
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14) The cargo needs documentation of which permissions?
   a) Insurance documents
   b) Health certificate
   c) Landing bill
   d) both a) & c)

SLR-QH-37

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Managing Innovation and Entrepreneurship (CIVHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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3) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Attempt Following Questions.

a) Explain economic theories in detail. **06**

b) What are the types of businesses? **04**

Q.3 Attempt Following Questions. (Any One) **08**

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SECTION – II

Q.5 Attempt Following Questions.

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a) Explain the process for problem identification.

b) Explain the process for problem solving.

c) Explain diversification and changing international environment.

SLR-QH-37

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Managing Innovation and Entrepreneurship (CIVHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

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c) Being unable to produce a technology on own
d) Adopting or purchasing new technologies to improve processes

2) A company that purchases the right to use another company's technology is engaging in _____.
a) Technology licensing b) Internal R&D
c) Purchase Order d) New innovations

3) What is an example of acquiring technology through strategic partnerships?
a) Forming a joint venture with a tech company to co-develop a product
b) To maintain independence
c) Partnering for marketing
d) Making research collaborations only

4) A tender notice is typically issued by _____.
a) Private individuals only
b) Financial institutions
c) Organizations or government bodies seeking suppliers
d) Customers looking for discounts

5) The cargo needs documentation of which permissions?
a) Insurance documents b) Health certificate
c) Landing bill d) both a) & c)

6) In the Russia-Ukraine war, Ukraine has lost control over which of the regions
a) Crimea b) Kharkiv
c) Rivne d) All of these

7) When was the last time China conducted military exercises and attacks on Taiwan?
a) 2025 b) 2024
c) 2023 d) 2022

8) When did Palestine and Israel war begin?
a) 2025 b) 2024
c) 2023 d) 2022

9) A well-defined problem statement should NOT include _____.
a) The context of the problem b) Multiple unrelated problems
c) The impact of the problem d) Clear boundaries

10) Schumpeter's theory comes under which economic theory?
a) Classical theory
b) Neo-classical theory
c) Austrian market process theory
d) All of above

11) Resilience in entrepreneurial competency is _____.
a) Relying on others to solve business challenges
b) Quitting the business when it fails
c) Persisting despite challenges and setbacks
d) Going on taking financial risks

12) In the innovation process, feasibility analysis is conducted to ____.
a) Determine if the idea is financially and technically viable
b) Launch the product with testing
c) Identify competitors for imitation
d) Making changes to the idea

13) Who introduced the concept of the seven sources of innovative opportunities?
a) Joseph Schumpeter b) Peter Drucker
c) Clayton Christensen d) Michael Porter

14) What is a key characteristic of a reactive innovation strategy?
a) The company innovates before competitors enter the market
b) It completely ignores industry changes
c) It consistently introduces radical innovations ahead of the market
d) It responds to competitors' innovations and assesses the demand

SLR-QH-37

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Managing Innovation and Entrepreneurship (CIVHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
4) Assume suitable data wherever necessary and mention it clearly.
3) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Attempt Following Questions.

a) Explain economic theories in detail. **06**

b) What are the types of businesses? **04**

Q.3 Attempt Following Questions. (Any One) **08**

a) Explain the innovation process in detail.

b) Give difference between innovative strategies.

Q.4 Attempt Following Questions. (Any Two) **10**

a) Explain government grants and investors.

b) Explain the types of innovation.

c) Explain Demographics, Process need and crowd funding.

SECTION – II

Q.5 Attempt Following Questions.

a) Explain success stories of any 2 entrepreneurs. **06**

b) Explain scalability and legal laws study. **04**

Q.6 Attempt Following Questions. (Any One) **08**

a) Explain any 4 strategic issues in International Business.

b) Explain any 4 ethics in International Business.

Q.7 Attempt Following Questions. (Any Two) **10**

a) Explain the process for problem identification.

b) Explain the process for problem solving.

c) Explain diversification and changing international environment.

SLR-QH-38

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Planning and Design of Rural Roads (CIVHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) Intermediate sight distance is defined as _____ the stopping sight distance.
a) Three time b) One time
c) Twice d) Four time

2) Transition Curve is provided at both ends of _____ Curve.
a) Horizontal b) Vertical
c) Widening d) None of the above

3) What is the side slope (H: V) for rural roads when the condition is embankment in silty/sandy/gravelly soil?
a) 2.5:1 to 3:1 b) 2:1
c) 1:1 to 0.5:1 d) 1/12:1 to 1/16:1

4) The required value of camber is dependent on the type of _____ and rainfall.
a) Pavement b) Embankment
c) Rural d) None of these

5) The maximum super elevation on hill roads should not exceed ____.
a) 7% b) 8%
c) 9% d) 10%

6) The type of Transition Curve that is generally provided on hill road is _____.
a) Circular b) Cubic parabola
c) Lemniscate spiral d) Spiral

7) For concrete and bituminous pavement value of camber is given by _____.

a) 0.5% b) 2%
c) 3 % d) 4%

8) The sight distance is measured along the middle of the _____.

a) Inner lane b) Outer lane
c) Middle lane d) None of these

9) Minimum thickness of the base of a flexible pavement is _____.

a) 15 cm b) 20 cm
c) 10 cm d) 5 cm

10) Which of the following it NOT a critical parameter to control cracking and rutting in a flexible pavement?

a) Tensile strain near the surface close to the edge of the wheel
b) Vertical sub-base strain
c) Vertical subgrade strain
d) Tensile strain at the bottom of bituminous layer

11) What is normally the primary objective of a Self Help Group (SHG)?

a) To provide micro-finance to groups
b) To improve technology of farming
c) To provide high quality seeds
d) To provide education needs

12) The interface treatment provided to plug in the voids of porous surfaces and to bond loose particles in bituminous pavements is called _____.

a) Tack coat b) Prime coat
c) Seal coat d) Surface dressing

13) Causeways are the type of _____.

a) Cross drainage structure
b) Side drains
c) Sub- surface drainage structure
d) Jelly drains

14) The seepage flow is present in _____.

a) Surface drainage b) Sub surface drainage
c) Camber d) Cross slope

SLR-QH-38

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Planning and Design of Rural Roads (CIVHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Solve following. (Any Two) **14**

a) Write short note on *'Planning Database in Rural Roads'.*

b) Explain in detail *"'Road alignment and Surveys'* in rural roads

c) Enlist and explain various factors affecting geometric design of roads.

Q.3 Solve following. (Any Two) **14**

a) On two way traffic road, speed of overtaking vehicle is 65 kmph and overtaken vehicle is 45 kmph. If average acceleration is 0.92 m/sec^2 and reaction time is 2.5 seconds, calculate Overtaking Sight Distance (OSD).

b) What are the various *'Design parameters'* for Pavement design in Rural Roads?

c) CBR test is performed on flexible pavement and load verses penetration table is shown below, an initial traffic of 30 CVPD, with a growth rate of 6 per cent per annum for a location having annual rainfall of 1200mm. The design life is 10 years. Determine the pavement thickness.

Penetration	0	0.5	1	1.5	2	2.5	3	4	5	7.5	10	12.5
Load (Kg)	0	8	26	43	63	75	84	105	114	135	151	165

Section – II

Q.4 Solve following. (Any Two) **14**

a) Explain the requirements of surface drain; road side drains, shoulder drains, catch water drains.

b) Explain standard designs of culverts.

c) Explain Construction of *fly ash embankments.*

Q.5 Solve following. (Any Two) **14**

a) Explain *quality control in construction*.

b) Explain maintenance of paved roads.

c) Explain the concept of *'Rehabilitation'*.

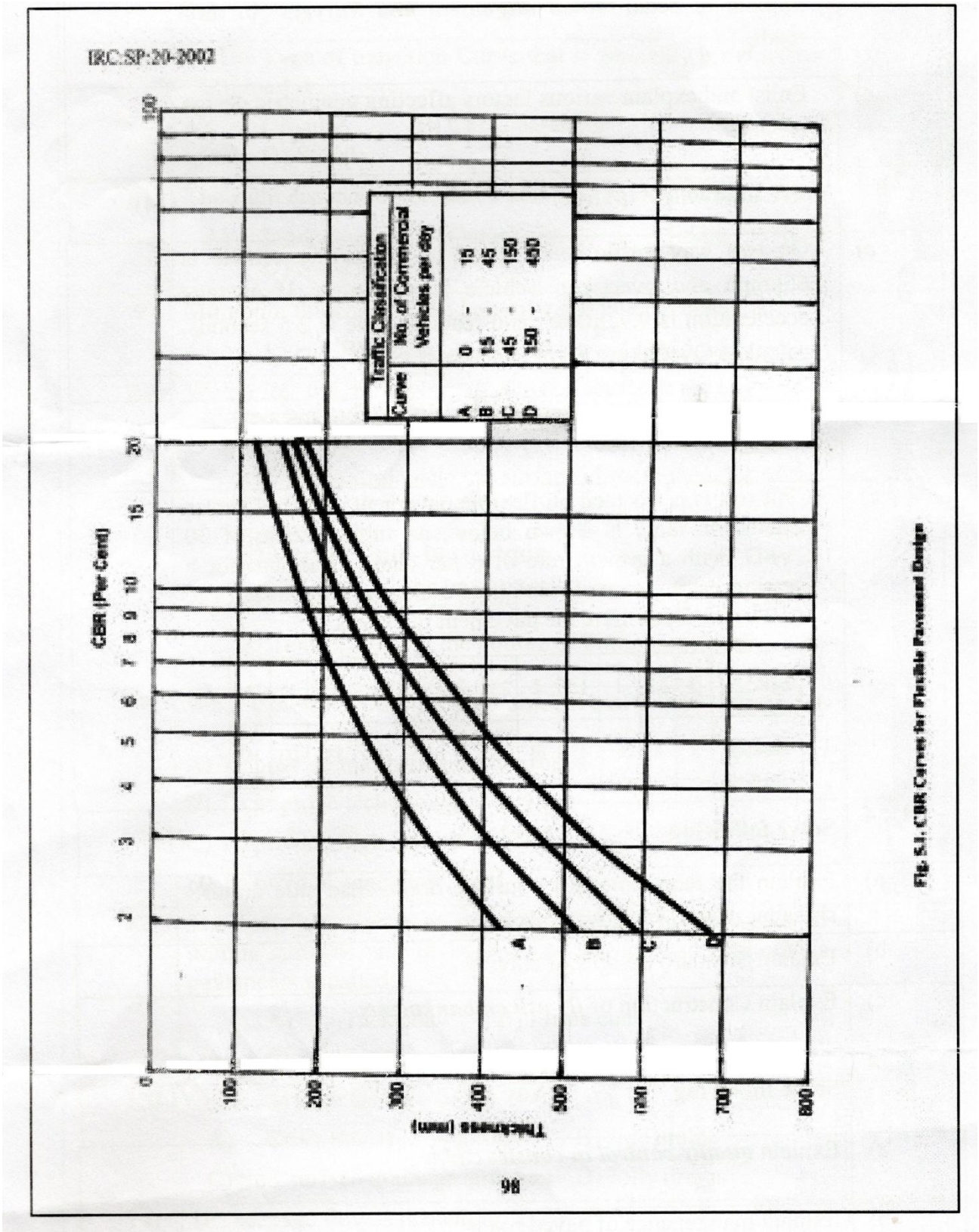
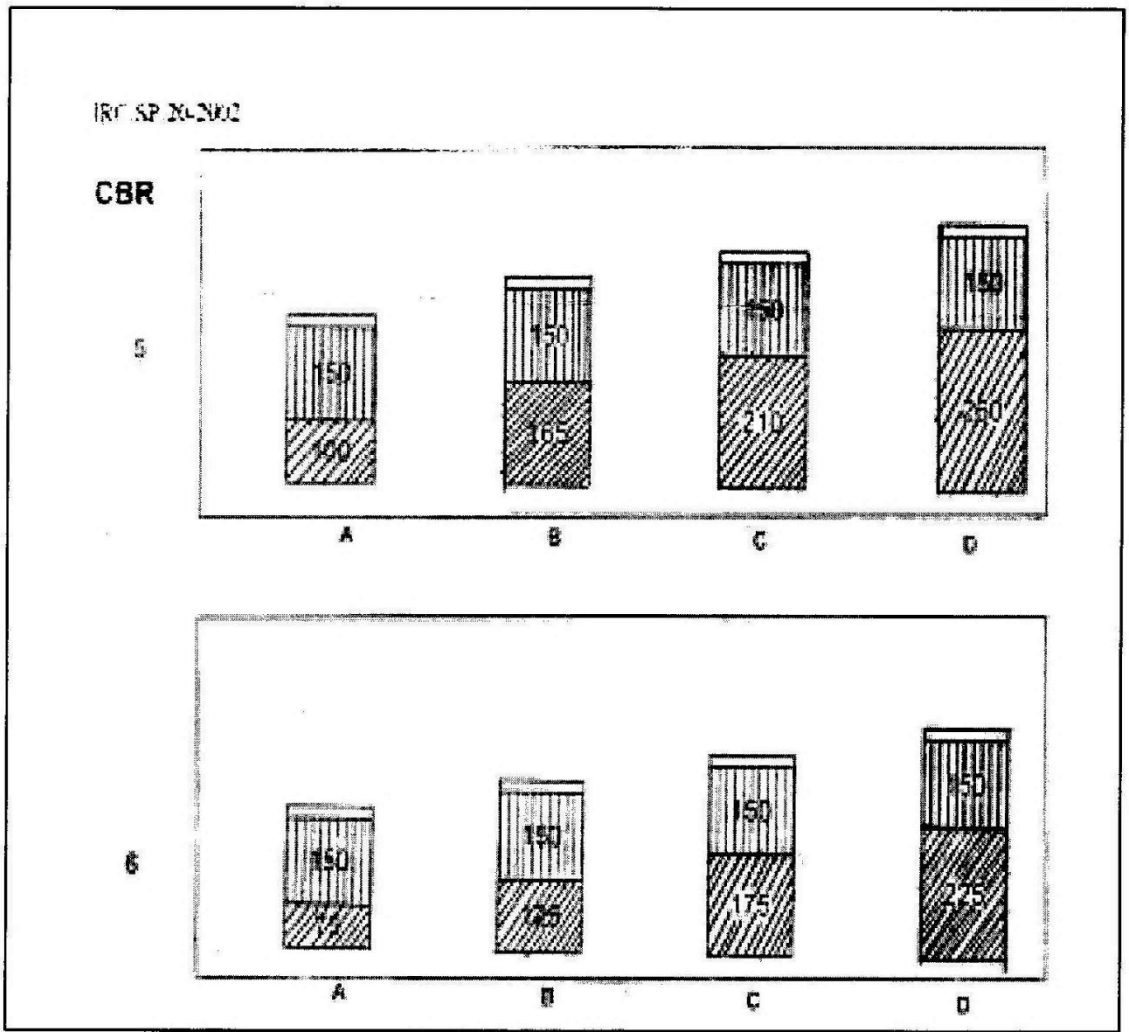


Fig. 5.1. CBR Curves for Flexible Pavement Design


IRC SP 20-2002
CBR
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SLR-QH-38

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April-2026
Planning and Design of Rural Roads (CIVHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) The sight distance is measured along the middle of the _____.
a) Inner lane b) Outer lane
c) Middle lane d) None of these

2) Minimum thickness of the base of a flexible pavement is _____.
a) 15 cm b) 20 cm
c) 10 cm d) 5 cm

3) Which of the following it NOT a critical parameter to control cracking and rutting in a flexible pavement?
a) Tensile strain near the surface close to the edge of the wheel
b) Vertical sub-base strain
c) Vertical subgrade strain
d) Tensile strain at the bottom of bituminous layer

4) What is normally the primary objective of a Self Help Group (SHG)?
a) To provide micro-finance to groups
b) To improve technology of farming
c) To provide high quality seeds
d) To provide education needs

5) The interface treatment provided to plug in the voids of porous surfaces and to bond loose particles in bituminous pavements is called _____.
a) Tack coat b) Prime coat
c) Seal coat d) Surface dressing

6) Causeways are the type of _____.
a) Cross drainage structure
b) Side drains
c) Sub- surface drainage structure
d) Jelly drains

7) The seepage flow is present in _____.
a) Surface drainage
b) Sub surface drainage
c) Camber
d) Cross slope

8) Intermediate sight distance is defined as _____ the stopping sight distance.
a) Three time
b) One time
c) Twice
d) Four time

9) Transition Curve is provided at both ends of _____ Curve.
a) Horizontal
b) Vertical
c) Widening
d) None of the above

10) What is the side slope (H: V) for rural roads when the condition is embankment in silty/sandy/gravelly soil?
a) 2.5:1 to 3:1
b) 2:1
c) 1:1 to 0.5:1
d) 1/12:1 to 1/16:1

11) The required value of camber is dependent on the type of _____ and rainfall.
a) Pavement
b) Embankment
c) Rural
d) None of these

12) The maximum super elevation on hill roads should not exceed ____.
a) 7%
b) 8%
c) 9%
d) 10%

13) The type of Transition Curve that is generally provided on hill road is _____.
a) Circular
b) Cubic parabola
c) Lemniscate spiral
d) Spiral

14) For concrete and bituminous pavement value of camber is given by _____.
a) 0.5%
b) 2%
c) 3 %
d) 4%

SLR-QH-38

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April- 2026
Planning and Design of Rural Roads (CIVHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Solve following. (Any Two) **14**

a) Write short note on *'Planning Database in Rural Roads'.*

b) Explain in detail *"'Road alignment and Surveys'* in rural roads

c) Enlist and explain various factors affecting geometric design of roads.

Q.3 Solve following. (Any Two) **14**

a) On two way traffic road, speed of overtaking vehicle is 65 kmph and overtaken vehicle is 45 kmph. If average acceleration is 0.92 m/sec^2 and reaction time is 2.5 seconds, calculate Overtaking Sight Distance (OSD).

b) What are the various *'Design parameters'* for Pavement design in Rural Roads?

c) CBR test is performed on flexible pavement and load verses penetration table is shown below, an initial traffic of 30 CVPD, with a growth rate of 6 per cent per annum for a location having annual rainfall of 1200mm. The design life is 10 years. Determine the pavement thickness.

Penetration	0	0.5	1	1.5	2	2.5	3	4	5	7.5	10	12.5
Load (Kg)	0	8	26	43	63	75	84	105	114	135	151	165

Section – II

Q.4 Solve following. (Any Two) **14**

a) Explain the requirements of surface drain; road side drains, shoulder drains, catch water drains.

b) Explain standard designs of culverts.

c) Explain Construction of *fly ash embankments.*

Q.5 Solve following. (Any Two) **14**

a) Explain *quality control in construction*.

b) Explain maintenance of paved roads.

c) Explain the concept of *'Rehabilitation'*.

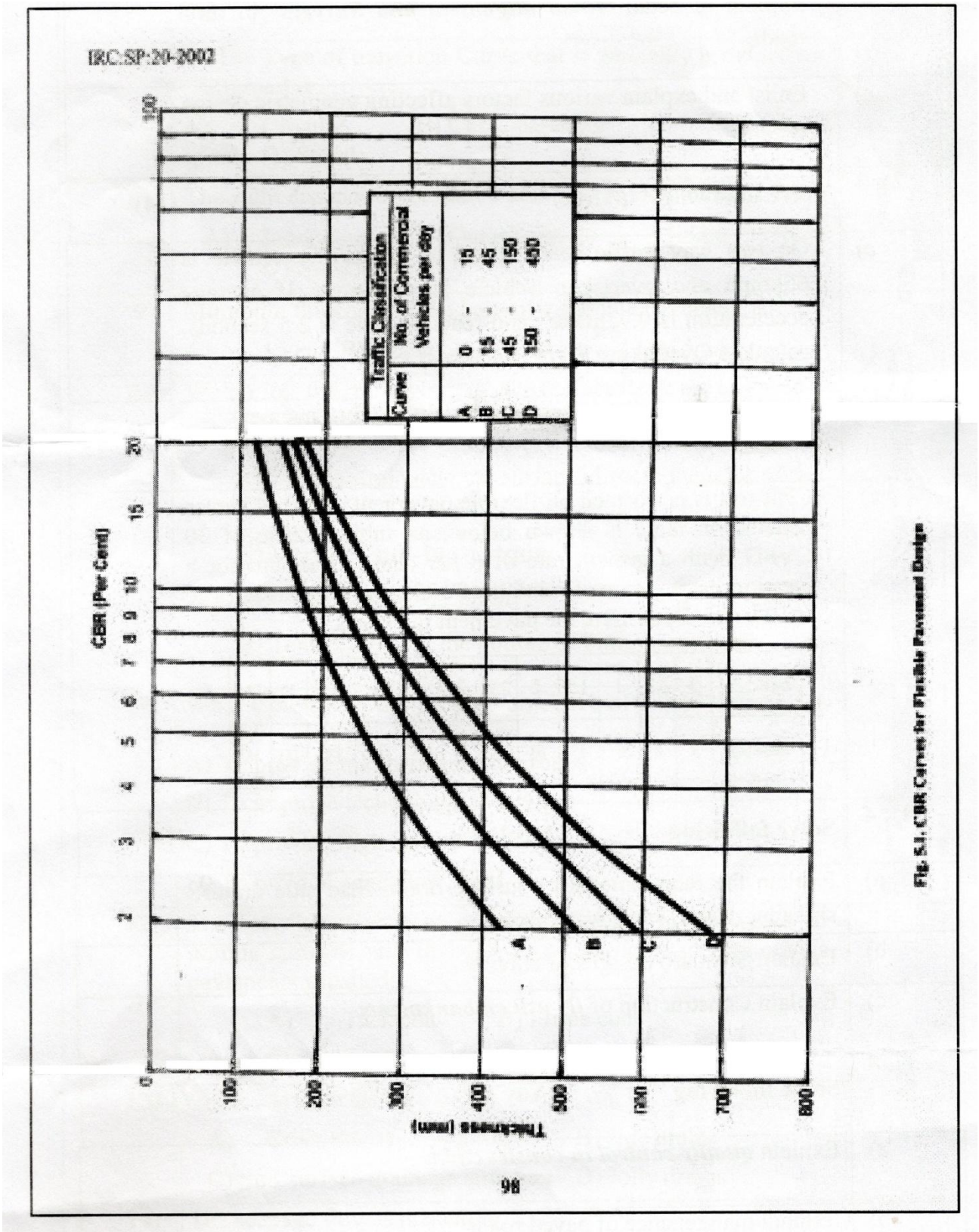
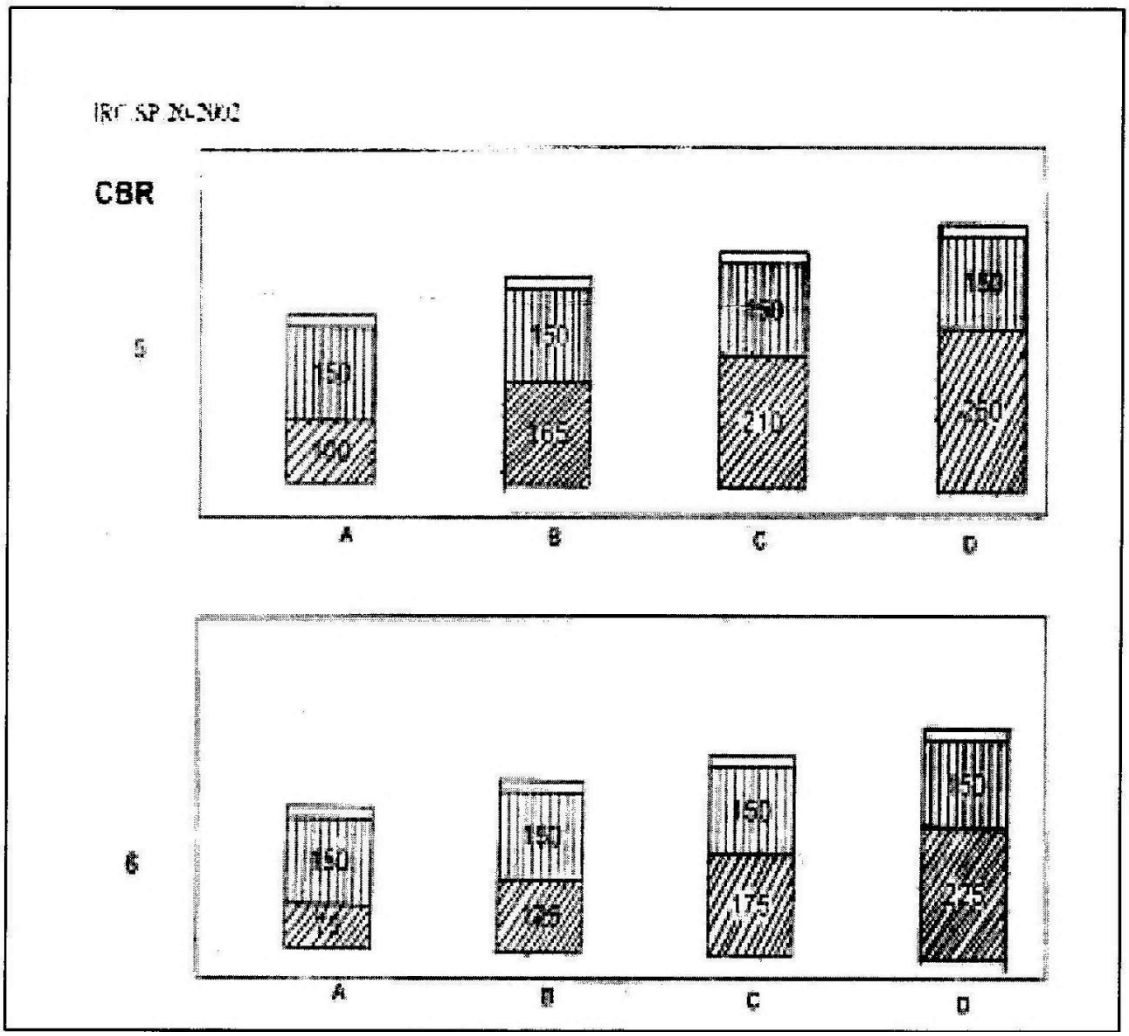


Fig. 5.1. CBR Curves for Flexible Pavement Design


IRC SP 20-2002
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175
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225
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B
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SLR-QH-38

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April-2026
Planning and Design of Rural Roads (CIVHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. 14

1) What is normally the primary objective of a Self Help Group (SHG)?
a) To provide micro-finance to groups
b) To improve technology of farming
c) To provide high quality seeds
d) To provide education needs

2) The interface treatment provided to plug in the voids of porous surfaces and to bond loose particles in bituminous pavements is called _____.
a) Tack coat b) Prime coat
c) Seal coat d) Surface dressing

3) Causeways are the type of _____.
a) Cross drainage structure
b) Side drains
c) Sub- surface drainage structure
d) Jelly drains

4) The seepage flow is present in _____.
a) Surface drainage b) Sub surface drainage
c) Camber d) Cross slope

5) Intermediate sight distance is defined as _____ the stopping sight distance.
a) Three time b) One time
c) Twice d) Four time

6) Transition Curve is provided at both ends of _____ Curve.
a) Horizontal b) Vertical
c) Widening d) None of the above

7) What is the side slope (H: V) for rural roads when the condition is embankment in silty/sandy/gravelly soil?
a) 2.5:1 to 3:1 b) 2:1
c) 1:1 to 0.5:1 d) 1/12:1 to 1/16:1

8) The required value of camber is dependent on the type of _____ and rainfall.
a) Pavement b) Embankment
c) Rural d) None of these

9) The maximum super elevation on hill roads should not exceed ____.
a) 7% b) 8%
c) 9% d) 10%

10) The type of Transition Curve that is generally provided on hill road is _____.
a) Circular b) Cubic parabola
c) Lemniscate spiral d) Spiral

11) For concrete and bituminous pavement value of camber is given by _____.
a) 0.5% b) 2%
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12) The sight distance is measured along the middle of the _____.
a) Inner lane b) Outer lane
c) Middle lane d) None of these

13) Minimum thickness of the base of a flexible pavement is _____.
a) 15 cm b) 20 cm
c) 10 cm d) 5 cm

14) Which of the following it NOT a critical parameter to control cracking and rutting in a flexible pavement?
a) Tensile strain near the surface close to the edge of the wheel
b) Vertical sub-base strain
c) Vertical subgrade strain
d) Tensile strain at the bottom of bituminous layer

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April- 2026
Planning and Design of Rural Roads (CIVHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Solve following. (Any Two) **14**

a) Write short note on *'Planning Database in Rural Roads'.*

b) Explain in detail *"'Road alignment and Surveys'* in rural roads

c) Enlist and explain various factors affecting geometric design of roads.

Q.3 Solve following. (Any Two) **14**

a) On two way traffic road, speed of overtaking vehicle is 65 kmph and overtaken vehicle is 45 kmph. If average acceleration is 0.92 m/sec^2 and reaction time is 2.5 seconds, calculate Overtaking Sight Distance (OSD).

b) What are the various *'Design parameters'* for Pavement design in Rural Roads?

c) CBR test is performed on flexible pavement and load verses penetration table is shown below, an initial traffic of 30 CVPD, with a growth rate of 6 per cent per annum for a location having annual rainfall of 1200mm. The design life is 10 years. Determine the pavement thickness.

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Load (Kg)	0	8	26	43	63	75	84	105	114	135	151	165

Section – II

Q.4 Solve following. (Any Two) **14**

a) Explain the requirements of surface drain; road side drains, shoulder drains, catch water drains.

b) Explain standard designs of culverts.

c) Explain Construction of *fly ash embankments.*

Q.5 Solve following. (Any Two) **14**

a) Explain *quality control in construction*.

b) Explain maintenance of paved roads.

c) Explain the concept of *'Rehabilitation'*.

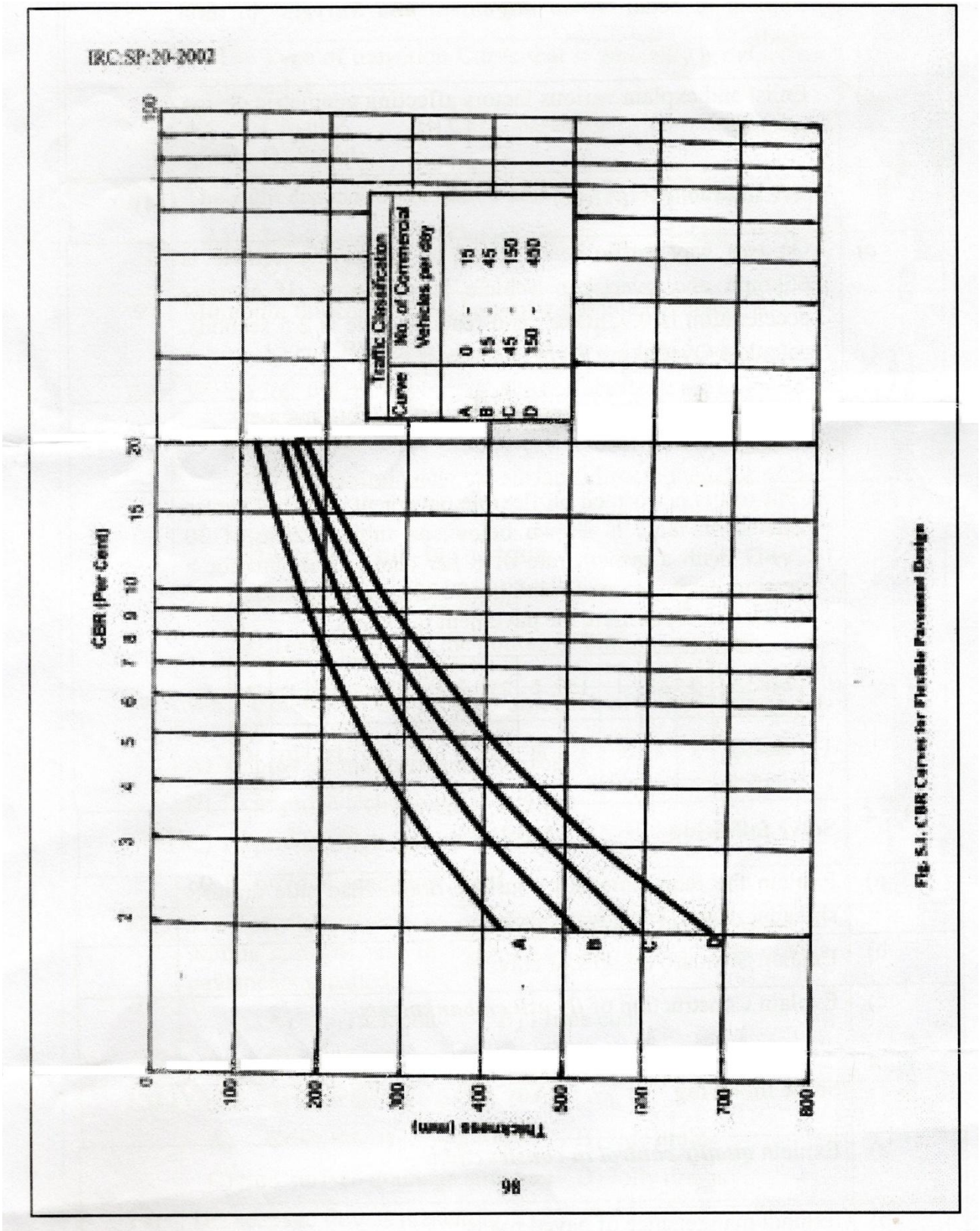
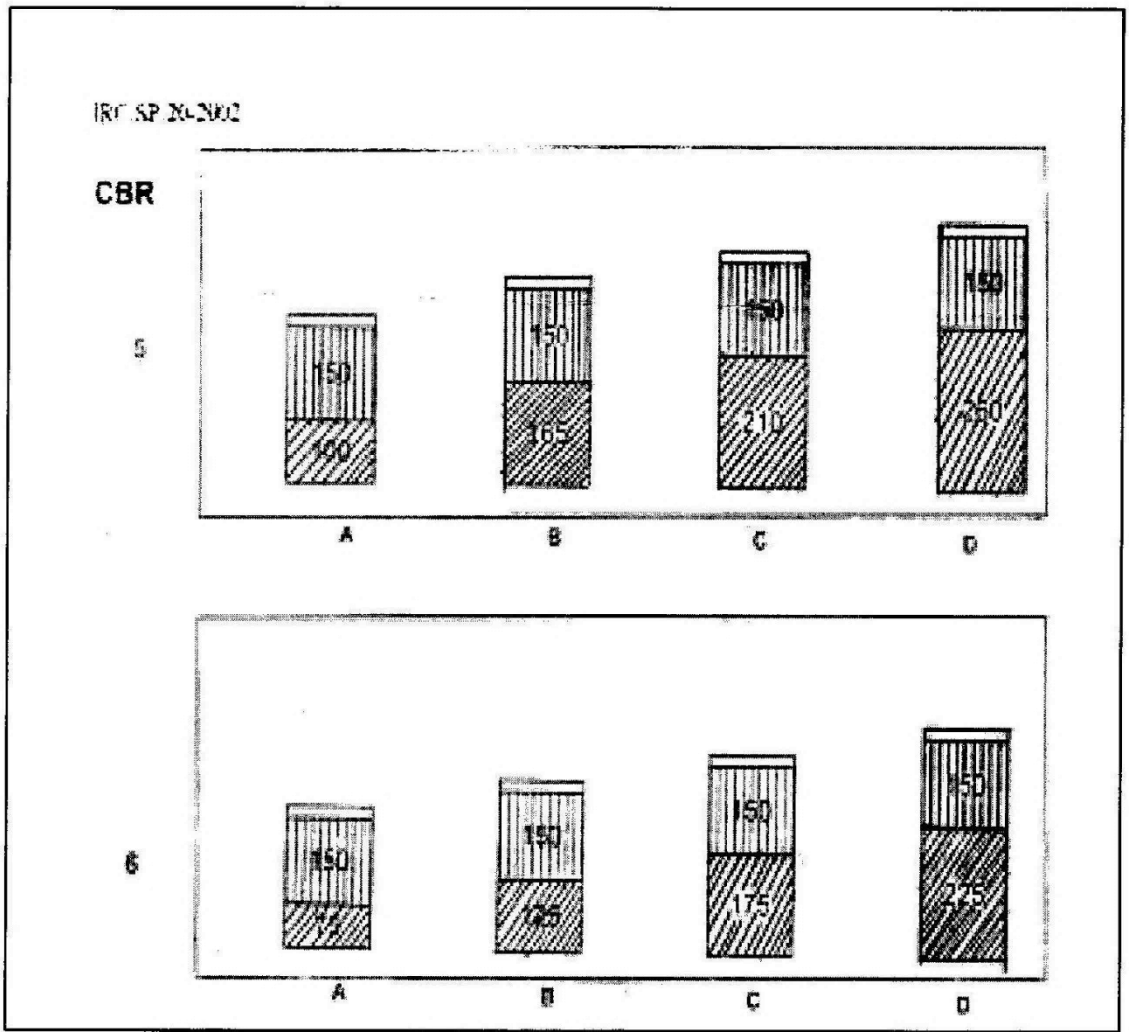


Fig. 5.1. CBR Curves for Flexible Pavement Design


IRC SP 20-2002
CBR
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SLR-QH-38

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April-2026
Planning and Design of Rural Roads (CIVHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) The type of Transition Curve that is generally provided on hill road is _____.
a) Circular b) Cubic parabola
c) Lemniscate spiral d) Spiral

2) For concrete and bituminous pavement value of camber is given by _____.
a) 0.5% b) 2%
c) 3 % d) 4%

3) The sight distance is measured along the middle of the _____.
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c) Middle lane d) None of these

4) Minimum thickness of the base of a flexible pavement is _____.
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a) Tensile strain near the surface close to the edge of the wheel
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6) What is normally the primary objective of a Self Help Group (SHG)?
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d) Cross slope

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a) Horizontal
b) Vertical
c) Widening
d) None of the above

12) What is the side slope (H: V) for rural roads when the condition is embankment in silty/sandy/gravelly soil?
a) 2.5:1 to 3:1
b) 2:1
c) 1:1 to 0.5:1
d) 1/12:1 to 1/16:1

13) The required value of camber is dependent on the type of _____ and rainfall.
a) Pavement
b) Embankment
c) Rural
d) None of these

14) The maximum super elevation on hill roads should not exceed ____.
a) 7%
b) 8%
c) 9%
d) 10%

SLR-QH-38

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April- 2026
Planning and Design of Rural Roads (CIVHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data wherever needed and mention it clearly.

Section – I

Q.2 Solve following. (Any Two) **14**

a) Write short note on *'Planning Database in Rural Roads'.*

b) Explain in detail *"'Road alignment and Surveys'* in rural roads

c) Enlist and explain various factors affecting geometric design of roads.

Q.3 Solve following. (Any Two) **14**

a) On two way traffic road, speed of overtaking vehicle is 65 kmph and overtaken vehicle is 45 kmph. If average acceleration is 0.92 m/sec^2 and reaction time is 2.5 seconds, calculate Overtaking Sight Distance (OSD).

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Load (Kg)	0	8	26	43	63	75	84	105	114	135	151	165

Section – II

Q.4 Solve following. (Any Two) **14**

a) Explain the requirements of surface drain; road side drains, shoulder drains, catch water drains.

b) Explain standard designs of culverts.

c) Explain Construction of *fly ash embankments.*

Q.5 Solve following. (Any Two) **14**

a) Explain *quality control in construction*.

b) Explain maintenance of paved roads.

c) Explain the concept of *'Rehabilitation'*.

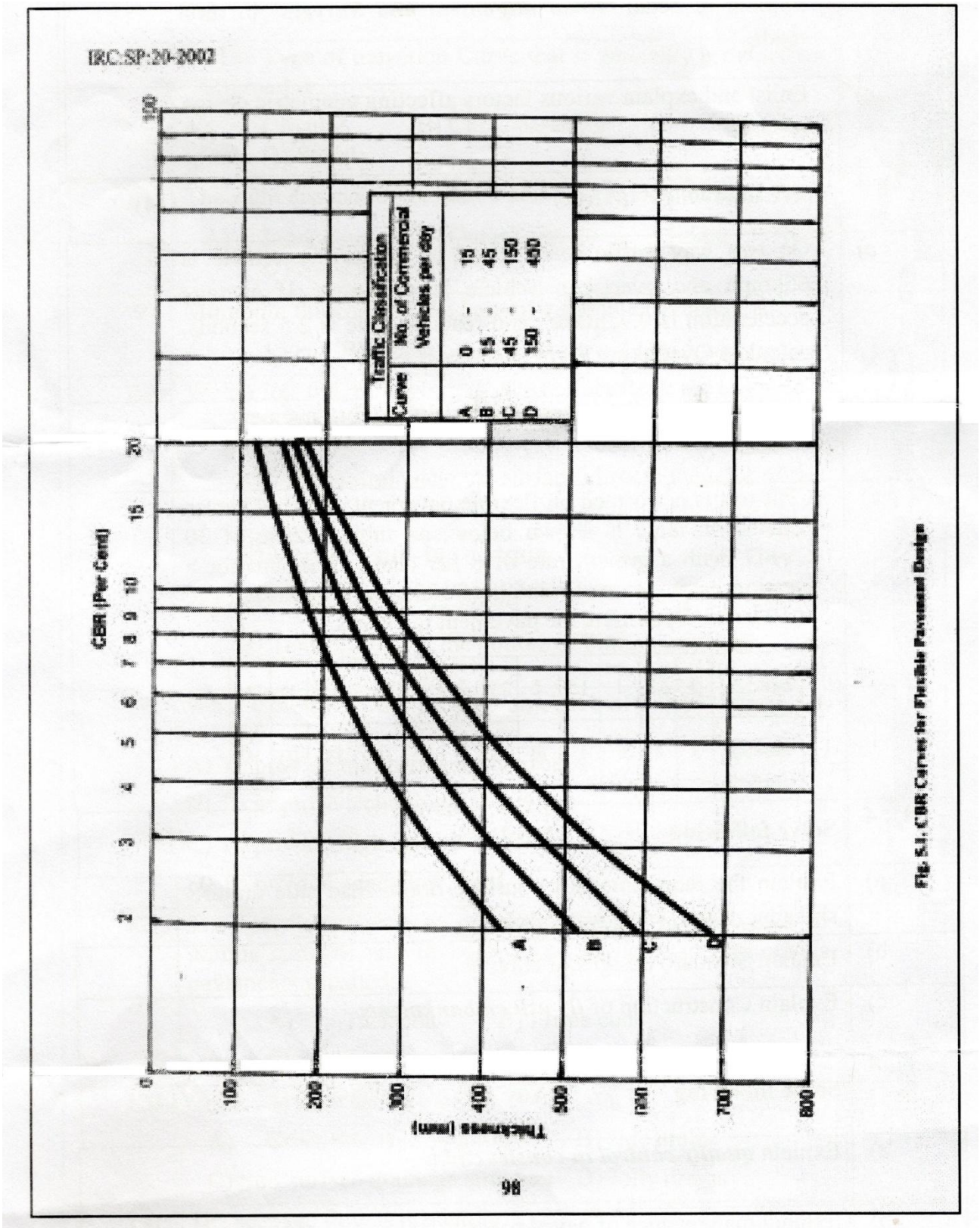
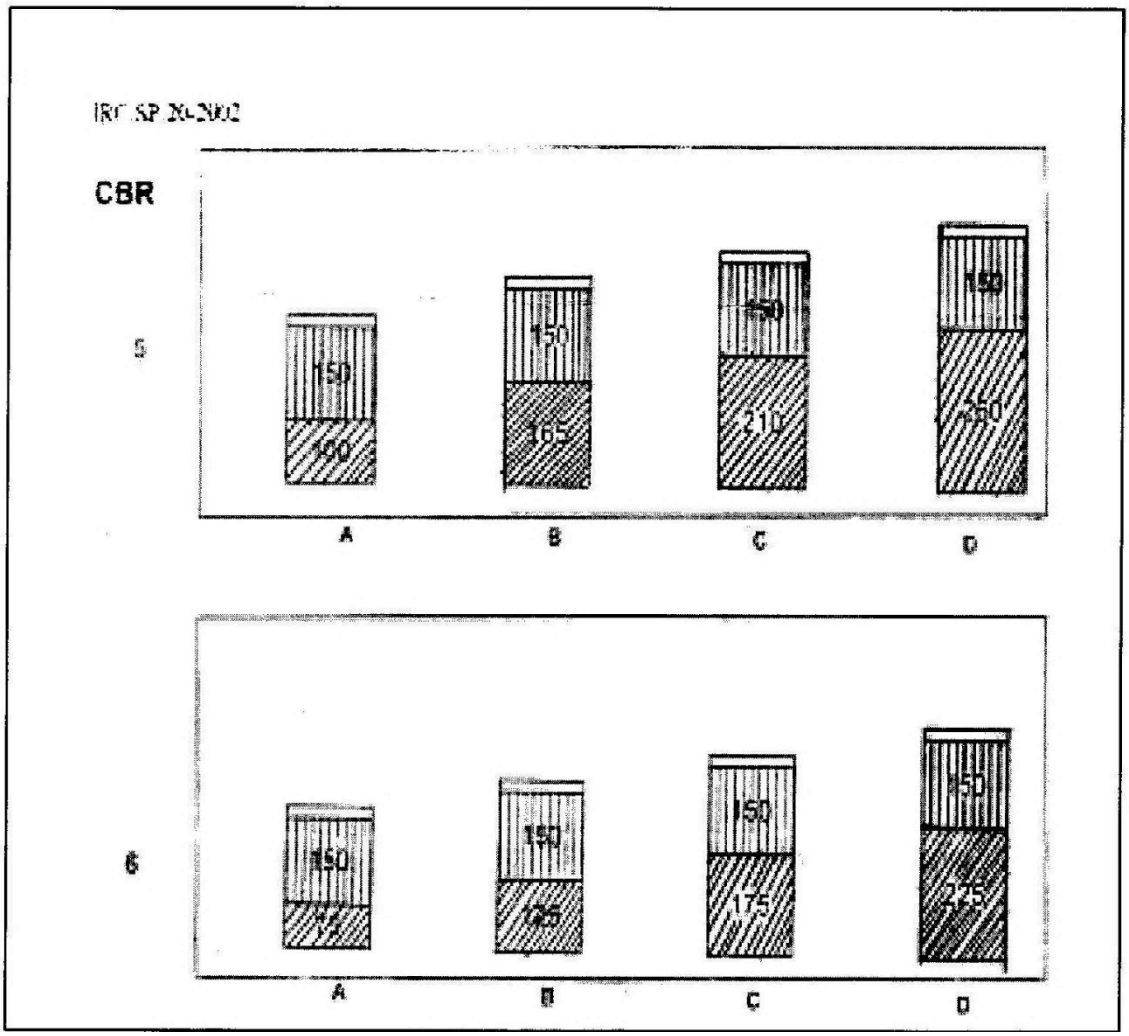


Fig. 5.1. CBR Curves for Flexible Pavement Design


IRC SP 20-2002
CBR
5
150
150
165
210
150
350
A
B
C
D
6
150
150
150
175
150
275
A
B
C
D

SLR-QH-39

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Construction Materials: Sustainability and Usability (CIVHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Sustainable building materials are those which _____.
a) Increase construction cost only
b) Cause environmental pollution
c) Reduce environmental impact during their life cycle
d) Are always imported

2) Which of the following is an example of a natural building material?
a) Steel b) Cement
c) Bamboo d) Aluminum

3) Materials that are obtained from nearby sources to reduce transportation energy are called _____.
a) Synthetic materials b) Imported materials
c) Locally available materials d) Artificial materials

4) Which of the following materials is considered a bio-material?
a) Fly ash brick b) Bamboo
c) Plastic sheet d) Aluminum panel

5) Low VOC paints are preferred in sustainable construction because they _____.
a) Increase cost
b) Reduce indoor air pollution
c) Increase wall strength
d) Improve waterproofing

6) Salvaged building materials are _____.
a) Newly manufactured materials
b) Materials imported from other countries
c) Materials recovered from old buildings for reuse
d) Materials produced in factories only

7) Which of the following is an example of recycled material?
a) Natural stone
b) Timber log
c) Recycled steel
d) Clay soil

8) Embodied energy refers to _____.
a) Energy used during building operation
b) Total energy required to produce a material
c) Energy used for lighting only
d) Energy used in transportation only

9) Carbon footprint of a material means _____.
a) Weight of carbon in the material
b) Total greenhouse gas emissions caused by the material
c) Density of carbon compounds
d) Carbon content in soil

10) Which analysis method studies the environmental impact of a material from production to disposal?
a) Stress analysis
b) Life Cycle Assessment (LCA)
c) Structural analysis
d) Hydrological analysis

11) CSEB stands for _____.
a) Compressed Stabilized Earth Block
b) Cement Stabilized Energy Block
c) Concrete Structural Energy Block
d) Composite Stabilized Earth Beam

12) Filler slab technique is mainly used to _____.
a) Increase slab thickness
b) Reduce dead weight and concrete consumption
c) Increase reinforcement
d) Improve foundation strength

13) Fly ash used in construction is mainly a waste product from _____.
a) Textile industry
b) Thermal power plants
c) Plastic industry
d) Agriculture

14) Eco-audit mainly evaluates _____.
a) Only cost of materials
b) Only strength of materials
c) Environmental impact and energy use of materials
d) Colour and appearance of materials

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Construction Materials: Sustainability and Usability (CIVHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve the following. (Any Two) **14**

a) Enlist and explain locally available and manufactured materials.

b) Explain the idea of “Embodied Energy”.

c) Explain Data sets available for calculation of embodied energy.

Q.3 Solve the following. (Any Two) **14**

a) Explain Concept of embodied carbon or carbon footprint of material.

b) Explain alternatives construction techniques such as SMB, CSEB, and steam cured blocks.

c) Explain Case studies of reinforced concrete masonry, vaulted roofs, ferro-cement walls etc.

SECTION – II

Q.4 Solve the following. (Any Two) **14**

a) Explain innovative use of waste materials.

b) Explain innovative use of salvaged materials.

c) Explain Eco auditing of Reusable and disposable cups, Grocery bags.

Q.5 Solve the following. (Any Two) **14**

a) Explain Principles of materials selection, Selection criteria and property charts.

b) Explain Eco-informed materials selection introduction, Selection per unit of function, Systematic eco-selection.

c) Explain materials for light weight structures, material substitution for eco-efficient design.

SLR-QH-39

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Construction Materials: Sustainability and Usability (CIVHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Embodied energy refers to _____.
a) Energy used during building operation
b) Total energy required to produce a material
c) Energy used for lighting only
d) Energy used in transportation only

2) Carbon footprint of a material means _____.
a) Weight of carbon in the material
b) Total greenhouse gas emissions caused by the material
c) Density of carbon compounds
d) Carbon content in soil

3) Which analysis method studies the environmental impact of a material from production to disposal?
a) Stress analysis b) Life Cycle Assessment (LCA)
c) Structural analysis d) Hydrological analysis

4) CSEB stands for _____.
a) Compressed Stabilized Earth Block
b) Cement Stabilized Energy Block
c) Concrete Structural Energy Block
d) Composite Stabilized Earth Beam

5) Filler slab technique is mainly used to _____.
a) Increase slab thickness
b) Reduce dead weight and concrete consumption
c) Increase reinforcement
d) Improve foundation strength

6) Fly ash used in construction is mainly a waste product from _____.
a) Textile industry
b) Thermal power plants
c) Plastic industry
d) Agriculture

7) Eco-audit mainly evaluates _____.
a) Only cost of materials
b) Only strength of materials
c) Environmental impact and energy use of materials
d) Colour and appearance of materials

8) Sustainable building materials are those which _____.
a) Increase construction cost only
b) Cause environmental pollution
c) Reduce environmental impact during their life cycle
d) Are always imported

9) Which of the following is an example of a natural building material?
a) Steel
b) Cement
c) Bamboo
d) Aluminum

10) Materials that are obtained from nearby sources to reduce transportation energy are called _____.
a) Synthetic materials
b) Imported materials
c) Locally available materials
d) Artificial materials

11) Which of the following materials is considered a bio-material?
a) Fly ash brick
b) Bamboo
c) Plastic sheet
d) Aluminum panel

12) Low VOC paints are preferred in sustainable construction because they _____.
a) Increase cost
b) Reduce indoor air pollution
c) Increase wall strength
d) Improve waterproofing

13) Salvaged building materials are _____.
a) Newly manufactured materials
b) Materials imported from other countries
c) Materials recovered from old buildings for reuse
d) Materials produced in factories only

14) Which of the following is an example of recycled material?
a) Natural stone
b) Timber log
c) Recycled steel
d) Clay soil

SLR-QH-39

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Construction Materials: Sustainability and Usability (CIVHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve the following. (Any Two) **14**

a) Enlist and explain locally available and manufactured materials.

b) Explain the idea of “Embodied Energy”.

c) Explain Data sets available for calculation of embodied energy.

Q.3 Solve the following. (Any Two) **14**

a) Explain Concept of embodied carbon or carbon footprint of material.

b) Explain alternatives construction techniques such as SMB, CSEB, and steam cured blocks.

c) Explain Case studies of reinforced concrete masonry, vaulted roofs, ferro-cement walls etc.

SECTION – II

Q.4 Solve the following. (Any Two) **14**

a) Explain innovative use of waste materials.

b) Explain innovative use of salvaged materials.

c) Explain Eco auditing of Reusable and disposable cups, Grocery bags.

Q.5 Solve the following. (Any Two) **14**

a) Explain Principles of materials selection, Selection criteria and property charts.

b) Explain Eco-informed materials selection introduction, Selection per unit of function, Systematic eco-selection.

c) Explain materials for light weight structures, material substitution for eco-efficient design.

SLR-QH-39

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Construction Materials: Sustainability and Usability (CIVHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) CSEB stands for _____.
a) Compressed Stabilized Earth Block
b) Cement Stabilized Energy Block
c) Concrete Structural Energy Block
d) Composite Stabilized Earth Beam

2) Filler slab technique is mainly used to _____.
a) Increase slab thickness
b) Reduce dead weight and concrete consumption
c) Increase reinforcement
d) Improve foundation strength

3) Fly ash used in construction is mainly a waste product from _____.
a) Textile industry b) Thermal power plants
c) Plastic industry d) Agriculture

4) Eco-audit mainly evaluates _____.
a) Only cost of materials
b) Only strength of materials
c) Environmental impact and energy use of materials
d) Colour and appearance of materials

5) Sustainable building materials are those which _____.
a) Increase construction cost only
b) Cause environmental pollution
c) Reduce environmental impact during their life cycle
d) Are always imported

6) Which of the following is an example of a natural building material?
a) Steel b) Cement
c) Bamboo d) Aluminum

7) Materials that are obtained from nearby sources to reduce transportation energy are called _____.
a) Synthetic materials b) Imported materials
c) Locally available materials d) Artificial materials

8) Which of the following materials is considered a bio-material?
a) Fly ash brick b) Bamboo
c) Plastic sheet d) Aluminum panel

9) Low VOC paints are preferred in sustainable construction because they _____.
a) Increase cost
b) Reduce indoor air pollution
c) Increase wall strength
d) Improve waterproofing

10) Salvaged building materials are _____.
a) Newly manufactured materials
b) Materials imported from other countries
c) Materials recovered from old buildings for reuse
d) Materials produced in factories only

11) Which of the following is an example of recycled material?
a) Natural stone b) Timber log
c) Recycled steel d) Clay soil

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a) Energy used during building operation
b) Total energy required to produce a material
c) Energy used for lighting only
d) Energy used in transportation only

13) Carbon footprint of a material means _____.
a) Weight of carbon in the material
b) Total greenhouse gas emissions caused by the material
c) Density of carbon compounds
d) Carbon content in soil

14) Which analysis method studies the environmental impact of a material from production to disposal?
a) Stress analysis b) Life Cycle Assessment (LCA)
c) Structural analysis d) Hydrological analysis

SLR-QH-39

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Construction Materials: Sustainability and Usability (CIVHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve the following. (Any Two) **14**

a) Enlist and explain locally available and manufactured materials.

b) Explain the idea of “Embodied Energy”.

c) Explain Data sets available for calculation of embodied energy.

Q.3 Solve the following. (Any Two) **14**

a) Explain Concept of embodied carbon or carbon footprint of material.

b) Explain alternatives construction techniques such as SMB, CSEB, and steam cured blocks.

c) Explain Case studies of reinforced concrete masonry, vaulted roofs, ferro-cement walls etc.

SECTION – II

Q.4 Solve the following. (Any Two) **14**

a) Explain innovative use of waste materials.

b) Explain innovative use of salvaged materials.

c) Explain Eco auditing of Reusable and disposable cups, Grocery bags.

Q.5 Solve the following. (Any Two) **14**

a) Explain Principles of materials selection, Selection criteria and property charts.

b) Explain Eco-informed materials selection introduction, Selection per unit of function, Systematic eco-selection.

c) Explain materials for light weight structures, material substitution for eco-efficient design.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Construction Materials: Sustainability and Usability (CIVHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Salvaged building materials are _____.
a) Newly manufactured materials
b) Materials imported from other countries
c) Materials recovered from old buildings for reuse
d) Materials produced in factories only

2) Which of the following is an example of recycled material?
a) Natural stone b) Timber log
c) Recycled steel d) Clay soil

3) Embodied energy refers to _____.
a) Energy used during building operation
b) Total energy required to produce a material
c) Energy used for lighting only
d) Energy used in transportation only

4) Carbon footprint of a material means _____.
a) Weight of carbon in the material
b) Total greenhouse gas emissions caused by the material
c) Density of carbon compounds
d) Carbon content in soil

5) Which analysis method studies the environmental impact of a material from production to disposal?
a) Stress analysis b) Life Cycle Assessment (LCA)
c) Structural analysis d) Hydrological analysis

6) CSEB stands for _____.
a) Compressed Stabilized Earth Block
b) Cement Stabilized Energy Block
c) Concrete Structural Energy Block
d) Composite Stabilized Earth Beam

7) Filler slab technique is mainly used to _____.
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b) Reduce dead weight and concrete consumption
c) Increase reinforcement
d) Improve foundation strength

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b) Thermal power plants
c) Plastic industry
d) Agriculture

9) Eco-audit mainly evaluates _____.
a) Only cost of materials
b) Only strength of materials
c) Environmental impact and energy use of materials
d) Colour and appearance of materials

10) Sustainable building materials are those which _____.
a) Increase construction cost only
b) Cause environmental pollution
c) Reduce environmental impact during their life cycle
d) Are always imported

11) Which of the following is an example of a natural building material?
a) Steel
b) Cement
c) Bamboo
d) Aluminum

12) Materials that are obtained from nearby sources to reduce transportation energy are called _____.
a) Synthetic materials
b) Imported materials
c) Locally available materials
d) Artificial materials

13) Which of the following materials is considered a bio-material?
a) Fly ash brick
b) Bamboo
c) Plastic sheet
d) Aluminum panel

14) Low VOC paints are preferred in sustainable construction because they _____.
a) Increase cost
b) Reduce indoor air pollution
c) Increase wall strength
d) Improve waterproofing

SLR-QH-39

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Construction Materials: Sustainability and Usability (CIVHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve the following. (Any Two) **14**

a) Enlist and explain locally available and manufactured materials.

b) Explain the idea of “Embodied Energy”.

c) Explain Data sets available for calculation of embodied energy.

Q.3 Solve the following. (Any Two) **14**

a) Explain Concept of embodied carbon or carbon footprint of material.

b) Explain alternatives construction techniques such as SMB, CSEB, and steam cured blocks.

c) Explain Case studies of reinforced concrete masonry, vaulted roofs, ferro-cement walls etc.

SECTION – II

Q.4 Solve the following. (Any Two) **14**

a) Explain innovative use of waste materials.

b) Explain innovative use of salvaged materials.

c) Explain Eco auditing of Reusable and disposable cups, Grocery bags.

Q.5 Solve the following. (Any Two) **14**

a) Explain Principles of materials selection, Selection criteria and property charts.

b) Explain Eco-informed materials selection introduction, Selection per unit of function, Systematic eco-selection.

c) Explain materials for light weight structures, material substitution for eco-efficient design.

SLR-QH-40

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Elevated Structures in Railway (CIVHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) The ideal location for a railway bridge is _____.
a) Upstream of river bends
b) On a sharp meander
c) On a straight reach of the river
d) In a delta region

2) A reconnaissance survey for a bridge location is primarily used to _____.
a) Determine economic cost b) Fix the final alignment
c) Identify feasible alternatives d) Check soil bearing capacity

3) What does the term "setting out" in bridge construction refer to?
a) Pouring concrete
b) Fixing bearings
c) Establishing the position of piers and abutments
d) Painting steel girders

4) In pile foundations, what test ensures the adequacy of load- bearing?
a) Slump test b) Load test
c) Split tensile test d) Sieve analysis

5) Which component of a girder primarily resists bending moments?
a) Web b) Bottom flange
c) Top flange d) Both b) and c)

6) Gantry girder cross-section is generally chosen as _____.
a) Rectangular beam b) I-section
c) Box section d) Plate girder with channel cap

7) During bridge inspection, a crack width of more than 0.3 mm in concrete indicates _____.
a) Normal condition
b) Minor damage
c) Moderate damage
d) Severe distress

8) Bearings are usually placed between _____.
a) Superstructure and abutment
b) Foundation and pile cap
c) Deck and expansion joint
d) Girder and parapet wall

9) Which test is not directly related to compaction control in embankments?
a) Sand replacement test
b) Nuclear density test
c) Dynamic cone penetrometer test
d) Slump test

10) In foot over bridges, the deck is primarily supported by _____.
a) Suspension cables
b) Trusses or beams
c) Pillars
d) Frames

11) What is the typical material used for superstructure of road over bridges (ROBs)?
a) Timber
b) Aluminum
c) Steel or RCC
d) Plastic

12) During tender opening, which of the following is typically verified first?
a) Technical specifications
b) Financial bid amounts
c) Compliance with submission requirements
d) Contractor's past performance

13) Arbitration in construction contracts is preferred over litigation because _____.
a) It is more expensive
b) It is a public process
c) It offers a faster resolution
d) It always favours the contractor

14) Under FIDIC contracts, the Engineer's role includes _____.
a) Financing the project
b) Representing the contractor
c) Supervising and certifying works
d) Supplying construction materials

SLR-QH-40

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Elevated Structures in Railway (CIVHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question No. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicates full marks.

SECTION – I

Q.2	**a)**	Give the classification of rivers based on topography and explain any two types.	**05**
	b)	Explain Well foundation with sketch showing typical section.	**05**
Q.3	**a)**	Explain how excavation for pier foundation in dry condition is done.	**05**
	b)	Give classification of railway bridge based on position of carriageway.	**04**
Q.4	**a)**	Describe the various components of a girder used in steel railway bridges.	**05**
	b)	Enlist various factors governing selection of bridge site.	**04**
Q.5	**a)**	Discuss the behaviour of the rivers in detail.	**05**
	b)	Explain various types of Girder bridges with neat sketch.	**04**

SECTION – II

Q.6	**a)**	Write short note on Abutments and Piers inspection.	**05**
	b)	Enlist various drawings prepared by the Civil Engineering department in railway. Explain structural drawing.	**05**
Q.7	**a)**	Define approaches in Railway Bridge. Discuss their components with neat labelling.	**04**
	b)	Write note on Dispute Adjudication Board.	**05**

Q.8	**a)**	What are Special Conditions of Contract (SCC)? Mention its key Elements.	**04**
	b)	Explain the three main components of a bridge with suitable examples.	**05**
Q.9	**a)**	Define a railway embankment. Give its objectives.	**04**
	b)	What is “General Conditions of Contract” (GCC)? Write any two key clauses it includes.	**05**

SLR-QH-40

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Elevated Structures in Railway (CIVHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) Bearings are usually placed between _____.
a) Superstructure and abutment b) Foundation and pile cap
c) Deck and expansion joint d) Girder and parapet wall

2) Which test is not directly related to compaction control in embankments?
a) Sand replacement test
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d) Slump test

3) In foot over bridges, the deck is primarily supported by _____.
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6) Arbitration in construction contracts is preferred over litigation because _____.
   a) It is more expensive
   b) It is a public process
   c) It offers a faster resolution
   d) It always favours the contractor

7) Under FIDIC contracts, the Engineer's role includes _____.
   a) Financing the project
   b) Representing the contractor
   c) Supervising and certifying works
   d) Supplying construction materials

8) The ideal location for a railway bridge is _____.
   a) Upstream of river bends
   b) On a sharp meander
   c) On a straight reach of the river
   d) In a delta region

9) A reconnaissance survey for a bridge location is primarily used to _____.
   a) Determine economic cost
   b) Fix the final alignment
   c) Identify feasible alternatives
   d) Check soil bearing capacity

10) What does the term "setting out" in bridge construction refer to?
   a) Pouring concrete
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   c) Establishing the position of piers and abutments
   d) Painting steel girders

11) In pile foundations, what test ensures the adequacy of load- bearing?
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   b) Load test
   c) Split tensile test
   d) Sieve analysis

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13) Gantry girder cross-section is generally chosen as _____.
   a) Rectangular beam
   b) I-section
   c) Box section
   d) Plate girder with channel cap

14) During bridge inspection, a crack width of more than 0.3 mm in concrete indicates _____.
   a) Normal condition
   b) Minor damage
   c) Moderate damage
   d) Severe distress

SLR-QH-40

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Elevated Structures in Railway (CIVHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question No. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicates full marks.

SECTION – I

Q.2	**a)**	Give the classification of rivers based on topography and explain any two types.	**05**
	b)	Explain Well foundation with sketch showing typical section.	**05**
Q.3	**a)**	Explain how excavation for pier foundation in dry condition is done.	**05**
	b)	Give classification of railway bridge based on position of carriageway.	**04**
Q.4	**a)**	Describe the various components of a girder used in steel railway bridges.	**05**
	b)	Enlist various factors governing selection of bridge site.	**04**
Q.5	**a)**	Discuss the behaviour of the rivers in detail.	**05**
	b)	Explain various types of Girder bridges with neat sketch.	**04**

SECTION – II

Q.6	**a)**	Write short note on Abutments and Piers inspection.	**05**
	b)	Enlist various drawings prepared by the Civil Engineering department in railway. Explain structural drawing.	**05**
Q.7	**a)**	Define approaches in Railway Bridge. Discuss their components with neat labelling.	**04**
	b)	Write note on Dispute Adjudication Board.	**05**

Q.8	**a)**	What are Special Conditions of Contract (SCC)? Mention its key Elements.	**04**
	b)	Explain the three main components of a bridge with suitable examples.	**05**
Q.9	**a)**	Define a railway embankment. Give its objectives.	**04**
	b)	What is “General Conditions of Contract” (GCC)? Write any two key clauses it includes.	**05**

SLR-QH-40

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Elevated Structures in Railway (CIVHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) What is the typical material used for superstructure of road over bridges (ROBs)?
a) Timber b) Aluminum
c) Steel or RCC d) Plastic

2) During tender opening, which of the following is typically verified first?
a) Technical specifications
b) Financial bid amounts
c) Compliance with submission requirements
d) Contractor's past performance

3) Arbitration in construction contracts is preferred over litigation because _____.
a) It is more expensive
b) It is a public process
c) It offers a faster resolution
d) It always favours the contractor

4) Under FIDIC contracts, the Engineer's role includes _____.
a) Financing the project
b) Representing the contractor
c) Supervising and certifying works
d) Supplying construction materials

5) The ideal location for a railway bridge is _____.
a) Upstream of river bends
b) On a sharp meander
c) On a straight reach of the river
d) In a delta region

6) A reconnaissance survey for a bridge location is primarily used to _____.
a) Determine economic cost b) Fix the final alignment
c) Identify feasible alternatives d) Check soil bearing capacity

7) What does the term "setting out" in bridge construction refer to?
a) Pouring concrete
b) Fixing bearings
c) Establishing the position of piers and abutments
d) Painting steel girders

8) In pile foundations, what test ensures the adequacy of load- bearing?
a) Slump test b) Load test
c) Split tensile test d) Sieve analysis

9) Which component of a girder primarily resists bending moments?
a) Web b) Bottom flange
c) Top flange d) Both b) and c)

10) Gantry girder cross-section is generally chosen as _____.
a) Rectangular beam b) I-section
c) Box section d) Plate girder with channel cap

11) During bridge inspection, a crack width of more than 0.3 mm in concrete indicates _____.
a) Normal condition b) Minor damage
c) Moderate damage d) Severe distress

12) Bearings are usually placed between _____.
a) Superstructure and abutment b) Foundation and pile cap
c) Deck and expansion joint d) Girder and parapet wall

13) Which test is not directly related to compaction control in embankments?
a) Sand replacement test
b) Nuclear density test
c) Dynamic cone penetrometer test
d) Slump test

14) In foot over bridges, the deck is primarily supported by _____.
a) Suspension cables b) Trusses or beams
c) Pillars d) Frames

SLR-QH-40

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Elevated Structures in Railway (CIVHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question No. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicates full marks.

SECTION – I

Q.2	**a)**	Give the classification of rivers based on topography and explain any two types.	**05**
	b)	Explain Well foundation with sketch showing typical section.	**05**
Q.3	**a)**	Explain how excavation for pier foundation in dry condition is done.	**05**
	b)	Give classification of railway bridge based on position of carriageway.	**04**
Q.4	**a)**	Describe the various components of a girder used in steel railway bridges.	**05**
	b)	Enlist various factors governing selection of bridge site.	**04**
Q.5	**a)**	Discuss the behaviour of the rivers in detail.	**05**
	b)	Explain various types of Girder bridges with neat sketch.	**04**

SECTION – II

Q.6	**a)**	Write short note on Abutments and Piers inspection.	**05**
	b)	Enlist various drawings prepared by the Civil Engineering department in railway. Explain structural drawing.	**05**
Q.7	**a)**	Define approaches in Railway Bridge. Discuss their components with neat labelling.	**04**
	b)	Write note on Dispute Adjudication Board.	**05**

Q.8	**a)**	What are Special Conditions of Contract (SCC)? Mention its key Elements.	**04**
	b)	Explain the three main components of a bridge with suitable examples.	**05**
Q.9	**a)**	Define a railway embankment. Give its objectives.	**04**
	b)	What is “General Conditions of Contract” (GCC)? Write any two key clauses it includes.	**05**

SLR-QH-40

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Elevated Structures in Railway (CIVHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

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SLR-QH-40

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Sem - II) (New) (CBCS)
Examination: March/April – 2026
Elevated Structures in Railway (CIVHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question No. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question No. 6 is compulsory in section II, and solve any two questions from the remaining.
3) Figures to the right indicates full marks.

SECTION – I

Q.2	**a)**	Give the classification of rivers based on topography and explain any two types.	**05**
	b)	Explain Well foundation with sketch showing typical section.	**05**
Q.3	**a)**	Explain how excavation for pier foundation in dry condition is done.	**05**
	b)	Give classification of railway bridge based on position of carriageway.	**04**
Q.4	**a)**	Describe the various components of a girder used in steel railway bridges.	**05**
	b)	Enlist various factors governing selection of bridge site.	**04**
Q.5	**a)**	Discuss the behaviour of the rivers in detail.	**05**
	b)	Explain various types of Girder bridges with neat sketch.	**04**

SECTION – II

Q.6	**a)**	Write short note on Abutments and Piers inspection.	**05**
	b)	Enlist various drawings prepared by the Civil Engineering department in railway. Explain structural drawing.	**05**
Q.7	**a)**	Define approaches in Railway Bridge. Discuss their components with neat labelling.	**04**
	b)	Write note on Dispute Adjudication Board.	**05**

Q.8	**a)**	What are Special Conditions of Contract (SCC)? Mention its key Elements.	**04**
	b)	Explain the three main components of a bridge with suitable examples.	**05**
Q.9	**a)**	Define a railway embankment. Give its objectives.	**04**
	b)	What is “General Conditions of Contract” (GCC)? Write any two key clauses it includes.	**05**

SLR-QH-41

Seat No.		Set	P

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S. Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

2) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

3) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

4) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

5) The value of respect entails _____.
a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

6) Which value involves being accountable for one's decisions and actions?
a) Responsibility b) Flexibility
c) Confidence d) Arrogance

7) The value of integrity entails _____.
a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

8) Which value involves being considerate and thoughtful towards others?
a) Kindness
b) Determination
c) Independence
d) Indifference

9) The value of wisdom involves _____.
a) Making sound and informed judgments based on knowledge and experience
b) Pursuing personal interests at the expense of others
c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

10) Which value involves being truthful and sincere in one's actions and words?
a) Honesty
b) Tolerance
c) Flexibility
d) Arrogance

11) What is the primary goal of engineering ethics?
a) To maximize profits for companies
b) To ensure engineers work efficiently
c) To protect public safety and welfare
d) To follow industry standards

12) Which of the following is considered an ethical responsibility of an engineer?
a) Ignoring environmental concerns to meet deadlines
b) Ensuring the safety of the public
c) Disregarding laws and regulations
d) Making decisions based on personal interests

13) Ethical engineering practices promote _____.
a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
d) The minimization of safety regulations

14) Ethical engineers should consider which of the following when making decisions?
a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

15) Which of the following is NOT part of an engineer's ethical responsibility?
a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

16) Ethical engineering involves making decisions based on _____.
a) Personal opinions and values
b) Financial incentives and company pressure
c) Objective analysis, codes of ethics, and consideration for the public good
d) Trends in the field of engineering

17) What should an engineer do if they discover a colleague is involved in unethical practices?
a) Ignore the situation to avoid conflict
b) Report the unethical behavior to management or relevant authorities
c) Cover up the situation to protect the colleague
d) Allow the behavior to continue if it does not affect the project

18) Ethical engineering practices include _____.
a) Following industry standards and regulations
b) Ensuring profitability is the main priority
c) Cutting costs by any means necessary
d) Avoiding the reporting of safety hazards

19) What is the primary focus of Kohlberg's theory?
a) Cognitive development b) Social development
c) Moral development d) Emotional development

20) Which term refers to an agreement that is made through discussions and compromises among parties?
a) Conflict b) Consensus
c) Dispute d) Isolation

21) What is the primary goal of risk assessment?
a) To eliminate all risks
b) To identify and mitigate potential risks
c) To ignore potential risks
d) To transfer risks to others

22) What is the primary goal of safety protocols?
a) To increase productivity
b) To reduce costs
c) To prevent injuries and illnesses
d) To improve employee morale

23) What is the difference between a hazard and a risk?
a) A hazard is a potential risk, while a risk is a real danger
b) A hazard is a real danger, while a risk is a potential danger
c) A hazard is a physical danger, while a risk is a financial danger
d) A hazard is a financial danger, while a risk is a physical danger

24) What should you do if you identify a potential risk in the workplace?
a) Ignore it and hope it goes away
b) Report it to your supervisor or HR
c) Try to mitigate it on your own
d) Transfer the risk to someone else

25) According to the theory of ethical egoism, what should guide an individual's moral actions?
a) The well-being of others
b) The individual's own self-interest
c) Social norms and conventions
d) Universal moral principles

26) Collegiality in a professional setting refers to _____.
a) Loyalty to your employer
b) Cooperation and mutual respect among colleagues
c) Competing for individual success
d) Avoiding work conflicts

27) Professional loyalty involves _____.
a) Reporting colleagues' mistakes publicly
b) Protecting the interests of the team or organization
c) Ignoring safety violations to avoid
d) Disclosing confidential information for personal conflict gain

28) Employee rights include _____.
a) The right to work without discrimination
b) The right to disregard company policies
c) The right to personal opinion but not affecting work
d) The right to ignore workplace safety standards

29) Intellectual Property Rights (IPR) protect _____.
a) The financial interests of corporations
b) The ownership and use of creative ideas and inventions
c) The physical assets of a company
d) Workplace performance evaluations

30) *Risk assessment* is important because it helps in _____.
a) Evaluating the potential impact of hazards on health and safety
b) Minimizing workplace productivity
c) Defining job roles
d) Ignoring environmental issues

31) In risk management, mitigation strategies aim to _____.
a) Accept all risks in the workplace
b) Reduce or eliminate identified risks
c) Increase the likelihood of hazards
d) Focus only on maximizing profits

32) Which of the following is a potential consequence of *occupational crime?*
a) Increased workplace productivity
b) Legal consequences and loss of reputation
c) Improvement in company safety standards
d) Higher employee satisfaction

33) Risk reduction in engineering refers to _____.
a) Implementing measures to lower the work chances of accidents
b) Increasing the number of hazards in the work environment
c) Ignoring potential risks
d) Cutting costs by removing safety measures

34) Public safety regulations are primarily designed to _____.
a) Ensure the safety of the company's assets
b) Protect the general public from potential harm
c) Increase revenue for the government
d) Focus only on preventing natural disasters

35) Multinational corporations (MNCs) are characterized by _____.
a) Operations in multiple countries with a centralized headquarters
b) Operating only in their home country
c) Limited influence on global markets
d) No responsibility toward environmental concerns

36) Environmental ethics primarily deals with _____.
a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
d) Treating employees equally

37) Which of the following is NOT an example of environmental ethics?
a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

38) Computer ethics involves _____.
   a) Programming and coding without considering social consequences
   b) Understanding the moral implications of computing technologies
   c) Focusing only on technological innovation
   d) Ignoring privacy issues

39) Weapons development ethics deals with _____.
   a) The development of new technologies to enhance military capabilities
   b) Restricting the use of all technological advancements
   c) Focusing only on civilian safety
   d) Only addressing the legal aspects of weapon development

40) Engineers as managers are expected to _____.
   a) Focus solely on technical tasks
   b) Lead teams, make strategic decisions, and manage projects
   c) Ignore the business aspects of their work
   d) Avoid taking responsibility for team outcomes

41) Consulting engineers are hired to _____.
   a) Work on projects within the company they are employed
   b) Provide expert advice on technical and engineering problems
   c) Manage public relations for a company
   d) Conduct legal investigations

42) Engineers acting as expert witnesses typically _____.
   a) Present evidence and offer testimony in legal cases
   b) Focus on public relations during a case
   c) Manage engineering projects for legal firms
   d) Directly represent the interests of a company court

43) Sample Code of Ethics of professional organizations typically includes _____.
   a) Guidelines for acceptable behavior and decision-making
   b) Rules for maximizing profits at any cost
   c) Detailed technical specifications for projects
   d) Guidelines for political involvement in engineering

44) ASME stands for _____.
   a) American Society of Mechanical Engineers
   b) American Society of Management Engineers
   c) Association of Safety and Mechanical Engineers
   d) Association of Scientific and Mechanical Engineers

45) The ASCE Code of Ethics emphasizes _____.
a) Following only local regulations
b) Maintaining professional integrity and responsibility
c) Focusing on personal financial gain
d) Ignoring environmental impacts

46) The IEEE Code of Ethics is primarily concerned with _____.
a) Fostering professional competence and integrity
b) Protecting corporate secrets
c) Maximizing technological advancements at any cost
d) Developing weapons for defense purposes

47) Global issues in engineering ethics include _____.
a) Cultural differences in engineering practices
b) Lack of understanding between technical and ethical concerns
c) Addressing both local and international engineering challenges
d) All of the above

48) A key challenge faced by multinational corporations is _____.
a) Balancing profits with social and environmental
b) Competing only within their home country responsibilities
c) Focusing solely on domestic issues
d) Ignoring corporate social responsibility

49) Empathy is the ability to _____.
a) Solve problems logically
b) Understand and share the feelings of others
c) Be indifferent to others' emotions
d) Only care about your own well-being

50) The quality of "caring" includes _____.
a) Showing concern for others' well-being
b) Ignoring the needs of others
c) Only helping family and friends
d) Seeking praise for helping others

SLR-QH-41

Seat No.		Set	Q

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S. Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) What is the primary goal of risk assessment?
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b) Ignoring the needs of others
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d) Seeking praise for helping others

31) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

32) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

33) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

34) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

35) The value of respect entails _____.
a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

36) Which value involves being accountable for one's decisions and actions?
a) Responsibility b) Flexibility
c) Confidence d) Arrogance

37) The value of integrity entails _____.
a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
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38) Which value involves being considerate and thoughtful towards others?

a) Kindness
b) Determination
c) Independence
d) Indifference

39) The value of wisdom involves _____.

a) Making sound and informed judgments based on knowledge and experience
b) Pursuing personal interests at the expense of others
c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

40) Which value involves being truthful and sincere in one's actions and words?

a) Honesty
b) Tolerance
c) Flexibility
d) Arrogance

41) What is the primary goal of engineering ethics?

a) To maximize profits for companies
b) To ensure engineers work efficiently
c) To protect public safety and welfare
d) To follow industry standards

42) Which of the following is considered an ethical responsibility of an engineer?

a) Ignoring environmental concerns to meet deadlines
b) Ensuring the safety of the public
c) Disregarding laws and regulations
d) Making decisions based on personal interests

43) Ethical engineering practices promote _____.

a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
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44) Ethical engineers should consider which of the following when making decisions?

a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

45) Which of the following is NOT part of an engineer's ethical responsibility?

a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

46) Ethical engineering involves making decisions based on _____.

a) Personal opinions and values
b) Financial incentives and company pressure
c) Objective analysis, codes of ethics, and consideration for the public good
d) Trends in the field of engineering

47) What should an engineer do if they discover a colleague is involved in unethical practices?

a) Ignore the situation to avoid conflict
b) Report the unethical behavior to management or relevant authorities
c) Cover up the situation to protect the colleague
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48) Ethical engineering practices include _____.

a) Following industry standards and regulations
b) Ensuring profitability is the main priority
c) Cutting costs by any means necessary
d) Avoiding the reporting of safety hazards

49) What is the primary focus of Kohlberg's theory?

a) Cognitive development b) Social development
c) Moral development d) Emotional development

50) Which term refers to an agreement that is made through discussions and compromises among parties?

a) Conflict b) Consensus
c) Dispute d) Isolation

SLR-QH-41

Seat No.		Set	R

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S. Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) Consulting engineers are hired to _____.
a) Work on projects within the company they are employed
b) Provide expert advice on technical and engineering problems
c) Manage public relations for a company
d) Conduct legal investigations

2) Engineers acting as expert witnesses typically _____.
a) Present evidence and offer testimony in legal cases
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c) Manage engineering projects for legal firms
d) Directly represent the interests of a company court

3) Sample Code of Ethics of professional organizations typically includes _____.
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5) The ASCE Code of Ethics emphasizes _____.
a) Following only local regulations
b) Maintaining professional integrity and responsibility
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6) The IEEE Code of Ethics is primarily concerned with _____.
   a) Fostering professional competence and integrity
   b) Protecting corporate secrets
   c) Maximizing technological advancements at any cost
   d) Developing weapons for defense purposes

7) Global issues in engineering ethics include _____.
   a) Cultural differences in engineering practices
   b) Lack of understanding between technical and ethical concerns
   c) Addressing both local and international engineering challenges
   d) All of the above

8) A key challenge faced by multinational corporations is _____.
   a) Balancing profits with social and environmental
   b) Competing only within their home country responsibilities
   c) Focusing solely on domestic issues
   d) Ignoring corporate social responsibility

9) Empathy is the ability to _____.
   a) Solve problems logically
   b) Understand and share the feelings of others
   c) Be indifferent to others' emotions
   d) Only care about your own well-being

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a) Honesty b) Tolerance
c) Flexibility d) Arrogance

21) What is the primary goal of engineering ethics?
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c) To protect public safety and welfare
d) To follow industry standards

22) Which of the following is considered an ethical responsibility of an engineer?
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d) Making decisions based on personal interests

23) Ethical engineering practices promote _____.
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b) The advancement of technology at any cost
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24) Ethical engineers should consider which of the following when making decisions?
a) Profit maximization
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25) Which of the following is NOT part of an engineer's ethical responsibility?
a) Designing for safety and sustainability
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30) Which term refers to an agreement that is made through discussions and compromises among parties?
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31) What is the primary goal of risk assessment?
a) To eliminate all risks
b) To identify and mitigate potential risks
c) To ignore potential risks
d) To transfer risks to others

32) What is the primary goal of safety protocols?
a) To increase productivity
b) To reduce costs
c) To prevent injuries and illnesses
d) To improve employee morale

33) What is the difference between a hazard and a risk?
a) A hazard is a potential risk, while a risk is a real danger
b) A hazard is a real danger, while a risk is a potential danger
c) A hazard is a physical danger, while a risk is a financial danger
d) A hazard is a financial danger, while a risk is a physical danger

34) What should you do if you identify a potential risk in the workplace?
a) Ignore it and hope it goes away
b) Report it to your supervisor or HR
c) Try to mitigate it on your own
d) Transfer the risk to someone else

35) According to the theory of ethical egoism, what should guide an individual's moral actions?
a) The well-being of others
b) The individual's own self-interest
c) Social norms and conventions
d) Universal moral principles

36) Collegiality in a professional setting refers to _____.
a) Loyalty to your employer
b) Cooperation and mutual respect among colleagues
c) Competing for individual success
d) Avoiding work conflicts

37) Professional loyalty involves _____.
a) Reporting colleagues' mistakes publicly
b) Protecting the interests of the team or organization
c) Ignoring safety violations to avoid
d) Disclosing confidential information for personal conflict gain

38) Employee rights include _____.
a) The right to work without discrimination
b) The right to disregard company policies
c) The right to personal opinion but not affecting work
d) The right to ignore workplace safety standards

39) Intellectual Property Rights (IPR) protect _____.
- a) The financial interests of corporations
- b) The ownership and use of creative ideas and inventions
- c) The physical assets of a company
- d) Workplace performance evaluations

40) *Risk assessment* is important because it helps in _____.
- a) Evaluating the potential impact of hazards on health and safety
- b) Minimizing workplace productivity
- c) Defining job roles
- d) Ignoring environmental issues

41) In risk management, mitigation strategies aim to _____.
- a) Accept all risks in the workplace
- b) Reduce or eliminate identified risks
- c) Increase the likelihood of hazards
- d) Focus only on maximizing profits

42) Which of the following is a potential consequence of *occupational crime?*
- a) Increased workplace productivity
- b) Legal consequences and loss of reputation
- c) Improvement in company safety standards
- d) Higher employee satisfaction

43) Risk reduction in engineering refers to _____.
- a) Implementing measures to lower the work chances of accidents
- b) Increasing the number of hazards in the work environment
- c) Ignoring potential risks
- d) Cutting costs by removing safety measures

44) Public safety regulations are primarily designed to _____.
- a) Ensure the safety of the company's assets
- b) Protect the general public from potential harm
- c) Increase revenue for the government
- d) Focus only on preventing natural disasters

45) Multinational corporations (MNCs) are characterized by _____.
- a) Operations in multiple countries with a centralized headquarters
- b) Operating only in their home country
- c) Limited influence on global markets
- d) No responsibility toward environmental concerns

46) Environmental ethics primarily deals with _____.

a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
d) Treating employees equally

47) Which of the following is NOT an example of environmental ethics?

a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

48) Computer ethics involves _____.

a) Programming and coding without considering social consequences
b) Understanding the moral implications of computing technologies
c) Focusing only on technological innovation
d) Ignoring privacy issues

49) Weapons development ethics deals with _____.

a) The development of new technologies to enhance military capabilities
b) Restricting the use of all technological advancements
c) Focusing only on civilian safety
d) Only addressing the legal aspects of weapon development

50) Engineers as managers are expected to _____.

a) Focus solely on technical tasks
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d) Avoid taking responsibility for team outcomes

SLR-QH-41

Seat No.		Set	S

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S. Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
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Answer

Q.1 Answer the following Objective Type Questions. 50

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a) Honesty b) Tolerance
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SLR-QH-42

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Engineering Mathematics - III (BTN01404)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) If the differential equation $\frac{d^n y}{dx^n} + P_1 \frac{d^{n-1} y}{dx^{n-1}} + \ldots + P_n y = X$ is a linear differential equation with constant coefficients then the R.H.S. is a _____.

a) constant
b) function of x only
c) function of y only
d) function of x and y

2) $\frac{1}{D+1}\left(\log x + \frac{1}{x}\right)$ is equal to _____.

a) e^x
b) $\log x$
c) x
d) 1

3) $L^{-1}\left(\frac{s+2}{(s+2)^2-5^2}\right) =$ _____.

a) $e^{2t}\sinh 5t$
b) $e^{-2t}\cosh 25t$
c) $e^{-2t}\sinh 5t$
d) $e^{-2t}\cosh 5t$

4) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \le x \le 1$ then $k =$ _____.

a) 2
b) 3
c) 5
d) 6

5) The general solution of $(3x+2)^2 \frac{d^2y}{dx^2} + 5(3x+2)\frac{dy}{dx} - 3y = 0$ is $y =$ _____.

a) $(c_1 + c_2 x)e^{2x}$
b) $c_1 e^{2x} + c_2 e^{4x}$
c) $c_1(3x+2)^{1/3} + c_2(3x+2)^{-1}$
d) $c_1(x+3)^2 + c_2(x+3)^3$

6) If $L[f(t)] = \emptyset(s)$, then $L(f(at))$ is _____.

a) $\emptyset\left(\frac{s}{a}\right)$ b) $\frac{1}{s}\emptyset\left(\frac{s}{a}\right)$

c) $\frac{1}{a}\emptyset\left(\frac{s}{a}\right)$ d) a. $\emptyset\left(\frac{s}{a}\right)$

7) The Laplace transform of $t\cosh t$ is _____.

a) $\frac{s^2-1}{(s^2+1)^2}$ b) $-\frac{s^2-1}{(s+1)^2}$

c) $\frac{s^2+1}{(s^2-1)^2}$ d) $-\frac{s^2+1}{(s^2-1)^2}$

8) The conditions for expansion of a function in a Fourier series are known as _____.

a) Harmonic b) Riemann conditions

c) Periodic d) Dirichlet's conditions

9) If $x\sin x = 1 - \frac{1}{2}\cos x - \frac{2}{3}\cos 2x + \frac{2}{8}\cos 3x - \ldots$ in the interval $(-\pi, \pi)$ then $\frac{1}{1.3} - \frac{1}{3.5} + \frac{1}{5.7} - \frac{1}{7.9} + \cdots =$ _____.

a) $\frac{\pi}{4}$ b) $\frac{\pi-1}{2}$

c) $\frac{\pi-2}{4}$ d) $\frac{\pi-3}{4}$

10) If $b_{yx} = \frac{5}{18}, b_{xy} = \frac{8}{5}$, then $r =$ _____.

a) $\frac{2}{5}$ b) $\frac{1}{2}$

c) $\frac{2}{3}$ d) $\frac{3}{2}$

11) If X, Y denotes the deviations from their means and if $\sum X^2 = 40, \sum Y^2 = 100, \sum XY = 50$, then $r =$ _____.

a) 0.63 b) 0.82

c) 0.91 d) 0.79

12) A discrete probability distribution function of a discrete random variable is given by,

x:	1	2	3	4	5	6
$p(x)$:	k	$2k$	$3k$	k^2	$K^2 + k$	$4k^2$

Then $k =$ _____.

a) $1/8$ b) $1/5$

c) $1/6$ d) $1/7$

13) The solution of the equation $pq = p + q$ is _____.

a) $z = ax + (a+1)y + c$

b) $z = (a+1)x + a(a-1)y + c$

c) $z(a-1) = a(a-1)x + ay + c$

d) $z = (a-1)x + a(a+1)y + c$

14) $Z = a(x + y) + c$ is the general solution of _____.

a) $pq = 1$ b) $p = 1 - q$

c) $p + q = 0$ d) $p = q$

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Engineering Mathematics - III (BTN01404)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve Any Three of the following. **09**

a) Solve $(D^3 + 3D^2 + 3D + 1)y = e^{-x}$

b) Solve $(D^2 - 2D + 1)y = x.e^x \sin x$

c) Solve $(D^2 + 4D + 4)y = x^2$

d) Solve $pq = x^m y^n z^{2l}$

e) Obtain half range sine series for $f(x) = \begin{cases} x, & 0 < x < 1 \\ 2 - x, & 1 < x < 2 \end{cases}$

Q.3 Solve Any Three of the following. **09**

a) Solve $p(1 + q) = qz$

b) Solve $x(y - z)p + y(z - x)q = z(x - y)$

c) Obtain Fourier series expansion of $f(x) = x$ in $(-1, 1)$

d) Find the Fourier series of the function $f(x) = \begin{cases} x, & 0 < x < \pi \\ 2\pi - x, & \pi < x < 2\pi \end{cases}$

e) Solve $(5 + 2x)^2 \frac{d^2y}{dx^2} - 6(5 + 2x)\frac{dy}{dx} + 8y = 6x$

Q.4 Solve Any Two of the following. **10**

a) Solve the following equation by the method of separation of variables $\frac{\partial u}{\partial x} = 4\frac{\partial u}{\partial y}$ where $u(0, y) = 8e^{-3y}$

b) Obtain half range cosine series for $f(x) = \begin{cases} x, & 0 < x < \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} < x < \pi \end{cases}$

c) Solve $(D^2 - D - 2)y = 2\log x + \frac{1}{x} + \frac{1}{x^2}$

SECTION – II

Q.5 Solve Any Three of the following. **09**

a) The incomes of a group of 10,000 persons were found to be normally distributed with mean 520 and S.D. 60 Find
- i) The number of persons having incomes between 400 and 550
- ii) The lowest income of the richest 500

b) Calculate $L\{te^{-4t}\sin 3t\}$

c) Calculate $L\left\{\cosh t \int_0^t e^u.\cosh u\, du\right\}$

d) Fit a Straight line to the following data

x:	1	2	3	4	5	6
y:	49	54	60	73	80	86

e) Calculate Spearman's coefficient of rank of correlation from the data on height and weight of 8 students

Height (in inches)	60	62	64	66	68	70	72	74
Weight (in lbs.)	92	83	101	110	128	119	137	146

Q.6 Solve Any Three of the following. **09**

a) Calculate $L^{-1}\left\{\frac{s^2}{(s^2+4)(s^2+9)}\right\}$ by using Convolution Method.

b) Calculate Inverse Laplace transform of $\frac{1}{s}\log\left(1+\frac{1}{s^2}\right)$

c) Fit a Parabola to the following data.

x:	0	1	2	3	4
y:	1.0	1.8	1.3	2.5	6.3

d) A hospital switch board receives an average of 4 emergency calls in a 10 minutes interval. What is the Probability that
- i) there are at least 2 emergency calls
- ii) there are exactly 3 emergency call in an interval of 10 minutes.

e) Find the probability that at most 4 defective bulbs will be found in a box of 200 bulbs if it is known that 2 percent of the bulbs are defective.

Q.7 Solve Any Two of the following. **10**

a) Use Laplace Transform to solve
$(D^2+4D+8)y=1$ where $y(0)=0$ and $y'(0)=1$

b) The mark obtained by 1000 students in an examination are found to be normally distributed with mean 70 and standard deviation 5. Estimate the number of students whose marks will be
- i) between 60 and 75
- ii) more than 75

c) From the following table showing age of cars of a certain make and annual maintenance costs, obtain the regression equation for costs related to age.

Age of cars (years)	2	4	6	7	8	10	12
Annual maintenance cost (Rs.)	1600	1500	1800	1900	1700	2100	2000

Find the approximate cost of maintaining 3 years old cars of the same make.

SLR-QH-42

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Engineering Mathematics - III (BTN01404)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) The conditions for expansion of a function in a Fourier series are known as _____.

a) Harmonic b) Riemann conditions
c) Periodic d) Dirichlet's conditions

2) If $x \sin x = 1 - \frac{1}{2}\cos x - \frac{2}{3}\cos 2x + \frac{2}{8}\cos 3x - \ldots$ in the interval $(-\pi, \pi)$ then $\frac{1}{1.3} - \frac{1}{3.5} + \frac{1}{5.7} - \frac{1}{7.9} + \cdots =$ _____.

a) $\frac{\pi}{4}$ b) $\frac{\pi-1}{2}$
c) $\frac{\pi-2}{4}$ d) $\frac{\pi-3}{4}$

3) If $b_{yx} = \frac{5}{18}, b_{xy} = \frac{8}{5}$, then $r =$ _____.

a) $\frac{2}{5}$ b) $\frac{1}{2}$
c) $\frac{2}{3}$ d) $\frac{3}{2}$

4) If X, Y denotes the deviations from their means and if $\sum X^2 = 40, \sum Y^2 = 100, \sum XY = 50$, then $r =$ _____.

a) 0.63 b) 0.82
c) 0.91 d) 0.79

5) A discrete probability distribution function of a discrete random variable is given by,

x:	1	2	3	4	5	6
$p(x)$:	k	$2k$	$3k$	k^2	K^2+k	$4k^2$

Then $k =$ _____.

a) $1/8$ b) $1/5$
c) $1/6$ d) $1/7$

6) The solution of the equation $pq = p + q$ is _____.

a) $z = ax + (a+1)y + c$
b) $z = (a+1)x + a(a-1)y + c$
c) $z(a-1) = a(a-1)x + ay + c$
d) $z = (a-1)x + a(a+1)y + c$

7) $Z = a(x+y) + c$ is the general solution of _____.

a) $pq = 1$ b) $p = 1 - q$
c) $p + q = 0$ d) $p = q$

8) If the differential equation $\frac{d^n y}{dx^n} + P_1 \frac{d^{n-1} y}{dx^{n-1}} + \ldots + P_n y = X$ is a linear differential equation with constant coefficients then the R.H.S. is a _____.

a) constant b) function of x only
c) function of y only d) function of x and y

9) $\frac{1}{D+1}\left(\log x + \frac{1}{x}\right)$ is equal to _____.

a) e^x b) $\log x$
c) x d) 1

10) $L^{-1}\left(\frac{s+2}{(s+2)^2 - 5^2}\right) =$ _____.

a) $e^{2t}\sinh 5t$ b) $e^{-2t}\cosh 25t$
c) $e^{-2t}\sinh 5t$ d) $e^{-2t}\cosh 5t$

11) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \le x \le 1$ then $k =$ _____.

a) 2 b) 3
c) 5 d) 6

12) The general solution of $(3x+2)^2 \frac{d^2 y}{dx^2} + 5(3x+2)\frac{dy}{dx} - 3y = 0$ is $y =$ _____.

a) $(c_1 + c_2 x)e^{2x}$ b) $c_1 e^{2x} + c_2 e^{4x}$
c) $c_1(3x+2)^{1/3} + c_2(3x+2)^{-1}$ d) $c_1(x+3)^2 + c_2(x+3)^3$

13) If $L[f(t)] = \emptyset(s)$, then $L(f(at)]$ is _____.

a) $\emptyset\left(\frac{s}{a}\right)$ b) $\frac{1}{s}\emptyset\left(\frac{s}{a}\right)$

c) $\frac{1}{a}\emptyset\left(\frac{s}{a}\right)$ d) a. $\emptyset\left(\frac{s}{a}\right)$

14) The Laplace transform of $t\cosh t$ is _____.

a) $\frac{s^2-1}{(s^2+1)^2}$ b) $-\frac{s^2-1}{(s+1)^2}$

c) $\frac{s^2+1}{(s^2-1)^2}$ d) $-\frac{s^2+1}{(s^2-1)^2}$

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Engineering Mathematics - III (BTN01404)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve Any Three of the following. **09**

a) Solve $(D^3 + 3D^2 + 3D + 1)y = e^{-x}$

b) Solve $(D^2 - 2D + 1)y = x.e^x \sin x$

c) Solve $(D^2 + 4D + 4)y = x^2$

d) Solve $pq = x^m y^n z^{2l}$

e) Obtain half range sine series for $f(x) = \begin{cases} x, & 0 < x < 1 \\ 2 - x, & 1 < x < 2 \end{cases}$

Q.3 Solve Any Three of the following. **09**

a) Solve $p(1 + q) = qz$

b) Solve $x(y - z)p + y(z - x)q = z(x - y)$

c) Obtain Fourier series expansion of $f(x) = x$ in $(-1, 1)$

d) Find the Fourier series of the function $f(x) = \begin{cases} x, & 0 < x < \pi \\ 2\pi - x, & \pi < x < 2\pi \end{cases}$

e) Solve $(5 + 2x)^2 \frac{d^2y}{dx^2} - 6(5 + 2x)\frac{dy}{dx} + 8y = 6x$

Q.4 Solve Any Two of the following. **10**

a) Solve the following equation by the method of separation of variables $\frac{\partial u}{\partial x} = 4\frac{\partial u}{\partial y}$ where $u(0, y) = 8e^{-3y}$

b) Obtain half range cosine series for $f(x) = \begin{cases} x, & 0 < x < \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} < x < \pi \end{cases}$

c) Solve $(D^2 - D - 2)y = 2\log x + \frac{1}{x} + \frac{1}{x^2}$

SECTION – II

Q.5 Solve Any Three of the following. **09**

a) The incomes of a group of 10,000 persons were found to be normally distributed with mean 520 and S.D. 60 Find
- i) The number of persons having incomes between 400 and 550
- ii) The lowest income of the richest 500

b) Calculate $L\{te^{-4t}\sin 3t\}$

c) Calculate $L\left\{\cosh t \int_0^t e^u.\cosh u\, du\right\}$

d) Fit a Straight line to the following data

x:	1	2	3	4	5	6
y:	49	54	60	73	80	86

e) Calculate Spearman's coefficient of rank of correlation from the data on height and weight of 8 students

Height (in inches)	60	62	64	66	68	70	72	74
Weight (in lbs.)	92	83	101	110	128	119	137	146

Q.6 Solve Any Three of the following. **09**

a) Calculate $L^{-1}\left\{\frac{s^2}{(s^2+4)(s^2+9)}\right\}$ by using Convolution Method.

b) Calculate Inverse Laplace transform of $\frac{1}{s}\log\left(1+\frac{1}{s^2}\right)$

c) Fit a Parabola to the following data.

x:	0	1	2	3	4
y:	1.0	1.8	1.3	2.5	6.3

d) A hospital switch board receives an average of 4 emergency calls in a 10 minutes interval. What is the Probability that
- i) there are at least 2 emergency calls
- ii) there are exactly 3 emergency call in an interval of 10 minutes.

e) Find the probability that at most 4 defective bulbs will be found in a box of 200 bulbs if it is known that 2 percent of the bulbs are defective.

Q.7 Solve Any Two of the following. **10**

a) Use Laplace Transform to solve
$(D^2+4D+8)y=1$ where $y(0)=0$ and $y'(0)=1$

b) The mark obtained by 1000 students in an examination are found to be normally distributed with mean 70 and standard deviation 5. Estimate the number of students whose marks will be
- i) between 60 and 75
- ii) more than 75

c) From the following table showing age of cars of a certain make and annual maintenance costs, obtain the regression equation for costs related to age.

Age of cars (years)	2	4	6	7	8	10	12
Annual maintenance cost (Rs.)	1600	1500	1800	1900	1700	2100	2000

Find the approximate cost of maintaining 3 years old cars of the same make.

SLR-QH-42

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Engineering Mathematics - III (BTN01404)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) If X, Y denotes the deviations from their means and if $\sum X^2 = 40, \sum Y^2 = 100, \sum XY = 50$, then $r =$ _____.

a) 0.63 b) 0.82
c) 0.91 d) 0.79

2) A discrete probability distribution function of a discrete random variable is given by,

x:	1	2	3	4	5	6
$p(x)$:	k	$2k$	$3k$	k^2	$K^2 + k$	$4k^2$

Then $k =$ _____.

a) $1/8$ b) $1/5$
c) $1/6$ d) $1/7$

3) The solution of the equation $pq = p + q$ is _____.

a) $z = ax + (a+1)y + c$
b) $z = (a+1)x + a(a-1)y + c$
c) $z(a-1) = a(a-1)x + ay + c$
d) $z = (a-1)x + a(a+1)y + c$

4) $Z = a(x+y) + c$ is the general solution of _____.

a) $pq = 1$ b) $p = 1 - q$
c) $p + q = 0$ d) $p = q$

5) If the differential equation $\frac{d^n y}{dx^n} + P_1 \frac{d^{n-1} y}{dx^{n-1}} + \ldots + P_n y = X$ is a linear differential equation with constant coefficients then the R.H.S. is a _____.

a) constant
b) function of x only
c) function of y only
d) function of x and y

6) $\frac{1}{D+1}\left(\log x + \frac{1}{x}\right)$ is equal to _____.

a) e^x
b) $\log x$
c) x
d) 1

7) $L^{-1}\left(\frac{s+2}{(s+2)^2-5^2}\right) =$ _____.

a) $e^{2t} \sinh 5t$
b) $e^{-2t} \cosh 25t$
c) $e^{-2t} \sinh 5t$
d) $e^{-2t} \cosh 5t$

8) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2
b) 3
c) 5
d) 6

9) The general solution of $(3x+2)^2 \frac{d^2 y}{dx^2} + 5(3x+2)\frac{dy}{dx} - 3y = 0$ is $y =$ _____.

a) $(c_1 + c_2 x)e^{2x}$
b) $c_1 e^{2x} + c_2 e^{4x}$
c) $c_1(3x+2)^{1/3} + c_2(3x+2)^{-1}$
d) $c_1(x+3)^2 + c_2(x+3)^3$

10) If $L[f(t)] = \emptyset(s)$, then $L(f(at)]$ is _____.

a) $\emptyset\left(\frac{s}{a}\right)$
b) $\frac{1}{s}\emptyset\left(\frac{s}{a}\right)$
c) $\frac{1}{a}\emptyset\left(\frac{s}{a}\right)$
d) a. $\emptyset\left(\frac{s}{a}\right)$

11) The Laplace transform of $t \cosh t$ is _____.

a) $\frac{s^2-1}{(s^2+1)^2}$
b) $-\frac{s^2-1}{(s+1)^2}$
c) $\frac{s^2+1}{(s^2-1)^2}$
d) $-\frac{s^2+1}{(s^2-1)^2}$

12) The conditions for expansion of a function in a Fourier series are known as _____.

a) Harmonic
b) Riemann conditions
c) Periodic
d) Dirichlet's conditions

13) If $x \sin x = 1 - \frac{1}{2}\cos x - \frac{2}{3}\cos 2x + \frac{2}{8}\cos 3x - \ldots$ in the interval $(-\pi, \pi)$ then $\frac{1}{1.3} - \frac{1}{3.5} + \frac{1}{5.7} - \frac{1}{7.9} + \cdots =$ _____.

a) $\frac{\pi}{4}$ b) $\frac{\pi-1}{2}$

c) $\frac{\pi-2}{4}$ d) $\frac{\pi-3}{4}$

14) If $b_{yx} = \frac{5}{18}, b_{xy} = \frac{8}{5}$, then $r =$ _____.

a) $\frac{2}{5}$ b) $\frac{1}{2}$

c) $\frac{2}{3}$ d) $\frac{3}{2}$

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Engineering Mathematics - III (BTN01404)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve Any Three of the following. **09**

a) Solve $(D^3 + 3D^2 + 3D + 1)y = e^{-x}$

b) Solve $(D^2 - 2D + 1)y = x.e^x \sin x$

c) Solve $(D^2 + 4D + 4)y = x^2$

d) Solve $pq = x^m y^n z^{2l}$

e) Obtain half range sine series for $f(x) = \begin{cases} x, & 0 < x < 1 \\ 2 - x, & 1 < x < 2 \end{cases}$

Q.3 Solve Any Three of the following. **09**

a) Solve $p(1 + q) = qz$

b) Solve $x(y - z)p + y(z - x)q = z(x - y)$

c) Obtain Fourier series expansion of $f(x) = x$ in $(-1, 1)$

d) Find the Fourier series of the function $f(x) = \begin{cases} x, & 0 < x < \pi \\ 2\pi - x, & \pi < x < 2\pi \end{cases}$

e) Solve $(5 + 2x)^2 \frac{d^2y}{dx^2} - 6(5 + 2x)\frac{dy}{dx} + 8y = 6x$

Q.4 Solve Any Two of the following. **10**

a) Solve the following equation by the method of separation of variables $\frac{\partial u}{\partial x} = 4\frac{\partial u}{\partial y}$ where $u(0, y) = 8e^{-3y}$

b) Obtain half range cosine series for $f(x) = \begin{cases} x, & 0 < x < \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} < x < \pi \end{cases}$

c) Solve $(D^2 - D - 2)y = 2\log x + \frac{1}{x} + \frac{1}{x^2}$

SECTION – II

Q.5 Solve Any Three of the following. **09**

a) The incomes of a group of 10,000 persons were found to be normally distributed with mean 520 and S.D. 60 Find
- i) The number of persons having incomes between 400 and 550
- ii) The lowest income of the richest 500

b) Calculate $L\{te^{-4t}\sin 3t\}$

c) Calculate $L\left\{\cosh t \int_0^t e^u.\cosh u\, du\right\}$

d) Fit a Straight line to the following data

x:	1	2	3	4	5	6
y:	49	54	60	73	80	86

e) Calculate Spearman's coefficient of rank of correlation from the data on height and weight of 8 students

Height (in inches)	60	62	64	66	68	70	72	74
Weight (in lbs.)	92	83	101	110	128	119	137	146

Q.6 Solve Any Three of the following. **09**

a) Calculate $L^{-1}\left\{\frac{s^2}{(s^2+4)(s^2+9)}\right\}$ by using Convolution Method.

b) Calculate Inverse Laplace transform of $\frac{1}{s}\log\left(1+\frac{1}{s^2}\right)$

c) Fit a Parabola to the following data.

x:	0	1	2	3	4
y:	1.0	1.8	1.3	2.5	6.3

d) A hospital switch board receives an average of 4 emergency calls in a 10 minutes interval. What is the Probability that
- i) there are at least 2 emergency calls
- ii) there are exactly 3 emergency call in an interval of 10 minutes.

e) Find the probability that at most 4 defective bulbs will be found in a box of 200 bulbs if it is known that 2 percent of the bulbs are defective.

Q.7 Solve Any Two of the following. **10**

a) Use Laplace Transform to solve
$(D^2+4D+8)y=1$ where $y(0)=0$ and $y'(0)=1$

b) The mark obtained by 1000 students in an examination are found to be normally distributed with mean 70 and standard deviation 5. Estimate the number of students whose marks will be
- i) between 60 and 75
- ii) more than 75

c) From the following table showing age of cars of a certain make and annual maintenance costs, obtain the regression equation for costs related to age.

Age of cars (years)	2	4	6	7	8	10	12
Annual maintenance cost (Rs.)	1600	1500	1800	1900	1700	2100	2000

Find the approximate cost of maintaining 3 years old cars of the same make.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Engineering Mathematics - III (BTN01404)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) If $L[f(t)] = \emptyset(s)$, then $L(f(at)]$ is _____.

a) $\emptyset\left(\frac{s}{a}\right)$ b) $\frac{1}{s}\emptyset\left(\frac{s}{a}\right)$

c) $\frac{1}{a}\emptyset\left(\frac{s}{a}\right)$ d) a. $\emptyset\left(\frac{s}{a}\right)$

2) The Laplace transform of $t\cosh t$ is _____.

a) $\frac{s^2-1}{(s^2+1)^2}$ b) $-\frac{s^2-1}{(s+1)^2}$

c) $\frac{s^2+1}{(s^2-1)^2}$ d) $-\frac{s^2+1}{(s^2-1)^2}$

3) The conditions for expansion of a function in a Fourier series are known as _____.

a) Harmonic b) Riemann conditions

c) Periodic d) Dirichlet's conditions

4) If $x\sin x = 1 - \frac{1}{2}\cos x - \frac{2}{3}\cos 2x + \frac{2}{8}\cos 3x - \ldots$ in the interval $(-\pi, \pi)$ then $\frac{1}{1.3} - \frac{1}{3.5} + \frac{1}{5.7} - \frac{1}{7.9} + \cdots =$ _____.

a) $\frac{\pi}{4}$ b) $\frac{\pi-1}{2}$

c) $\frac{\pi-2}{4}$ d) $\frac{\pi-3}{4}$

5) If $b_{yx} = \frac{5}{18}, b_{xy} = \frac{8}{5}$, then $r =$ _____.

a) $\frac{2}{5}$ b) $\frac{1}{2}$

c) $\frac{2}{3}$ d) $\frac{3}{2}$

6) If X, Y denotes the deviations from their means and if $\sum X^2 = 40, \sum Y^2 = 100, \sum XY = 50$, then $r =$ _____.

a) 0.63 b) 0.82

c) 0.91 d) 0.79

7) A discrete probability distribution function of a discrete random variable is given by,

x:	1	2	3	4	5	6
$p(x)$:	k	$2k$	$3k$	k^2	$K^2 + k$	$4k^2$

Then $k =$ _____.

a) $1/8$ b) $1/5$

c) $1/6$ d) $1/7$

8) The solution of the equation $pq = p + q$ is _____.

a) $z = ax + (a+1)y + c$

b) $z = (a+1)x + a(a-1)y + c$

c) $z(a-1) = a(a-1)x + ay + c$

d) $z = (a-1)x + a(a+1)y + c$

9) $Z = a(x+y) + c$ is the general solution of _____.

a) $pq = 1$ b) $p = 1 - q$

c) $p + q = 0$ d) $p = q$

10) If the differential equation $\frac{d^n y}{dx^n} + P_1 \frac{d^{n-1} y}{dx^{n-1}} + \ldots + P_n y = X$ is a linear differential equation with constant coefficients then the R.H.S. is a _____.

a) constant b) function of x only

c) function of y only d) function of x and y

11) $\frac{1}{D+1}\left(\log x + \frac{1}{x}\right)$ is equal to _____.

a) e^x b) $\log x$

c) x d) 1

12) $L^{-1}\left(\frac{s+2}{(s+2)^2 - 5^2}\right) =$ _____.

a) $e^{2t} \sinh 5t$ b) $e^{-2t} \cosh 25t$

c) $e^{-2t} \sinh 5t$ d) $e^{-2t} \cosh 5t$

13) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \le x \le 1$ then $k =$ _____.

a) 2 b) 3

c) 5 d) 6

14) The general solution of $(3x+2)^2\frac{d^2y}{dx^2}+5(3x+2)\frac{dy}{dx}-3y=0$ is $y=$ _____.

a) $(c_1+c_2x)e^{2x}$ b) $c_1e^{2x}+c_2e^{4x}$

c) $c_1(3x+2)^{1/3}+c_2(3x+2)^{-1}$ d) $c_1(x+3)^2+c_2(x+3)^3$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Engineering Mathematics - III (BTN01404)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve Any Three of the following. **09**

a) Solve $(D^3 + 3D^2 + 3D + 1)y = e^{-x}$

b) Solve $(D^2 - 2D + 1)y = x.e^x \sin x$

c) Solve $(D^2 + 4D + 4)y = x^2$

d) Solve $pq = x^m y^n z^{2l}$

e) Obtain half range sine series for $f(x) = \begin{cases} x, & 0 < x < 1 \\ 2 - x, & 1 < x < 2 \end{cases}$

Q.3 Solve Any Three of the following. **09**

a) Solve $p(1 + q) = qz$

b) Solve $x(y - z)p + y(z - x)q = z(x - y)$

c) Obtain Fourier series expansion of $f(x) = x$ in $(-1, 1)$

d) Find the Fourier series of the function $f(x) = \begin{cases} x, & 0 < x < \pi \\ 2\pi - x, & \pi < x < 2\pi \end{cases}$

e) Solve $(5 + 2x)^2 \frac{d^2y}{dx^2} - 6(5 + 2x)\frac{dy}{dx} + 8y = 6x$

Q.4 Solve Any Two of the following. **10**

a) Solve the following equation by the method of separation of variables $\frac{\partial u}{\partial x} = 4\frac{\partial u}{\partial y}$ where $u(0, y) = 8e^{-3y}$

b) Obtain half range cosine series for $f(x) = \begin{cases} x, & 0 < x < \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} < x < \pi \end{cases}$

c) Solve $(D^2 - D - 2)y = 2\log x + \frac{1}{x} + \frac{1}{x^2}$

SECTION – II

Q.5 Solve Any Three of the following. **09**

a) The incomes of a group of 10,000 persons were found to be normally distributed with mean 520 and S.D. 60 Find
- i) The number of persons having incomes between 400 and 550
- ii) The lowest income of the richest 500

b) Calculate $L\{te^{-4t}\sin 3t\}$

c) Calculate $L\left\{\cosh t \int_0^t e^u . \cosh u \, du\right\}$

d) Fit a Straight line to the following data

x:	1	2	3	4	5	6
y:	49	54	60	73	80	86

e) Calculate Spearman's coefficient of rank of correlation from the data on height and weight of 8 students

Height (in inches)	60	62	64	66	68	70	72	74
Weight (in lbs.)	92	83	101	110	128	119	137	146

Q.6 Solve Any Three of the following. **09**

a) Calculate $L^{-1}\left\{\frac{s^2}{(s^2+4)(s^2+9)}\right\}$ by using Convolution Method.

b) Calculate Inverse Laplace transform of $\frac{1}{s}\log\left(1+\frac{1}{s^2}\right)$

c) Fit a Parabola to the following data.

x:	0	1	2	3	4
y:	1.0	1.8	1.3	2.5	6.3

d) A hospital switch board receives an average of 4 emergency calls in a 10 minutes interval. What is the Probability that
- i) there are at least 2 emergency calls
- ii) there are exactly 3 emergency call in an interval of 10 minutes.

e) Find the probability that at most 4 defective bulbs will be found in a box of 200 bulbs if it is known that 2 percent of the bulbs are defective.

Q.7 Solve Any Two of the following. **10**

a) Use Laplace Transform to solve
$(D^2+4D+8)y = 1$ where $y(0) = 0$ and $y'(0) = 1$

b) The mark obtained by 1000 students in an examination are found to be normally distributed with mean 70 and standard deviation 5. Estimate the number of students whose marks will be
- i) between 60 and 75
- ii) more than 75

c) From the following table showing age of cars of a certain make and annual maintenance costs, obtain the regression equation for costs related to age.

Age of cars (years)	2	4	6	7	8	10	12
Annual maintenance cost (Rs.)	1600	1500	1800	1900	1700	2100	2000

Find the approximate cost of maintaining 3 years old cars of the same make.

SLR-QH-43

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Applied Thermodynamics (MECHPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.
5) Use of Steam tables is allowed.
6) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) What is the dryness fraction (x) on the dry and saturated steam?
a) x=0 b) x=1
c) x=0.9 d) x=0.5

2) The term coefficient of performance is related with _____.
a) Heat pump b) Heat Engine
c) Steam Engine d) Gas Turbine

3) Available energy is known as _____.
a) Entropy b) Enthalpy
c) Gibbs energy d) Exergy

4) When the boiler pressure in the Rankine cycle increases, the efficiency of plant _____.
a) increases b) decreases
c) remains the same d) cannot say

5) The ratio of heat used in producing the steam to the heat liberated in the furnace is called _____.
a) Equivalent evaporation b) Evaporative capacity
c) Boiler efficiency d) Factor of evaporation

6) The major heat loss in the boiler is due to _____.
a) Moisture in fuel b) Dry fuel gases
c) steam formation d) Unburnt fuel

7) The smallest section of Convergent - divergent nozzle is called _____.
a) Opening
b) Inlet
c) Diverging section
d) Throat

8) The law of compression for Isentropic compression is approximated by the equation _____.
a) $pv = C$
b) $Pv^{1.3} = C$
c) $pv^{1.4} = C$
d) $Pv^{1.135} = C$

9) The ratio of the actual vacuum to the ideal vacuum in a condenser is called _____.
a) condenser efficiency
b) vacuum efficiency
c) nozzle efficiency
d) evaporator efficiency

10) In case of reaction steam turbine _____.
a) there is an enthalpy drop both in fixed and moving blades
b) there is an enthalpy drop only in fixed blades
c) there is an enthalpy drop only in moving blades
d) none of the above

11) A condenser in a steam power plant _____.
a) increases expansion ratio of steam
b) reduces back pressure of steam
c) reduces temp of steam
d) All of the above

12) Delaval turbine is _____.
a) impulse reaction turbine
b) reaction turbine
c) multi-rotor impulse turbine
d) single-rotor impulse turbine

13) In single stage single acting reciprocating-compressor without clearance volume, the work done is minimal during _____.
a) isothermal compression
b) isentropic compression
c) polytropic compression
d) None of the above

14) Due to intercooling the required work done for compression, _____.
a) Remains constant
b) Increases
c) Decreases
d) None of the above

SLR-QH-43

Seat No.		Set	P

S.Y. (B.Tech.) (Mechanical Engineering) (Sem - I) (New) (NEP CBCS)
Examination: March/April-2026
Applied Thermodynamics (MECHPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of Steam tables and Mollier diagrams is allowed.
4) Use of Scientific calculator is allowed.
5) Assume suitable data if required and state it clearly.

SECTION – I

Q.2 **a)** Calculate the standard enthalpy at 298.15 K for the reaction **05**

$4NH_3(g)+5O_2(g) \rightarrow 4NO(g) + 6H_2O(g)$

standard enthalpies of formation for

$NH_3(g)$ = 45.72 KJ/mol

$NO(g)$ = 90.43 KJ/mol

$H_2o(g)$ = -242 KJ/mol

b) Derive an expression for entropy change of an ideal gas undergoing change of state in terms of initial and final temperatures and volumes. **05**

c) State 2nd law of thermodynamics and prove that **04**
$COP_{HP} = COP_{Refrigerator} + 1$.

Q.3 **a)** Write a short note on the classification of Boilers. **05**

b) With the help of formulae, enlist the different losses in a boiler and draw a model heat balance sheet for a boiler. **05**

c) A boiler produces wet steam having a dryness fraction of 0.90. The working pressure of the boiler is 12 bar absolute It generates steam at the rate of 640 kg/hr and consumes coal at the rate of 80 kg/hr, if the calorific value of coal is 31,400 kJ/kg and water is fed at temp. of 200C, calculate: **04**

i) equivalent evaporation/kg of coal
ii) factor of evaporation
iii) boiler efficiency

Q.4 **a)** Explain the effect of various operating conditions on Rankine cycle efficiency. **05**

b) In the Rankine cycle, dry and saturated steam enters the turbine at 20 bar pressure. The exhaust pressure of the turbine is 0.1 bar, and all processes are reversible, find: **05**

i) Cycle thermal efficiency
ii) Work ratio
iii) Specific steam Consumption

c) Draw the T-S diagram for the Rankine cycle when steam enters the turbine is. **04**

i) Dry and saturated
ii) Superheated

SECTION – II

Q.5 **a)** In the De-laval turbine steam issues from a nozzle with a velocity of 1200 m/s. the nozzle angle is 20°. The mean blade speed is 400 m/s. inlet and outlet angles of the blade are equal. The mass of steam flowing through the turbine per hour is 1000 kg calculate: **05**

i) Blade angles
ii) Relative velocity of steam entering the blade
iii) Tangential force on the blade
iv) Power developed
v) Blade efficiency. Take K = 0.8

b) Define the Condenser, & explain with a sketch the elements of the steam-condensing plant. **05**

c) What is a nozzle? What are its different types? Explain with the help of sketches. **04**

Q.6 **a)** Derive an expression for the volumetric efficiency of a reciprocating compressor with usual notations. **05**

b) What is the compounding of a steam turbine? Explain any one method of compounding. **05**

c) Differentiate between Surface Condenser & Jet Condenser. **04**

Q.7 **a)** Air is to be compressed in a single-stage reciprocating compressor from 1.013 bar and 15°C to 7 bar. Calculate the indicated power required for a free air delivery of 0.3 m^3/min, when the compression process is **05**

i) Isentropic
ii) Polytronic, and n = 1.25.
iii) Isothermal

b) Derive the expression for a polytropic work done in a single-stage reciprocating air compressor with a suitable P-V diagram. **05**

c) What is the necessity of multistage compression? Discuss the advantages of multistage compression with intercooling. **04**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Applied Thermodynamics (MECHPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.
5) Use of Steam tables is allowed.
6) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The law of compression for Isentropic compression is approximated by the equation _____.
a) $pv = C$ b) $Pv^{1.3} = C$
c) $pv^{1.4} = C$ d) $Pv^{1.135} = C$

2) The ratio of the actual vacuum to the ideal vacuum in a condenser is called _____.
a) condenser efficiency b) vacuum efficiency
c) nozzle efficiency d) evaporator efficiency

3) In case of reaction steam turbine _____.
a) there is an enthalpy drop both in fixed and moving blades
b) there is an enthalpy drop only in fixed blades
c) there is an enthalpy drop only in moving blades
d) none of the above

4) A condenser in a steam power plant _____.
a) increases expansion ratio of steam
b) reduces back pressure of steam
c) reduces temp of steam
d) All of the above

5) Delaval turbine is _____.
a) impulse reaction turbine b) reaction turbine
c) multi-rotor impulse turbine d) single-rotor impulse turbine

6) In single stage single acting reciprocating-compressor without clearance volume, the work done is minimal during _____.
a) isothermal compression b) isentropic compression
c) polytropic compression d) None of the above

7) Due to intercooling the required work done for compression, _____.
a) Remains constant b) Increases
c) Decreases d) None of the above

8) What is the dryness fraction (x) on the dry and saturated steam?
a) x=0 b) x=1
c) x=0.9 d) x=0.5

9) The term coefficient of performance is related with _____.
a) Heat pump b) Heat Engine
c) Steam Engine d) Gas Turbine

10) Available energy is known as _____.
a) Entropy b) Enthalpy
c) Gibbs energy d) Exergy

11) When the boiler pressure in the Rankine cycle increases, the efficiency of plant _____.
a) increases b) decreases
c) remains the same d) cannot say

12) The ratio of heat used in producing the steam to the heat liberated in the furnace is called _____.
a) Equivalent evaporation b) Evaporative capacity
c) Boiler efficiency d) Factor of evaporation

13) The major heat loss in the boiler is due to _____.
a) Moisture in fuel b) Dry fuel gases
c) steam formation d) Unburnt fuel

14) The smallest section of Convergent - divergent nozzle is called _____.
a) Opening b) Inlet
c) Diverging section d) Throat

SLR-QH-43

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Sem - I) (New) (NEP CBCS)
Examination: March/April-2026
Applied Thermodynamics (MECHPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of Steam tables and Mollier diagrams is allowed.
4) Use of Scientific calculator is allowed.
5) Assume suitable data if required and state it clearly.

SECTION – I

Q.2 a) Calculate the standard enthalpy at 298.15 K for the reaction **05**

$4NH_3(g)+5O_2(g) \rightarrow 4NO(g) + 6H_2O(g)$

standard enthalpies of formation for

$NH_3(g)$ = 45.72 KJ/mol

$NO(g)$ = 90.43 KJ/mol

$H_2o(g)$ = -242 KJ/mol

b) Derive an expression for entropy change of an ideal gas undergoing change of state in terms of initial and final temperatures and volumes. **05**

c) State 2nd law of thermodynamics and prove that $COP_{HP} = COP_{Refrigerator} + 1$. **04**

Q.3 a) Write a short note on the classification of Boilers. **05**

b) With the help of formulae, enlist the different losses in a boiler and draw a model heat balance sheet for a boiler. **05**

c) A boiler produces wet steam having a dryness fraction of 0.90. The working pressure of the boiler is 12 bar absolute It generates steam at the rate of 640 kg/hr and consumes coal at the rate of 80 kg/hr, if the calorific value of coal is 31,400 kJ/kg and water is fed at temp. of 200C, calculate: **04**

i) equivalent evaporation/kg of coal
ii) factor of evaporation
iii) boiler efficiency

Q.4 a) Explain the effect of various operating conditions on Rankine cycle efficiency. **05**

b) In the Rankine cycle, dry and saturated steam enters the turbine at 20 bar pressure. The exhaust pressure of the turbine is 0.1 bar, and all processes are reversible, find: **05**

i) Cycle thermal efficiency
ii) Work ratio
iii) Specific steam Consumption

c) Draw the T-S diagram for the Rankine cycle when steam enters the turbine is. **04**

i) Dry and saturated
ii) Superheated

SECTION – II

Q.5 **a)** In the De-laval turbine steam issues from a nozzle with a velocity of 1200 m/s. the nozzle angle is 20°. The mean blade speed is 400 m/s. inlet and outlet angles of the blade are equal. The mass of steam flowing through the turbine per hour is 1000 kg calculate: **05**

i) Blade angles
ii) Relative velocity of steam entering the blade
iii) Tangential force on the blade
iv) Power developed
v) Blade efficiency. Take K = 0.8

b) Define the Condenser, & explain with a sketch the elements of the steam-condensing plant. **05**

c) What is a nozzle? What are its different types? Explain with the help of sketches. **04**

Q.6 **a)** Derive an expression for the volumetric efficiency of a reciprocating compressor with usual notations. **05**

b) What is the compounding of a steam turbine? Explain any one method of compounding. **05**

c) Differentiate between Surface Condenser & Jet Condenser. **04**

Q.7 **a)** Air is to be compressed in a single-stage reciprocating compressor from 1.013 bar and 15°C to 7 bar. Calculate the indicated power required for a free air delivery of 0.3 m^3/min, when the compression process is **05**

i) Isentropic
ii) Polytronic, and n = 1.25.
iii) Isothermal

b) Derive the expression for a polytropic work done in a single-stage reciprocating air compressor with a suitable P-V diagram. **05**

c) What is the necessity of multistage compression? Discuss the advantages of multistage compression with intercooling. **04**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Applied Thermodynamics (MECHPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.
5) Use of Steam tables is allowed.
6) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A condenser in a steam power plant _____.
a) increases expansion ratio of steam
b) reduces back pressure of steam
c) reduces temp of steam
d) All of the above

2) Delaval turbine is _____.
a) impulse reaction turbine b) reaction turbine
c) multi-rotor impulse turbine d) single-rotor impulse turbine

3) In single stage single acting reciprocating-compressor without clearance volume, the work done is minimal during _____.
a) isothermal compression b) isentropic compression
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4) Due to intercooling the required work done for compression, _____.
a) Remains constant b) Increases
c) Decreases d) None of the above

5) What is the dryness fraction (x) on the dry and saturated steam?
a) x=0 b) x=1
c) x=0.9 d) x=0.5

6) The term coefficient of performance is related with _____.
a) Heat pump b) Heat Engine
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11) The smallest section of Convergent - divergent nozzle is called _____.
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12) The law of compression for Isentropic compression is approximated by the equation _____.
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13) The ratio of the actual vacuum to the ideal vacuum in a condenser is called _____.
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c) nozzle efficiency d) evaporator efficiency

14) In case of reaction steam turbine _____.
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c) there is an enthalpy drop only in moving blades
d) none of the above

SLR-QH-43

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Sem - I) (New) (NEP CBCS)
Examination: March/April-2026
Applied Thermodynamics (MECHPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of Steam tables and Mollier diagrams is allowed.
4) Use of Scientific calculator is allowed.
5) Assume suitable data if required and state it clearly.

SECTION – I

Q.2 **a)** Calculate the standard enthalpy at 298.15 K for the reaction **05**

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b) With the help of formulae, enlist the different losses in a boiler and draw a model heat balance sheet for a boiler. **05**

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Q.4 **a)** Explain the effect of various operating conditions on Rankine cycle efficiency. **05**

b) In the Rankine cycle, dry and saturated steam enters the turbine at 20 bar pressure. The exhaust pressure of the turbine is 0.1 bar, and all processes are reversible, find: **05**

i) Cycle thermal efficiency
ii) Work ratio
iii) Specific steam Consumption

c) Draw the T-S diagram for the Rankine cycle when steam enters the turbine is. **04**

i) Dry and saturated
ii) Superheated

SECTION – II

Q.5 **a)** In the De-laval turbine steam issues from a nozzle with a velocity of 1200 m/s. the nozzle angle is 20°. The mean blade speed is 400 m/s. inlet and outlet angles of the blade are equal. The mass of steam flowing through the turbine per hour is 1000 kg calculate: **05**

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iv) Power developed
v) Blade efficiency. Take K = 0.8

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b) What is the compounding of a steam turbine? Explain any one method of compounding. **05**

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Q.7 **a)** Air is to be compressed in a single-stage reciprocating compressor from 1.013 bar and 15°C to 7 bar. Calculate the indicated power required for a free air delivery of 0.3 m^3/min, when the compression process is **05**

i) Isentropic
ii) Polytronic, and n = 1.25.
iii) Isothermal

b) Derive the expression for a polytropic work done in a single-stage reciprocating air compressor with a suitable P-V diagram. **05**

c) What is the necessity of multistage compression? Discuss the advantages of multistage compression with intercooling. **04**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Applied Thermodynamics (MECHPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required and state it clearly.
5) Use of Steam tables is allowed.
6) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The major heat loss in the boiler is due to _____.
a) Moisture in fuel b) Dry fuel gases
c) steam formation d) Unburnt fuel

2) The smallest section of Convergent - divergent nozzle is called _____.
a) Opening b) Inlet
c) Diverging section d) Throat

3) The law of compression for Isentropic compression is approximated by the equation _____.
a) $pv = C$ b) $Pv^{1.3} = C$
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a) there is an enthalpy drop both in fixed and moving blades
b) there is an enthalpy drop only in fixed blades
c) there is an enthalpy drop only in moving blades
d) none of the above

6) A condenser in a steam power plant _____.
a) increases expansion ratio of steam
b) reduces back pressure of steam
c) reduces temp of steam
d) All of the above

7) Delaval turbine is _____.
a) impulse reaction turbine
b) reaction turbine
c) multi-rotor impulse turbine
d) single-rotor impulse turbine

8) In single stage single acting reciprocating-compressor without clearance volume, the work done is minimal during _____.
a) isothermal compression
b) isentropic compression
c) polytropic compression
d) None of the above

9) Due to intercooling the required work done for compression, _____.
a) Remains constant
b) Increases
c) Decreases
d) None of the above

10) What is the dryness fraction (x) on the dry and saturated steam?
a) x=0
b) x=1
c) x=0.9
d) x=0.5

11) The term coefficient of performance is related with _____.
a) Heat pump
b) Heat Engine
c) Steam Engine
d) Gas Turbine

12) Available energy is known as _____.
a) Entropy
b) Enthalpy
c) Gibbs energy
d) Exergy

13) When the boiler pressure in the Rankine cycle increases, the efficiency of plant _____.
a) increases
b) decreases
c) remains the same
d) cannot say

14) The ratio of heat used in producing the steam to the heat liberated in the furnace is called _____.
a) Equivalent evaporation
b) Evaporative capacity
c) Boiler efficiency
d) Factor of evaporation

SLR-QH-43

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Sem - I) (New) (NEP CBCS)
Examination: March/April-2026
Applied Thermodynamics (MECHPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each section.
2) Figures to the right indicate full marks.
3) Use of Steam tables and Mollier diagrams is allowed.
4) Use of Scientific calculator is allowed.
5) Assume suitable data if required and state it clearly.

SECTION – I

Q.2 a) Calculate the standard enthalpy at 298.15 K for the reaction **05**

$4NH_3(g)+5O_2(g) \rightarrow 4NO(g) + 6H_2O(g)$

standard enthalpies of formation for

$NH_3(g)$ = 45.72 KJ/mol

$NO(g)$ = 90.43 KJ/mol

$H_2o(g)$ = -242 KJ/mol

b) Derive an expression for entropy change of an ideal gas undergoing change of state in terms of initial and final temperatures and volumes. **05**

c) State 2nd law of thermodynamics and prove that **04**
$COP_{HP} = COP_{Refrigerator} + 1$.

Q.3 a) Write a short note on the classification of Boilers. **05**

b) With the help of formulae, enlist the different losses in a boiler and draw a model heat balance sheet for a boiler. **05**

c) A boiler produces wet steam having a dryness fraction of 0.90. The working pressure of the boiler is 12 bar absolute It generates steam at the rate of 640 kg/hr and consumes coal at the rate of 80 kg/hr, if the calorific value of coal is 31,400 kJ/kg and water is fed at temp. of 200C, calculate: **04**

i) equivalent evaporation/kg of coal
ii) factor of evaporation
iii) boiler efficiency

Q.4 a) Explain the effect of various operating conditions on Rankine cycle efficiency. **05**

b) In the Rankine cycle, dry and saturated steam enters the turbine at 20 bar pressure. The exhaust pressure of the turbine is 0.1 bar, and all processes are reversible, find: **05**

i) Cycle thermal efficiency
ii) Work ratio
iii) Specific steam Consumption

c) Draw the T-S diagram for the Rankine cycle when steam enters the turbine is. **04**

i) Dry and saturated
ii) Superheated

SECTION – II

Q.5 **a)** In the De-laval turbine steam issues from a nozzle with a velocity of 1200 m/s. the nozzle angle is 20°. The mean blade speed is 400 m/s. inlet and outlet angles of the blade are equal. The mass of steam flowing through the turbine per hour is 1000 kg calculate: **05**

i) Blade angles
ii) Relative velocity of steam entering the blade
iii) Tangential force on the blade
iv) Power developed
v) Blade efficiency. Take K = 0.8

b) Define the Condenser, & explain with a sketch the elements of the steam-condensing plant. **05**

c) What is a nozzle? What are its different types? Explain with the help of sketches. **04**

Q.6 **a)** Derive an expression for the volumetric efficiency of a reciprocating compressor with usual notations. **05**

b) What is the compounding of a steam turbine? Explain any one method of compounding. **05**

c) Differentiate between Surface Condenser & Jet Condenser. **04**

Q.7 **a)** Air is to be compressed in a single-stage reciprocating compressor from 1.013 bar and 15°C to 7 bar. Calculate the indicated power required for a free air delivery of 0.3 m^3/min, when the compression process is **05**

i) Isentropic
ii) Polytronic, and n = 1.25.
iii) Isothermal

b) Derive the expression for a polytropic work done in a single-stage reciprocating air compressor with a suitable P-V diagram. **05**

c) What is the necessity of multistage compression? Discuss the advantages of multistage compression with intercooling. **04**

SLR-QH-44

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Manufacturing Processes (MECHPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) For joining of two parts without use of extra filler metal, following processes are used ____.
a) Brazing b) TIG welding
c) MIG welding d) Resistance welding

2) Investment Casting _____.
a) uses Metal Pattern
b) suitable for Mass Production
c) does not use Core
d) used for manufacturing of Lathe Bed

3) Which of the following flux is used in cupola _____.
a) Limestone b) Sodium Chloride
c) Sodium Hydroxide d) Sulphur

4) Cold working operations are carried out ____.
a) Above recrystallization temperature
b) Below recrystallization temperature
c) Above Melting temperature
d) Below melting temperature

5) Inert gas used in TIG/MIG welding are ____.
a) Oxygen b) Nitrogen
c) Argon/ Helium d) None of above

6) What is the function of cores in the casting process?
a) To support the pattern
b) To provide differential cooling rates at specific portions
c) To make holes and cavities
d) For ease of flow of the molten material

7) Which of the following is 'not' an allowance given to the pattern for casting?
a) Shrinkage
b) Draft
c) Hole
d) Machining

8) The metal extrusion process is generally used for producing _____.
a) uniform solid sections
b) uniform hollow sections
c) uniform solid and hollow sections
d) varying solid and hollow sections

9) The operation of producing cup shaped parts from flat sheet metal blanks by bending and plastic flow of metal, is known as _____.
a) drawing
b) squeezing
c) coining
d) planishing

10) Which of the process, the input material is in powder form?
a) LOM
b) SLS
c) FDM
d) MJM

11) The oxygen cylinder is usually painted with _____.
a) black colour
b) white colour
c) maroon colour
d) yellow colour

12) In which of the following welding techniques, the weld pool is surrounded by an inert gas _____.
a) Arc welding
b) Carbon arc
c) MIG
d) Electroslag welding

13) The purpose of a riser is to _____.
a) deliver molten metal into the mould cavity
b) act as a reservoir for the molten metal
c) feed the molten metal to the casting in order to compensate for the shrinkage
d) deliver the molten metal from pouring basin to gate

14) From the following, in which process, the input material is in solid form?
a) SLA
b) SLS
c) FDM
d) MJM

SLR-QH-44

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Manufacturing Processes (MECHPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain types of pattern allowances with neat sketch.	**05**
	b)	Explain types of Core with neat sketch.	**05**
	c)	Write name of different types of patterns and explain any two patterns.	**04**
Q.3	**a)**	Explain working of cupola Furnace with various zones.	**05**
	b)	Explain in detail working of centrifugal casting and their types.	**05**
	c)	Explain any four defects in casting with their causes.	**04**
Q.4	**a)**	Sketch the three types of flames used in the oxy-acetylene welding process. Give the uses of each.	**05**
	b)	Discuss the TIG welding process setup with the help of a neat sketch also enlist advantages & disadvantages.	**05**
	c)	What is the difference between Brazing and Soldering?	**04**

SECTION – II

Q.5	**a)**	Explain with neat sketch principle and operation of rolling process.	**05**
	b)	Discuss classification of Rolling Mills and their application.	**05**
	c)	Explain the classification of forming processes.	**04**
Q.6	**a)**	Explain with neat sketches hydro forming process.	**05**
	b)	Explain with neat sketches magnetic pulse forming.	**05**
	c)	Explain with neat sketch Explosive forming with advantages, disadvantages, application.	**04**

Q.7	**a)**	Explain Fused Deposition Modelling (FDP) with advantages, disadvantages and applications.	**05**
	b)	Explain Direct Metal Laser Sintering (DMLS) with advantages, disadvantages and applications.	**05**
	c)	Explain advantages, disadvantages and application of rapid Protyping.	**04**

SLR-QH-44

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Manufacturing Processes (MECHPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The metal extrusion process is generally used for producing _____.
a) uniform solid sections
b) uniform hollow sections
c) uniform solid and hollow sections
d) varying solid and hollow sections

2) The operation of producing cup shaped parts from flat sheet metal blanks by bending and plastic flow of metal, is known as _____.
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c) coining d) planishing

3) Which of the process, the input material is in powder form?
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c) MIG d) Electroslag welding

6) The purpose of a riser is to _____.
a) deliver molten metal into the mould cavity
b) act as a reservoir for the molten metal
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7) From the following, in which process, the input material is in solid form?
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10) Which of the following flux is used in cupola _____.
a) Limestone b) Sodium Chloride
c) Sodium Hydroxide d) Sulphur

11) Cold working operations are carried out ____.
a) Above recrystallization temperature
b) Below recrystallization temperature
c) Above Melting temperature
d) Below melting temperature

12) Inert gas used in TIG/MIG welding are ____.
a) Oxygen b) Nitrogen
c) Argon/ Helium d) None of above

13) What is the function of cores in the casting process?
a) To support the pattern
b) To provide differential cooling rates at specific portions
c) To make holes and cavities
d) For ease of flow of the molten material

14) Which of the following is ‘not’ an allowance given to the pattern for casting?
a) Shrinkage b) Draft
c) Hole d) Machining

SLR-QH-44

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Manufacturing Processes (MECHPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain types of pattern allowances with neat sketch.	**05**
	b)	Explain types of Core with neat sketch.	**05**
	c)	Write name of different types of patterns and explain any two patterns.	**04**
Q.3	**a)**	Explain working of cupola Furnace with various zones.	**05**
	b)	Explain in detail working of centrifugal casting and their types.	**05**
	c)	Explain any four defects in casting with their causes.	**04**
Q.4	**a)**	Sketch the three types of flames used in the oxy-acetylene welding process. Give the uses of each.	**05**
	b)	Discuss the TIG welding process setup with the help of a neat sketch also enlist advantages & disadvantages.	**05**
	c)	What is the difference between Brazing and Soldering?	**04**

SECTION – II

Q.5	**a)**	Explain with neat sketch principle and operation of rolling process.	**05**
	b)	Discuss classification of Rolling Mills and their application.	**05**
	c)	Explain the classification of forming processes.	**04**
Q.6	**a)**	Explain with neat sketches hydro forming process.	**05**
	b)	Explain with neat sketches magnetic pulse forming.	**05**
	c)	Explain with neat sketch Explosive forming with advantages, disadvantages, application.	**04**

Q.7	**a)**	Explain Fused Deposition Modelling (FDP) with advantages, disadvantages and applications.	**05**
	b)	Explain Direct Metal Laser Sintering (DMLS) with advantages, disadvantages and applications.	**05**
	c)	Explain advantages, disadvantages and application of rapid Protyping.	**04**

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Manufacturing Processes (MECHPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The oxygen cylinder is usually painted with _____.
a) black colour b) white colour
c) maroon colour d) yellow colour

2) In which of the following welding techniques, the weld pool is surrounded by an inert gas _____.
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3) The purpose of a riser is to _____.
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c) feed the molten metal to the casting in order to compensate for the shrinkage
d) deliver the molten metal from pouring basin to gate

4) From the following, in which process, the input material is in solid form?
a) SLA b) SLS
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5) For joining of two parts without use of extra filler metal, following processes are used ____.
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13) The operation of producing cup shaped parts from flat sheet metal blanks by bending and plastic flow of metal, is known as _____.
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c) coining d) planishing

14) Which of the process, the input material is in powder form?
a) LOM b) SLS
c) FDM d) MJM

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Manufacturing Processes (MECHPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain types of pattern allowances with neat sketch.	**05**
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Q.3	**a)**	Explain working of cupola Furnace with various zones.	**05**
	b)	Explain in detail working of centrifugal casting and their types.	**05**
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	b)	Discuss the TIG welding process setup with the help of a neat sketch also enlist advantages & disadvantages.	**05**
	c)	What is the difference between Brazing and Soldering?	**04**

SECTION – II

Q.5	**a)**	Explain with neat sketch principle and operation of rolling process.	**05**
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	c)	Explain advantages, disadvantages and application of rapid Protyping.	**04**

Seat No.	

Set | S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Manufacturing Processes (MECHPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) What is the function of cores in the casting process?
a) To support the pattern
b) To provide differential cooling rates at specific portions
c) To make holes and cavities
d) For ease of flow of the molten material

2) Which of the following is 'not' an allowance given to the pattern for casting?
a) Shrinkage b) Draft
c) Hole d) Machining

3) The metal extrusion process is generally used for producing _____.
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d) varying solid and hollow sections

4) The operation of producing cup shaped parts from flat sheet metal blanks by bending and plastic flow of metal, is known as _____.
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b) SLS
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d) MJM

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c) Sodium Hydroxide
d) Sulphur

13) Cold working operations are carried out ____.

a) Above recrystallization temperature
b) Below recrystallization temperature
c) Above Melting temperature
d) Below melting temperature

14) Inert gas used in TIG/MIG welding are ____.

a) Oxygen
b) Nitrogen
c) Argon/ Helium
d) None of above

SLR-QH-44

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Manufacturing Processes (MECHPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain types of pattern allowances with neat sketch.	**05**
	b)	Explain types of Core with neat sketch.	**05**
	c)	Write name of different types of patterns and explain any two patterns.	**04**
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	c)	Explain any four defects in casting with their causes.	**04**
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	b)	Discuss the TIG welding process setup with the help of a neat sketch also enlist advantages & disadvantages.	**05**
	c)	What is the difference between Brazing and Soldering?	**04**

SECTION – II

Q.5	**a)**	Explain with neat sketch principle and operation of rolling process.	**05**
	b)	Discuss classification of Rolling Mills and their application.	**05**
	c)	Explain the classification of forming processes.	**04**
Q.6	**a)**	Explain with neat sketches hydro forming process.	**05**
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	c)	Explain with neat sketch Explosive forming with advantages, disadvantages, application.	**04**

Q.7	**a)**	Explain Fused Deposition Modelling (FDP) with advantages, disadvantages and applications.	**05**
	b)	Explain Direct Metal Laser Sintering (DMLS) with advantages, disadvantages and applications.	**05**
	c)	Explain advantages, disadvantages and application of rapid Protyping.	**04**

SLR-QH-45

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mechanics of Materials (MECHPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) In terms of Poisson's ratio (μ), ratio of young's modulus (E) to shear Modulus (G) of elastic materials is _____.
a) $2(1+\mu)$ b) $2(1-\mu)$
c) $(1+\mu)/2$ d) $2/(1+\mu)$

2) The Poisson's ratio is ratio of lateral strain to _____.
a) Shear strain b) Linear strain
c) Elastic strain d) Transverse strain

3) For a shaft subjected to torsion, the shear stress developed is _____.
a) maximum at axis b) uniform over section
c) maximum at outer surface d) maximum at inner surface

4) In case of a cantilever beam, maximum B.M. and maximum S.F. always occur at _____.
a) Couple end b) Fixed end
c) Free end d) Mid span

5) For transmitting same power, all properties remaining same, between a solid and hollow shaft _____.
a) hollow shaft is economical b) solid shaft is economical
c) both are costly d) None of the above

6) Maximum energy that a given component can absorb without undergoing permanent deformations up to elastic limit is known as _____.
a) Proof resilience b) Resilience
c) Hardness d) Toughness

7) The Bending moment suddenly rises or fall at a section where there is _____.
a) UDL
b) Couple
c) Point load
d) UVL

8) A point along the length of beam subjected to loads, where bending moment changes its sign known as _____.
a) Zero shear force
b) Maximum shear stress
c) Contra flexure
d) Inflexion

9) When simply supported beam is loaded, maximum tensile stress shall develop at _____.
a) at the neutral layer
b) top layer
c) bottom layer
d) at any layer

10) The ratio of maximum shear stress to average shear stress is 4/3 in _____.
a) circular cross-section
b) rectangular cross-section
c) square cross-section
d) All of the above

11) Maximum shear stress in Mohr's circle is _____.
a) equal to radius of Mohr's circle
b) greater than radius of Mohr's circle
c) less than radius of Mohr's circle
d) could be any of above

12) What is nature of distribution of shear stress in a rectangular beam?
a) Linear
b) Parabolic
c) Hyperbolic
d) Elliptic

13) For a simply supported beam carrying a U.D.L. on its entire span, the deflection is _____.
a) same as slope
b) maximum at center
c) zero at center
d) zero at support

14) Neutral axis of the beam is the axis at which _____.
a) Shear force is zero
b) Moment of inertia is zero
c) Bending stress is zero
d) Bending stress is maximum

SLR-QH-45

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mechanics of Materials (MECHPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Use of Scientific calculator is allowed.
3) Figures to the right indicate full marks
4) Assume additional suitable data if necessary and state it clearly.

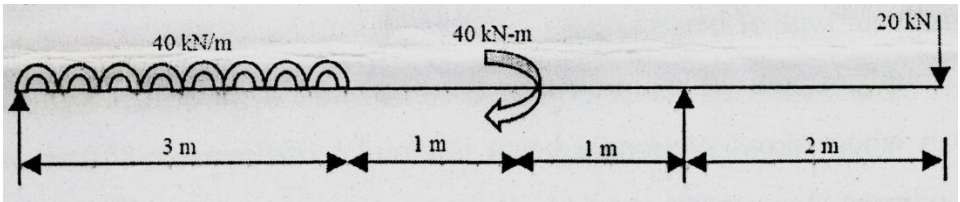
SECTION – I

Q.2 **a)** A steel rod 50 mm diameter, 1200 mm long is co-axially enclosed in a brass tube of 60 mm external diameter, 4 mm thickness and 1200 mm length. Determine stress induced in each material and the change in length, if the assembly is subjected to an axial compressive load of 80 kN. Take, E for steel 200 Gpa; E for Brass 100Gpa. **08**

b) A weight of 2kN is dropped on a collar attached at lower end of vertical bar 3 meter-long, and 24mm diameter. Calculate height of drop if maximum instantaneous stress is not to exceed 140mpa. Also calculate the instantaneous elongation. Take E = 200Gpa. **06**

Q.3 **a)** Design the diameter of solid circular shaft to transmit 50 kW power rotating at 100 rpm. Maximum torque is likely to exceed mean torque by 25%. Maximum permissible stress is 60 Mpa. Also calculate angle of twist for a shaft length of 2 meter. Take G = 80Gpa. **08**

b) A beam carries loaded as shown in figure. Draw SFD, BMD and locate point of contra-shear and contra-flexure on SFD and BMD **06**



Q.4 **a)** A steel bar 10 mm in diameter 2 m long is at a temperature of 25°C. Find the free expansion of the bar when it is heated to 70°C. Calculate temperature stress exerted if **05**

i) expansion of bar is fully prevented
ii) bar is permitted to expand by 0.5 mm.
Take: $\alpha = 12 \times 10^{-6}$ per °c and $E = 200$ Gpa

b) A metal bar 40 × 40 mm section is subjected to axial Tensile load pf 500 kN. The extension of 200 mm gauge length is found to be 0.6mm and decrease in each side of bar is 0.04 mm. Calculate E, G and Poisson's Ratio. **05**

c) Define following terms: **04**

i) Point of Contra flexure
ii) Thermal stress
iii) Proof Resilience
iv) Torsional Rigidity

SECTION – II

Q.5 **a)** At a point in a strained material for given stresses are 54Mpa (Tensile) and 8Mpa (Compressive). Determine **06**

i) Normal, Tangential and Resultant stress on a plane inclined at 30 degrees to Axis of tensile stress.
ii) Maximum shear stress

b) A cast iron beam of T-section of flange 120 x 18 mm and web size 18 x 90 mm is used as simply supported beam of span 8 m. The beam carries point load of 6 kN at midspan of the beam. Determine maximum Tensile and compressive bending stress induced in the beam. **08**

Q.6 **a)** An I section of beam having two equal flanges 180 × 60 mm and web of 60 × 240 mm subjected to maximum shear force of 50kN. Determine shear stress across depth of cross section and draw shear stress distribution diagram across flange. **08**

b) A cantilever beam 3 m span caries two concentrated loads of 10kN and 5kN at a distance of 1.5 m and 3 meter from fixed end. Determine maximum slope and Deflection at free end of beam. Take E = 200 Gpa and Moment of inertia is I = 20 x 10^6 mm^4 **06**

Q.7 **a)** Explain in brief concept of slope and deflection in simply supported beam and cantilever type of beam. **04**

b) A simply supported beam 6-meter span carries U.D.L of 12 kN/m over entire span whose cross section of beam is circular of diameter 80 mm. Calculate Maximum slope at support and maximum deflections. Take E = 110Gpa **05**

c) At a point within a body subjected to two mutually perpendicular directions, stresses are 100 mpa and 75 mpa both are tensile. Each of above stresses is accompanied by shear stress of 75 mpa. Determine Magnitude of major and minor principal stress and greatest shear stress. **05**

SLR-QH-45

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mechanics of Materials (MECHPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A point along the length of beam subjected to loads, where bending moment changes its sign known as _____.
a) Zero shear force b) Maximum shear stress
c) Contra flexure d) Inflexion

2) When simply supported beam is loaded, maximum tensile stress shall develop at _____.
a) at the neutral layer b) top layer
c) bottom layer d) at any layer

3) The ratio of maximum shear stress to average shear stress is 4/3 in _____.
a) circular cross-section b) rectangular cross-section
c) square cross-section d) All of the above

4) Maximum shear stress in Mohr's circle is _____.
a) equal to radius of Mohr's circle
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6) For a simply supported beam carrying a U.D.L. on its entire span, the deflection is _____.
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7) Neutral axis of the beam is the axis at which _____.

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8) In terms of Poisson's ratio (μ), ratio of young's modulus (E) to shear Modulus (G) of elastic materials is _____.

a) $2(1+\mu)$
b) $2(1-\mu)$
c) $(1+\mu)/2$
d) $2/(1+\mu)$

9) The Poisson's ratio is ratio of lateral strain to _____.

a) Shear strain
b) Linear strain
c) Elastic strain
d) Transverse strain

10) For a shaft subjected to torsion, the shear stress developed is _____.

a) maximum at axis
b) uniform over section
c) maximum at outer surface
d) maximum at inner surface

11) In case of a cantilever beam, maximum B.M. and maximum S.F. always occur at _____.

a) Couple end
b) Fixed end
c) Free end
d) Mid span

12) For transmitting same power, all properties remaining same, between a solid and hollow shaft _____.

a) hollow shaft is economical
b) solid shaft is economical
c) both are costly
d) None of the above

13) Maximum energy that a given component can absorb without undergoing permanent deformations up to elastic limit is known as _____.

a) Proof resilience
b) Resilience
c) Hardness
d) Toughness

14) The Bending moment suddenly rises or fall at a section where there is _____.

a) UDL
b) Couple
c) Point load
d) UVL

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mechanics of Materials (MECHPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Use of Scientific calculator is allowed.
3) Figures to the right indicate full marks
4) Assume additional suitable data if necessary and state it clearly.

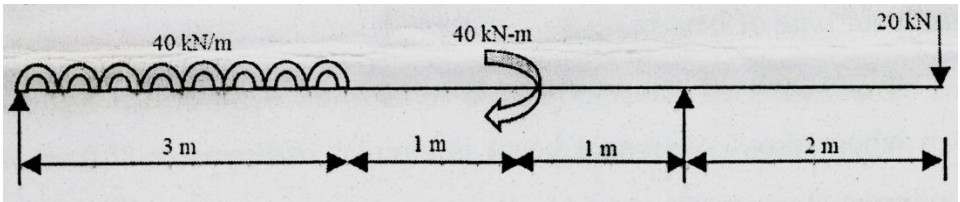
SECTION – I

Q.2 **a)** A steel rod 50 mm diameter, 1200 mm long is co-axially enclosed in a brass tube of 60 mm external diameter, 4 mm thickness and 1200 mm length. Determine stress induced in each material and the change in length, if the assembly is subjected to an axial compressive load of 80 kN. Take, E for steel 200 Gpa; E for Brass 100Gpa. **08**

b) A weight of 2kN is dropped on a collar attached at lower end of vertical bar 3 meter-long, and 24mm diameter. Calculate height of drop if maximum instantaneous stress is not to exceed 140mpa. Also calculate the instantaneous elongation. Take E = 200Gpa. **06**

Q.3 **a)** Design the diameter of solid circular shaft to transmit 50 kW power rotating at 100 rpm. Maximum torque is likely to exceed mean torque by 25%. Maximum permissible stress is 60 Mpa. Also calculate angle of twist for a shaft length of 2 meter. Take G = 80Gpa. **08**

b) A beam carries loaded as shown in figure. Draw SFD, BMD and locate point of contra-shear and contra-flexure on SFD and BMD **06**



Q.4 **a)** A steel bar 10 mm in diameter 2 m long is at a temperature of 25°C. Find the free expansion of the bar when it is heated to 70°C. Calculate temperature stress exerted if **05**

i) expansion of bar is fully prevented
ii) bar is permitted to expand by 0.5 mm.
Take: $\alpha = 12 \times 10^{-6}$ per °c and $E = 200$ Gpa

b) A metal bar 40 × 40 mm section is subjected to axial Tensile load pf 500 kN. The extension of 200 mm gauge length is found to be 0.6mm and decrease in each side of bar is 0.04 mm. Calculate E, G and Poisson's Ratio. **05**

c) Define following terms: **04**

i) Point of Contra flexure
ii) Thermal stress
iii) Proof Resilience
iv) Torsional Rigidity

SECTION – II

Q.5 **a)** At a point in a strained material for given stresses are 54Mpa (Tensile) and 8Mpa (Compressive). Determine **06**

i) Normal, Tangential and Resultant stress on a plane inclined at 30 degrees to Axis of tensile stress.
ii) Maximum shear stress

b) A cast iron beam of T-section of flange 120 x 18 mm and web size 18 x 90 mm is used as simply supported beam of span 8 m. The beam carries point load of 6 kN at midspan of the beam. Determine maximum Tensile and compressive bending stress induced in the beam. **08**

Q.6 **a)** An I section of beam having two equal flanges 180 × 60 mm and web of 60 × 240 mm subjected to maximum shear force of 50kN. Determine shear stress across depth of cross section and draw shear stress distribution diagram across flange. **08**

b) A cantilever beam 3 m span caries two concentrated loads of 10kN and 5kN at a distance of 1.5 m and 3 meter from fixed end. Determine maximum slope and Deflection at free end of beam. Take E = 200 Gpa and Moment of inertia is I = 20 x 10^6 mm^4 **06**

Q.7 **a)** Explain in brief concept of slope and deflection in simply supported beam and cantilever type of beam. **04**

b) A simply supported beam 6-meter span carries U.D.L of 12 kN/m over entire span whose cross section of beam is circular of diameter 80 mm. Calculate Maximum slope at support and maximum deflections. Take E = 110Gpa **05**

c) At a point within a body subjected to two mutually perpendicular directions, stresses are 100 mpa and 75 mpa both are tensile. Each of above stresses is accompanied by shear stress of 75 mpa. Determine Magnitude of major and minor principal stress and greatest shear stress. **05**

SLR-QH-45

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mechanics of Materials (MECHPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Maximum shear stress in Mohr's circle is _____.
a) equal to radius of Mohr's circle
b) greater than radius of Mohr's circle
c) less than radius of Mohr's circle
d) could be any of above

2) What is nature of distribution of shear stress in a rectangular beam?
a) Linear b) Parabolic
c) Hyperbolic d) Elliptic

3) For a simply supported beam carrying a U.D.L. on its entire span, the deflection is _____.
a) same as slope b) maximum at center
c) zero at center d) zero at support

4) Neutral axis of the beam is the axis at which _____.
a) Shear force is zero b) Moment of inertia is zero
c) Bending stress is zero d) Bending stress is maximum

5) In terms of Poisson's ratio (μ), ratio of young's modulus (E) to shear Modulus (G) of elastic materials is _____.
a) $2(1+\mu)$ b) $2(1-\mu)$
c) $(1+\mu)/2$ d) $2/(1+\mu)$

6) The Poisson's ratio is ratio of lateral strain to _____.
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7) For a shaft subjected to torsion, the shear stress developed is _____.
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d) maximum at inner surface

8) In case of a cantilever beam, maximum B.M. and maximum S.F. always occur at _____.
a) Couple end
b) Fixed end
c) Free end
d) Mid span

9) For transmitting same power, all properties remaining same, between a solid and hollow shaft _____.
a) hollow shaft is economical
b) solid shaft is economical
c) both are costly
d) None of the above

10) Maximum energy that a given component can absorb without undergoing permanent deformations up to elastic limit is known as _____.
a) Proof resilience
b) Resilience
c) Hardness
d) Toughness

11) The Bending moment suddenly rises or fall at a section where there is _____.
a) UDL
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d) UVL

12) A point along the length of beam subjected to loads, where bending moment changes its sign known as _____.
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13) When simply supported beam is loaded, maximum tensile stress shall develop at _____.
a) at the neutral layer
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d) at any layer

14) The ratio of maximum shear stress to average shear stress is 4/3 in _____.
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b) rectangular cross-section
c) square cross-section
d) All of the above

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mechanics of Materials (MECHPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Use of Scientific calculator is allowed.
3) Figures to the right indicate full marks
4) Assume additional suitable data if necessary and state it clearly.

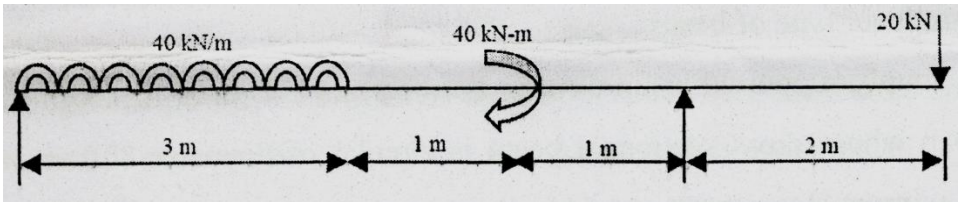
SECTION – I

Q.2 **a)** A steel rod 50 mm diameter, 1200 mm long is co-axially enclosed in a brass tube of 60 mm external diameter, 4 mm thickness and 1200 mm length. Determine stress induced in each material and the change in length, if the assembly is subjected to an axial compressive load of 80 kN. Take, E for steel 200 Gpa; E for Brass 100Gpa. **08**

b) A weight of 2kN is dropped on a collar attached at lower end of vertical bar 3 meter-long, and 24mm diameter. Calculate height of drop if maximum instantaneous stress is not to exceed 140mpa. Also calculate the instantaneous elongation. Take E = 200Gpa. **06**

Q.3 **a)** Design the diameter of solid circular shaft to transmit 50 kW power rotating at 100 rpm. Maximum torque is likely to exceed mean torque by 25%. Maximum permissible stress is 60 Mpa. Also calculate angle of twist for a shaft length of 2 meter. Take G = 80Gpa. **08**

b) A beam carries loaded as shown in figure. Draw SFD, BMD and locate point of contra-shear and contra-flexure on SFD and BMD **06**



Q.4 **a)** A steel bar 10 mm in diameter 2 m long is at a temperature of 25°C. Find the free expansion of the bar when it is heated to 70°C. Calculate temperature stress exerted if **05**

i) expansion of bar is fully prevented
ii) bar is permitted to expand by 0.5 mm.
Take: $\alpha = 12 \times 10^{-6}$ per °c and $E = 200$ Gpa

b) A metal bar 40 × 40 mm section is subjected to axial Tensile load pf 500 kN. The extension of 200 mm gauge length is found to be 0.6mm and decrease in each side of bar is 0.04 mm. Calculate E, G and Poisson's Ratio. **05**

c) Define following terms: **04**

i) Point of Contra flexure
ii) Thermal stress
iii) Proof Resilience
iv) Torsional Rigidity

SECTION – II

Q.5 **a)** At a point in a strained material for given stresses are 54Mpa (Tensile) and 8Mpa (Compressive). Determine **06**

i) Normal, Tangential and Resultant stress on a plane inclined at 30 degrees to Axis of tensile stress.
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b) A cast iron beam of T-section of flange 120 x 18 mm and web size 18 x 90 mm is used as simply supported beam of span 8 m. The beam carries point load of 6 kN at midspan of the beam. Determine maximum Tensile and compressive bending stress induced in the beam. **08**

Q.6 **a)** An I section of beam having two equal flanges 180 × 60 mm and web of 60 × 240 mm subjected to maximum shear force of 50kN. Determine shear stress across depth of cross section and draw shear stress distribution diagram across flange. **08**

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Q.7 **a)** Explain in brief concept of slope and deflection in simply supported beam and cantilever type of beam. **04**

b) A simply supported beam 6-meter span carries U.D.L of 12 kN/m over entire span whose cross section of beam is circular of diameter 80 mm. Calculate Maximum slope at support and maximum deflections. Take E = 110Gpa **05**

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SLR-QH-45

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mechanics of Materials (MECHPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Maximum energy that a given component can absorb without undergoing permanent deformations up to elastic limit is known as _____.
a) Proof resilience b) Resilience
c) Hardness d) Toughness

2) The Bending moment suddenly rises or fall at a section where there is _____.
a) UDL b) Couple
c) Point load d) UVL

3) A point along the length of beam subjected to loads, where bending moment changes its sign known as _____.
a) Zero shear force b) Maximum shear stress
c) Contra flexure d) Inflexion

4) When simply supported beam is loaded, maximum tensile stress shall develop at _____.
a) at the neutral layer b) top layer
c) bottom layer d) at any layer

5) The ratio of maximum shear stress to average shear stress is 4/3 in _____.
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14) For transmitting same power, all properties remaining same, between a solid and hollow shaft _____.
a) hollow shaft is economical b) solid shaft is economical
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Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mechanics of Materials (MECHPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
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SECTION – I

Q.2 **a)** A steel rod 50 mm diameter, 1200 mm long is co-axially enclosed in a brass tube of 60 mm external diameter, 4 mm thickness and 1200 mm length. Determine stress induced in each material and the change in length, if the assembly is subjected to an axial compressive load of 80 kN. Take, E for steel 200 Gpa; E for Brass 100Gpa. **08**

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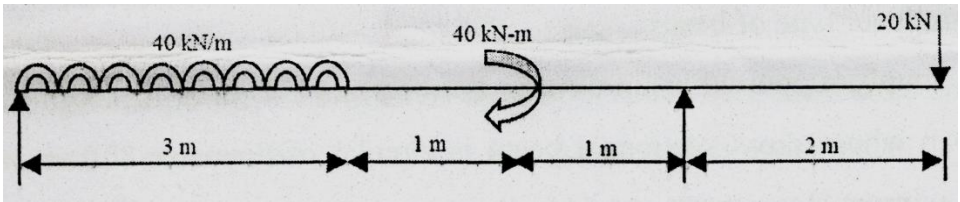
b) A beam carries loaded as shown in figure. Draw SFD, BMD and locate point of contra-shear and contra-flexure on SFD and BMD **06**



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c) Define following terms: **04**

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SECTION – II

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Q.7	**a)**	Explain in brief concept of slope and deflection in simply supported beam and cantilever type of beam.	**04**
	b)	A simply supported beam 6-meter span carries U.D.L of 12 kN/m over entire span whose cross section of beam is circular of diameter 80 mm. Calculate Maximum slope at support and maximum deflections. Take E = 110Gpa	**05**
	c)	At a point within a body subjected to two mutually perpendicular directions, stresses are 100 mpa and 75 mpa both are tensile. Each of above stresses is accompanied by shear stress of 75 mpa. Determine Magnitude of major and minor principal stress and greatest shear stress.	**05**

SLR-QH-46

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

2) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

3) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

4) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

5) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

6) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

7) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

8) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

9) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

10) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

11) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78

c) 0.81 d) 0.95

12) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1

c) ± 1 d) 1

13) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$

b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2

d) μ, and $\frac{\sigma^2}{n}$

14) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$

b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$

d) $\sum \frac{(O-E)^2}{E}$

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $\nu = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7
c) -1.2 d) -4

2) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6
c) 3 d) 5

3) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$
c) $3/2$ d) 0

4) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78
c) 0.81 d) 0.95

5) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1
c) ± 1 d) 1

6) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

7) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

8) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

9) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

10) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

11) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

12) The solution of $p + q = 1$ is _____.

a) $z = ax + (1-a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1-y) + c$ d) $z = a(1-x) + b(1-y) + c$

13) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

14) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$

b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$

d) $\frac{\mu_4}{\mu_2^3}$

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78
c) 0.81 d) 0.95

2) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1
c) ± 1 d) 1

3) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

4) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$
c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

5) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

6) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

7) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

8) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

9) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

10) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

11) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

12) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

13) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

14) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

Seat No.	

Set | **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2 + 1)y = x^2 \cos 3x$

c) Solve: $(D^2 - 4D + 4)y = 8.x^2 e^{2x} \sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y - z)p + y(z - x)q = z(x - y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $\nu = 9$ degrees of freedom is 1.86 for one tailed test)

SLR-QH-46

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

2) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

3) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

4) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

5) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

6) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78

c) 0.81 d) 0.95

7) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1

c) ± 1 d) 1

8) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

9) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

10) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

11) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

12) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

13) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

14) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

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d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

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(Given: For a standard normal variate
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Prod. (m. tons)	3	5	9	10	12	14	15

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a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

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Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $\nu = 9$ degrees of freedom is 1.86 for one tailed test)

SLR-QH-47

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: **14**

1) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com b) e-bay
c) Rentalic.com d) All of the above

2) Which type of E - Commerce is Amazon?
a) B2B b) B2C
c) G2B d) G2C

3) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model b) Business model
c) Business plan d) Revenue model

4) All of the following are major B2C business models except _____.
a) content provider b) industry consortium
c) transaction broker d) service provider

5) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

6) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling b) Connectivity
c) Communication d) Customer

7) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business
b) Business to Government
c) Consumer to Business
d) Business to Consumer

8) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo
b) regret
c) provide rating for
d) forget

9) Digital Cash has the following characteristics _____.
a) Anonymity
b) Security
c) Confidentiality
d) All of the Above

10) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

11) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack
b) Brute force attack
c) Phlashing
d) Smurf attack

12) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business
b) Business to Consumer
c) Business to Business
d) Consumer to Consumer

13) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway
b) E - E-Commerce gateway
c) Software gateway
d) E-Wallets

14) What is another name called PDoS?
a) Brute force attack
b) Non-technical attack
c) Phlashing
d) Smurf attack

SLR-QH-47

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-47

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: 14

1) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo b) regret
c) provide rating for d) forget

2) Digital Cash has the following characteristics _____.
a) Anonymity b) Security
c) Confidentiality d) All of the Above

3) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

4) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

5) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business b) Business to Consumer
c) Business to Business d) Consumer to Consumer

6) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway b) E - E-Commerce gateway
c) Software gateway d) E-Wallets

7) What is another name called PDoS?
a) Brute force attack
b) Non-technical attack
c) Phlashing
d) Smurf attack

8) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com
b) e-bay
c) Rentalic.com
d) All of the above

9) Which type of E - Commerce is Amazon?
a) B2B
b) B2C
c) G2B
d) G2C

10) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model
b) Business model
c) Business plan
d) Revenue model

11) All of the following are major B2C business models except _____.
a) content provider
b) industry consortium
c) transaction broker
d) service provider

12) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

13) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling
b) Connectivity
c) Communication
d) Customer

14) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business
b) Business to Government
c) Consumer to Business
d) Business to Consumer

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
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iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-47

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: 14

1) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
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2) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
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SLR-QH-47

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-47

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: **14**

1) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling b) Connectivity
c) Communication d) Customer

2) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business b) Business to Government
c) Consumer to Business d) Business to Consumer

3) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo b) regret
c) provide rating for d) forget

4) Digital Cash has the following characteristics _____.
a) Anonymity b) Security
c) Confidentiality d) All of the Above

5) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

6) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

7) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business
b) Business to Consumer
c) Business to Business
d) Consumer to Consumer

8) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway
b) E - E-Commerce gateway
c) Software gateway
d) E-Wallets

9) What is another name called PDoS?
a) Brute force attack
b) Non-technical attack
c) Phlashing
d) Smurf attack

10) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com
b) e-bay
c) Rentalic.com
d) All of the above

11) Which type of E - Commerce is Amazon?
a) B2B
b) B2C
c) G2B
d) G2C

12) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model
b) Business model
c) Business plan
d) Revenue model

13) All of the following are major B2C business models except _____.
a) content provider
b) industry consortium
c) transaction broker
d) service provider

14) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

SLR-QH-47

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-48

Seat No.		Set	P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) History is best defined as the study of _____.
a) Future events b) Past human activities
c) Natural phenomena d) Scientific experiments

2) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

3) Which of the following disciplines deals with political systems and governance?
a) Economics b) Political Science
c) Sociology d) Cultural Studies

4) Urbanization is best described as _____.
a) Decline of rural population b) Growth of cities and towns
c) Spread of agriculture d) Industrial decline

5) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

6) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

7) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

8) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

9) Socialization refers to _____.
a) Economic growth
b) Learning social norms
c) Political participation
d) Cultural diffusion

10) The study of language structure and its evolution is called _____.
a) Sociology
b) Linguistics
c) Psychology
d) Anthropology

11) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women’s rights
c) Political ideologies
d) Technological advancements

12) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science
b) Psychoanalysis
c) Economic theory
d) Structural linguistics

13) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology
b) Political Science
c) Economics
d) History

14) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

SLR-QH-48

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

SLR-QH-48

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

2) Socialization refers to _____.
a) Economic growth b) Learning social norms
c) Political participation d) Cultural diffusion

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c) Psychology d) Anthropology

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b) Gender equality and women's rights
c) Political ideologies
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c) Economics d) History

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a) Logic and reasoning
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a) Future events
b) Past human activities
c) Natural phenomena
d) Scientific experiments

9) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

10) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

11) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

12) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

13) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

14) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

SLR-QH-48

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

SLR-QH-48

Seat No.		Set	R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women's rights
c) Political ideologies
d) Technological advancements

2) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science b) Psychoanalysis
c) Economic theory d) Structural linguistics

3) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology b) Political Science
c) Economics d) History

4) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning b) Moral principles and conduct
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d) Mesopotamia

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b) Decrease in prices
c) Increase in general price level
d) Increase in production

13) Socialization refers to _____.
a) Economic growth
b) Learning social norms
c) Political participation
d) Cultural diffusion

14) The study of language structure and its evolution is called _____.
a) Sociology
b) Linguistics
c) Psychology
d) Anthropology

SLR-QH-48

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

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Q.5 Attempt Any Two. **16**

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b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

SLR-QH-48

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

2) In which ancient civilization did the term "democracy" originate?
a) Ancient Egypt b) Ancient Greece
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3) Inflation means _____.
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8) Which discipline studies the production, distribution, and consumption of goods and services?
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b) Political Science
c) Economics
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d) Historical events

SLR-QH-48

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

SLR-QH-49

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

2) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing b) Controlling
c) Planning d) Leading

3) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

4) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

5) Which is the first step in the planning process?
a) Developing alternatives b) Evaluating alternatives
c) Setting objectives d) Selecting the best alternative

6) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

7) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

8) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs
b) Social needs
c) Esteem needs
d) Self-actualization

9) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

10) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

11) Which of the following is not typically considered an element of quality?
a) Performance
b) Reliability
c) Advertising
d) Durability

12) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

13) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

14) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

SLR-QH-49

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-49

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: **14**

1) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs b) Social needs
c) Esteem needs d) Self-actualization

2) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

3) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

4) Which of the following is not typically considered an element of quality?
a) Performance b) Reliability
c) Advertising d) Durability

5) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

6) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

7) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

8) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

9) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

10) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

11) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

12) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

13) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

14) What is the main purpose of employee training and development?

a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

SLR-QH-49

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-49

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) Which of the following is not typically considered an element of quality?
a) Performance b) Reliability
c) Advertising d) Durability

2) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

3) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

4) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

5) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

6) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

7) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

8) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

9) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

10) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

11) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

12) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs
b) Social needs
c) Esteem needs
d) Self-actualization

13) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

14) Which of the following best defines “quality” in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

SLR-QH-49

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-49

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

2) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

3) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs b) Social needs
c) Esteem needs d) Self-actualization

4) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

5) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

6) Which of the following is not typically considered an element of quality?
a) Performance b) Reliability
c) Advertising d) Durability

7) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

8) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

9) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

10) Which of the following best defines the primary purpose of management?
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b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

11) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing b) Controlling
c) Planning d) Leading

12) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

13) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

14) Which is the first step in the planning process?
a) Developing alternatives b) Evaluating alternatives
c) Setting objectives d) Selecting the best alternative

SLR-QH-49

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-50

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$
c) $(C_1 + C_2x)e^x$ d) x^2e^x

2) The general solution of $(D^2 - 4)^2y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$
b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$
c) $y = C_1\cos 2x + C_2\sin 2x + (C_3 + C_4x)e^{2x}$
d) None of these

3) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$
c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

4) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$
c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

5) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

6) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^k d) 3^{-k-1}

7) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

8) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2

c) 3 and 4 d) 0 and 1

9) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$

c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

10) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.

a) 0 b) $\frac{1}{2}$

c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

11) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

12) For the function $f(x) \begin{matrix} = & 0, & -\pi < x < 0 \\ = & x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

13) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

14) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \quad (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\, \cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

SLR-QH-50

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.
a) 2 and 3 b) 1 and 2
c) 3 and 4 d) 0 and 1

2) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.
a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$
c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

3) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.
a) 0 b) $\frac{1}{2}$
c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

4) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.
a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$
c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

5) For the function $f(x) \begin{matrix} = & 0, & -\pi < x < 0 \\ = & x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

6) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

7) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

8) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

9) The general solution of $(D^2 - 4)^2 y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1 \cos 2x + C_2 \sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

10) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

11) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

12) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

13) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^{k} d) 3^{-k-1}

14) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \quad (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\, \cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

SLR-QH-50

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

2) For the function $f(x) \begin{matrix} = \\ = \end{matrix} \begin{matrix} 0, & -\pi < x < 0 \\ x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

3) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

4) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

5) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

6) The general solution of $(D^2 - 4)^2y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1\cos 2x + C_2\sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

7) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

8) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

9) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

10) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^k d) 3^{-k-1}

11) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

12) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2

c) 3 and 4 d) 0 and 1

13) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$

c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

14) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.

a) 0 b) $\frac{1}{2}$

c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \quad (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\, \cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}
c) 3^{k} d) 3^{-k-1}

2) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2
c) $\sqrt{2}$ d) 3

3) A positive real root of the equation $xe^{x} - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2
c) 3 and 4 d) 0 and 1

4) Since $z\{1\} = \frac{z}{z-1}, z\{a^{k}\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$
c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

5) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^{2}$ is _____.

a) 0 b) $\frac{1}{2}$
c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

6) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

7) For the function $f(x) \begin{matrix} = \\ = \end{matrix} \begin{matrix} 0, & -\pi < x < 0 \\ x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

8) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

9) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

10) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

11) The general solution of $(D^2 - 4)^2 y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1 \cos 2x + C_2 \sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

12) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

13) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

14) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \quad (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\, \cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

SLR-QH-51

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

2) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

3) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

4) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

5) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

6) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

7) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

8) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

9) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

10) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

11) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

12) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

13) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

14) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

SLR-QH-51

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-51

Seat No.		Set	Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

2) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

3) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

4) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

5) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

6) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

7) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

8) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

9) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

10) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

11) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

12) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

13) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

14) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

SLR-QH-51

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-51

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. 14

1) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

2) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

3) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

4) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

5) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

6) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

7) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

8) Stress is defined as _____.
   a) A physical or emotional reaction to challenges or demands
   b) A type of disease
   c) Only physical pain
   d) A mental disorder

9) Time management means _____.
   a) Doing work very quickly
   b) Planning and organizing how to spend time effectively
   c) Wasting time
   d) Avoiding responsibilities

10) Effective non-verbal communication in presentations helps to _____.
   a) Confuse the audience
   b) Improve understanding and engagement
   c) Reduce communication
   d) Replace verbal communication

11) Which of the following helps in effective presentation?
   a) Organizing ideas clearly b) Using complex language
   c) Ignoring the audience d) All of the above

12) The main purpose of an interview is to _____.
   a) Test physical strength
   b) Assess a candidate's suitability
   c) Conduct training
   d) Provide entertainment

13) Which of the following is part of presentation etiquette?
   a) Clear speaking b) Good posture
   c) Proper visual aids d) All of the above

14) Good posture during a presentation indicates _____.
   a) Confidence b) Nervousness
   c) Disinterest d) Laziness

SLR-QH-51

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-51

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

2) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

3) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

4) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

5) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

6) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

7) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

8) Procrastination means _____.
a) Completing work early
b) Delaying tasks unnecessarily
c) Planning work
d) Finishing tasks on time

9) Taking short breaks during work helps to _____.
a) Reduce efficiency
b) Improve focus
c) Waste time
d) Increase stress

10) In the process of communication, _____ is the person who encodes the message.
a) Receiver
b) Driver
c) Cleaner
d) Sender

11) Which among the following barriers is related to fault in the channel?
a) Physical
b) Mechanical
c) Psychological
d) All of above

12) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy
b) Self-awareness
c) Emotional intelligence
d) Relationship management

13) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

14) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

SLR-QH-51

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-52

Seat No.		Set	P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Robotics (MechHon-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of nonprogrammable calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

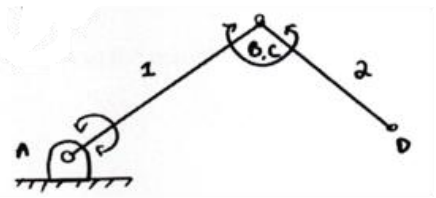
Q.1 Solve All MCQ Questions. **14**

1) The word Robot is derived from the Czech word "Robota" meaning _____.
a) Forced laborer b) Toy
c) Teacher d) Intelligent worker

2) In which scenario would a legged robot be more suitable than a wheeled robot?
a) Racing on a paved track
b) Navigating uneven terrain with obstacles
c) Transporting heavy payloads over long distances
d) Delivering packages in a warehouse with smooth floors

3) How many Degrees of freedom (DOF) does a prismatic and revolute joint have respectively?
a) 1,1 b) 2,1
c) 1,2 d) 2,2

4) How many degrees of freedom does the following figure have?



a) 5 b) 3
c) 6 d) 2

5) The surface of the workspace describes a _____.
   a) Work surface b) Work envelope
   c) Work load d) Workplace

6) Drives also known as _____.
   a) Controller b) Sensors
   c) Manipulator d) Actuators

7) The process of finding the position of the end effectors when the joint variables are know is called _____.
   a) Forward Kinematics b) Inverse Kinematics
   c) Forward Dynamics d) Inverse Dynamics

8) Which one of the following joints comes under rotary motion?
   a) Orthogonal Joint b) Linear Joint
   c) Both a) and b) d) Revolving Joint

9) Which one of the following robots commonly used for picks and place work?
   a) Cylindrical b) Cartesian
   c) Both a) and b) d) None of the above

10) What is the primary function of a LiDAR sensor in robotics?
   a) Object manipulation b) Navigation and mapping
   c) Tactile feedback d) Speech recognition

11) Radial movement (in & out) to the manipulator arm is provided by _____.
   a) Wrist bend b) Wrist swivel
   c) Wrist yaw d) Elbow extension

12) Which one of the following is safer?
   a) Cobot b) Robot
   c) Both a) and b) d) None of the above

13) The _____ of a manipulator is a measure of how close the manipulator can come to a given point within its workspace.
   a) Accuracy b) Repeatability
   c) Efficiency d) Resolution

14) Which type of robot is commonly used for tasks in hazardous environments?
   a) Industrial Robot b) Aerial Robot
   c) Search and Rescue Robot d) Humanoid Robot

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Robotics (MechHon-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt two questions from each section.
2) Figures to the right indicate full marks.
3) Use of nonprogrammable calculator is allowed.
4) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt the following. **14**

a) Write a note on the current market scenario of Robotics.

b) What is a Mobile Robots? Differentiate wheeled and track robots.

Q.3 Attempt the following. **14**

a) Explain working of A C Motor and Its control techniques.

b) Discus classification of Sensors and write a note on GPS.

Q.4 Attempt the following. **14**

a) Explain in detail classification of End effectors.

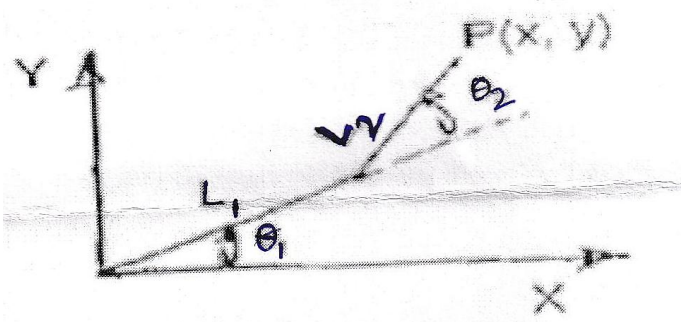
b) Write a note on Mechanical end effectors.

SECTION – II

Q.5 Attempt the following. **14**

a) Write short note on a velocity jacobian and Singularities.

b) What do you understand by forward for 2 dof's?
Explain in detail it is desired to determine the values of which the angels $\ominus 1$ & $\ominus 2$ must be set into order to achieve certain point the length of joint $L1 = 12$ in the length of $L2 = 10$ in. The coordinates $x = 15.7$ and $y = 12.6$ using the reverse transformation method determine the angles $\ominus 1$ & $\ominus 2$.



Q.6 Attempt the following. **14**

a) Explain Trajectory planning and enlist issue with Trajectory Planning.

b) Explain control architecture of robot with block diagram.

Q.7 Attempt the following. **14**

a) What are the general considerations for selecting robots for Machine tending application?

b) What are the general considerations for selecting robots for sealant application?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Robotics (MechHon-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of nonprogrammable calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions. **14**

1) Which one of the following joints comes under rotary motion?
a) Orthogonal Joint b) Linear Joint
c) Both a) and b) d) Revolving Joint

2) Which one of the following robots commonly used for picks and place work?
a) Cylindrical b) Cartesian
c) Both a) and b) d) None of the above

3) What is the primary function of a LiDAR sensor in robotics?
a) Object manipulation b) Navigation and mapping
c) Tactile feedback d) Speech recognition

4) Radial movement (in & out) to the manipulator arm is provided by _____.
a) Wrist bend b) Wrist swivel
c) Wrist yaw d) Elbow extension

5) Which one of the following is safer?
a) Cobot b) Robot
c) Both a) and b) d) None of the above

6) The _____ of a manipulator is a measure of how close the manipulator can come to a given point within its workspace.
a) Accuracy b) Repeatability
c) Efficiency d) Resolution

7) Which type of robot is commonly used for tasks in hazardous environments?

a) Industrial Robot
b) Aerial Robot
c) Search and Rescue Robot
d) Humanoid Robot

8) The word Robot is derived from the Czech word "Robota" meaning _____.

a) Forced laborer
b) Toy
c) Teacher
d) Intelligent worker

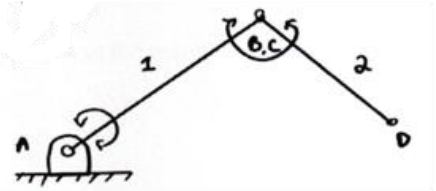
9) In which scenario would a legged robot be more suitable than a wheeled robot?

a) Racing on a paved track
b) Navigating uneven terrain with obstacles
c) Transporting heavy payloads over long distances
d) Delivering packages in a warehouse with smooth floors

10) How many Degrees of freedom (DOF) does a prismatic and revolute joint have respectively?

a) 1,1
b) 2,1
c) 1,2
d) 2,2

11) How many degrees of freedom does the following figure have?



a) 5
b) 3
c) 6
d) 2

12) The surface of the workspace describes a _____.

a) Work surface
b) Work envelope
c) Work load
d) Workplace

13) Drives also known as _____.

a) Controller
b) Sensors
c) Manipulator
d) Actuators

14) The process of finding the position of the end effectors when the joint variables are know is called _____.

a) Forward Kinematics
b) Inverse Kinematics
c) Forward Dynamics
d) Inverse Dynamics

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Robotics (MechHon-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt two questions from each section.
2) Figures to the right indicate full marks.
3) Use of nonprogrammable calculator is allowed.
4) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt the following. **14**

a) Write a note on the current market scenario of Robotics.

b) What is a Mobile Robots? Differentiate wheeled and track robots.

Q.3 Attempt the following. **14**

a) Explain working of A C Motor and Its control techniques.

b) Discus classification of Sensors and write a note on GPS.

Q.4 Attempt the following. **14**

a) Explain in detail classification of End effectors.

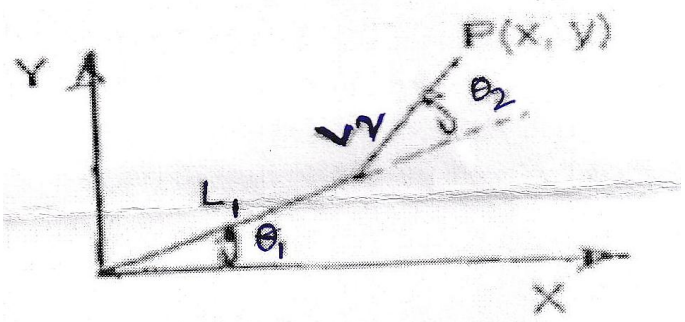
b) Write a note on Mechanical end effectors.

SECTION – II

Q.5 Attempt the following. **14**

a) Write short note on a velocity jacobian and Singularities.

b) What do you understand by forward for 2 dof's?
Explain in detail it is desired to determine the values of which the angels $\ominus 1$ & $\ominus 2$ must be set into order to achieve certain point the length of joint $L1 = 12$ in the length of $L2 = 10$ in. The coordinates $x = 15.7$ and $y = 12.6$ using the reverse transformation method determine the angles $\ominus 1$ & $\ominus 2$.



Q.6 Attempt the following. **14**

a) Explain Trajectory planning and enlist issue with Trajectory Planning.

b) Explain control architecture of robot with block diagram.

Q.7 Attempt the following. **14**

a) What are the general considerations for selecting robots for Machine tending application?

b) What are the general considerations for selecting robots for sealant application?

SLR-QH-52

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Robotics (MechHon-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions. **14**

1) Radial movement (in & out) to the manipulator arm is provided by _____.
a) Wrist bend b) Wrist swivel
c) Wrist yaw d) Elbow extension

2) Which one of the following is safer?
a) Cobot b) Robot
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3) The _____ of a manipulator is a measure of how close the manipulator can come to a given point within its workspace.
a) Accuracy b) Repeatability
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4) Which type of robot is commonly used for tasks in hazardous environments?
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   c) Transporting heavy payloads over long distances
   d) Delivering packages in a warehouse with smooth floors

7) How many Degrees of freedom (DOF) does a prismatic and revolute joint have respectively?
   a) 1,1 b) 2,1
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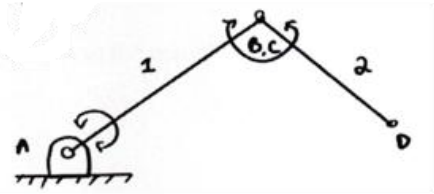

   a) 5 b) 3
   c) 6 d) 2

9) The surface of the workspace describes a _____.
   a) Work surface b) Work envelope
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10) Drives also known as _____.
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   a) Forward Kinematics b) Inverse Kinematics
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13) Which one of the following robots commonly used for picks and place work?
   a) Cylindrical b) Cartesian
   c) Both a) and b) d) None of the above

14) What is the primary function of a LiDAR sensor in robotics?
   a) Object manipulation b) Navigation and mapping
   c) Tactile feedback d) Speech recognition

SLR-QH-52

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Robotics (MechHon-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt two questions from each section.
2) Figures to the right indicate full marks.
3) Use of nonprogrammable calculator is allowed.
4) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt the following. **14**

a) Write a note on the current market scenario of Robotics.

b) What is a Mobile Robots? Differentiate wheeled and track robots.

Q.3 Attempt the following. **14**

a) Explain working of A C Motor and Its control techniques.

b) Discus classification of Sensors and write a note on GPS.

Q.4 Attempt the following. **14**

a) Explain in detail classification of End effectors.

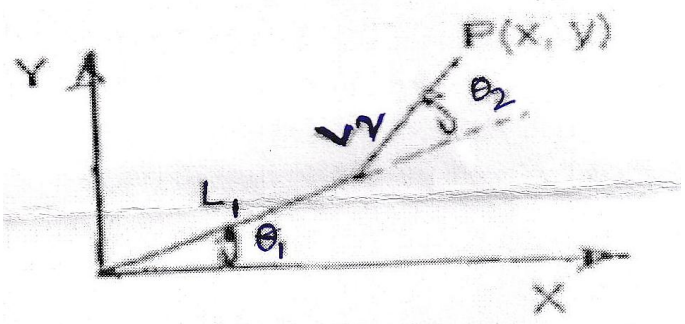
b) Write a note on Mechanical end effectors.

SECTION – II

Q.5 Attempt the following. **14**

a) Write short note on a velocity jacobian and Singularities.

b) What do you understand by forward for 2 dof's?
Explain in detail it is desired to determine the values of which the angels $\ominus 1$ & $\ominus 2$ must be set into order to achieve certain point the length of joint $L1 = 12$ in the length of $L2 = 10$ in. The coordinates $x = 15.7$ and $y = 12.6$ using the reverse transformation method determine the angles $\ominus 1$ & $\ominus 2$.



Q.6 Attempt the following. **14**

a) Explain Trajectory planning and enlist issue with Trajectory Planning.

b) Explain control architecture of robot with block diagram.

Q.7 Attempt the following. **14**

a) What are the general considerations for selecting robots for Machine tending application?

b) What are the general considerations for selecting robots for sealant application?

Seat No.	

Set | S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Robotics (MechHon-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of nonprogrammable calculator is allowed.
5) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve All MCQ Questions. **14**

1) Drives also known as _____.
a) Controller b) Sensors
c) Manipulator d) Actuators

2) The process of finding the position of the end effectors when the joint variables are know is called _____.
a) Forward Kinematics b) Inverse Kinematics
c) Forward Dynamics d) Inverse Dynamics

3) Which one of the following joints comes under rotary motion?
a) Orthogonal Joint b) Linear Joint
c) Both a) and b) d) Revolving Joint

4) Which one of the following robots commonly used for picks and place work?
a) Cylindrical b) Cartesian
c) Both a) and b) d) None of the above

5) What is the primary function of a LiDAR sensor in robotics?
a) Object manipulation b) Navigation and mapping
c) Tactile feedback d) Speech recognition

6) Radial movement (in & out) to the manipulator arm is provided by _____.
a) Wrist bend b) Wrist swivel
c) Wrist yaw d) Elbow extension

7) Which one of the following is safer?
a) Cobot b) Robot
c) Both a) and b) d) None of the above

8) The _____ of a manipulator is a measure of how close the manipulator can come to a given point within its workspace.
a) Accuracy b) Repeatability
c) Efficiency d) Resolution

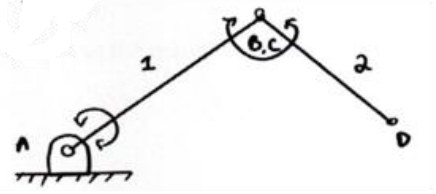
9) Which type of robot is commonly used for tasks in hazardous environments?
a) Industrial Robot b) Aerial Robot
c) Search and Rescue Robot d) Humanoid Robot

10) The word Robot is derived from the Czech word "Robota" meaning _____.
a) Forced laborer b) Toy
c) Teacher d) Intelligent worker

11) In which scenario would a legged robot be more suitable than a wheeled robot?
a) Racing on a paved track
b) Navigating uneven terrain with obstacles
c) Transporting heavy payloads over long distances
d) Delivering packages in a warehouse with smooth floors

12) How many Degrees of freedom (DOF) does a prismatic and revolute joint have respectively?
a) 1,1 b) 2,1
c) 1,2 d) 2,2

13) How many degrees of freedom does the following figure have?



a) 5 b) 3
c) 6 d) 2

14) The surface of the workspace describes a _____.
a) Work surface b) Work envelope
c) Work load d) Workplace

SLR-QH-52

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Robotics (MechHon-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt two questions from each section.
2) Figures to the right indicate full marks.
3) Use of nonprogrammable calculator is allowed.
4) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt the following. **14**

a) Write a note on the current market scenario of Robotics.

b) What is a Mobile Robots? Differentiate wheeled and track robots.

Q.3 Attempt the following. **14**

a) Explain working of A C Motor and Its control techniques.

b) Discus classification of Sensors and write a note on GPS.

Q.4 Attempt the following. **14**

a) Explain in detail classification of End effectors.

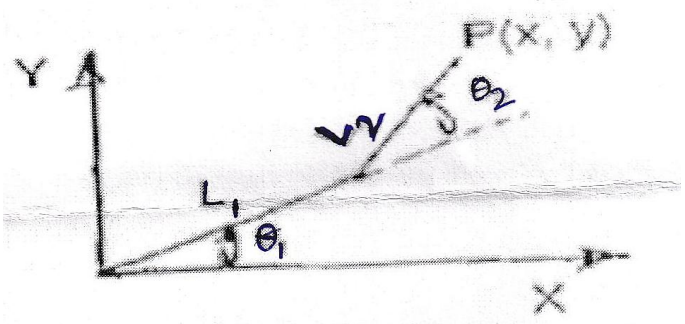
b) Write a note on Mechanical end effectors.

SECTION – II

Q.5 Attempt the following. **14**

a) Write short note on a velocity jacobian and Singularities.

b) What do you understand by forward for 2 dof's?
Explain in detail it is desired to determine the values of which the angels $\ominus 1$ & $\ominus 2$ must be set into order to achieve certain point the length of joint $L1 = 12$ in the length of $L2 = 10$ in. The coordinates $x = 15.7$ and $y = 12.6$ using the reverse transformation method determine the angles $\ominus 1$ & $\ominus 2$.



Q.6 Attempt the following. **14**

a) Explain Trajectory planning and enlist issue with Trajectory Planning.

b) Explain control architecture of robot with block diagram.

Q.7 Attempt the following. **14**

a) What are the general considerations for selecting robots for Machine tending application?

b) What are the general considerations for selecting robots for sealant application?

SLR-QH-53

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Automobile Engineering (MechHon-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Give the correct option for the following questions. 14

1) What is the key advantage of using a turbocharged engine in automotive powertrains?
a) Reduced emissions
b) Improved thermal efficiency
c) Increased power output for a given engine size
d) Better cold-start performance

2) Which factor primarily affects the selection of an engine for a hybrid electric vehicle (HEV)? _____.
a) Engine capacity
b) Engine weight
c) Fuel type compatibility
d) Torque-speed characteristics

3) What is the main function of the synchronizer in a manual transmission?
a) Match the rotational speeds of gears
b) Enhance fuel efficiency
c) Reduce clutch slippage
d) Increase gear ratios

4) What is the key parameter for determining the efficiency of a clutch system?
a) Gear ratio
b) Friction coefficient
c) Clutch plate thickness
d) Input shaft speed

5) What is the primary function of the Anti-lock Braking System (ABS)?
a) Reduce braking distance
b) Increase braking force
c) Prevent wheel lockup during braking
d) Improve tire durability

6) Which parameter will primarily determines the stopping distance of a vehicle?
a) Brake type
b) Tire composition
c) Road condition
d) Vehicle speed

7) Which steering system component translates rotary motion into linear motion?
a) Rack-and-pinion
b) Tie rods
c) Kingpin
d) Steering column

8) What is the steering ratio in a steering system?
a) Speed of turning versus road speed
b) Angle of steering wheel to tire angle
c) Force input to force output ratio
d) Torque output to input ratio

9) What does wheel toe-in adjustment affect?
a) Braking force
b) Vehicle weight
c) Steering response
d) Suspension travel

10) Which component converts AC power generated by the alternator to DC for battery charging?
a) Voltage regulator
b) Spark plug
c) Starter motor
d) Rectifier

11) You are tasked with selecting an engine for a sports car. Which characteristic would be most critical for this application?
a) High power-to-weight ratio
b) High torque at low RPM
c) Large displacement volume
d) Low thermal efficiency

12) During a powertrain analysis, how would you calculate the torque at the wheels?
a) Engine torque ÷ gear ratio
b) Engine torque × gear ratio × differential ratio
c) Engine power × speed ratio
d) Gear ratio ÷ engine torque

13) What is the main reason for balancing wheels?

a) Increase fuel economy
b) Improve braking efficiency
c) Prevent vibration at high speeds
d) Reduce tire weight

14) In a hybrid electric vehicle, the powertrain uses both ICE and electric motor. What is the primary advantage?

a) Elimination of the transmission system
b) Simplified vehicle architecture
c) Improved acceleration only
d) Enhanced fuel economy and reduced emissions

Seat No.	

Set | P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Introduction to Automobile Engineering (MechHon-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever needed mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain constant mesh gear box and state its limitation. **07**

b) Explain with neat sketch difference between 2 stroke and 4 stroke engine operation. **07**

Q.3 **a)** Explain need, construction and working of final drive. **07**

b) Explain with sketch working of single plate clutch. **07**

Q.4 **a)** Explain construction and working of Wheel cylinder in hydraulic braking. **07**

b) A Car has Vehicle weight 1200 kg, Frontal area 2.0 m^2, air resistance coefficient 0.3, Rolling resistance coefficient 0.02, Transmission efficiency 90%. Gear ratios 1^{st} gear 4.0, 2^{nd} gear 2.5, Wheel radius 0.32 m, Air density 1.2 kg/m^3, Vehicle speed in 1^{st} gear: 40 km/h, Road grade: 8%, Find: Engine brake power required at 40 km/h, Vehicle speed in 2^{nd} gear at the same engine speed, Tractive effort for gradeability. **07**

Section – II

Q.5 **a)** Explain necessity of front wheel steering geometry. Explain with figure different steering geometries for front wheel steering system. **07**

b) Explain telescopic shock absorber with neat sketch. **07**

Q.6 **a)** Explain recalculating ball type steering gearbox. **07**

b) Compare independent suspension system with conventional suspension system. **07**

Q.7 **a)** Explain with application in automobile for the different sensors and actuators. **07**

b) Explain starting system of automobile. **07**

SLR-QH-53

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Automobile Engineering (MechHon-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Give the correct option for the following questions. 14

1) What is the steering ratio in a steering system?
a) Speed of turning versus road speed
b) Angle of steering wheel to tire angle
c) Force input to force output ratio
d) Torque output to input ratio

2) What does wheel toe-in adjustment affect?
a) Braking force b) Vehicle weight
c) Steering response d) Suspension travel

3) Which component converts AC power generated by the alternator to DC for battery charging?
a) Voltage regulator b) Spark plug
c) Starter motor d) Rectifier

4) You are tasked with selecting an engine for a sports car. Which characteristic would be most critical for this application?
a) High power-to-weight ratio
b) High torque at low RPM
c) Large displacement volume
d) Low thermal efficiency

5) During a powertrain analysis, how would you calculate the torque at the wheels?
a) Engine torque ÷ gear ratio
b) Engine torque × gear ratio × differential ratio
c) Engine power × speed ratio
d) Gear ratio ÷ engine torque

6) What is the main reason for balancing wheels?
a) Increase fuel economy
b) Improve braking efficiency
c) Prevent vibration at high speeds
d) Reduce tire weight

7) In a hybrid electric vehicle, the powertrain uses both ICE and electric motor. What is the primary advantage?
a) Elimination of the transmission system
b) Simplified vehicle architecture
c) Improved acceleration only
d) Enhanced fuel economy and reduced emissions

8) What is the key advantage of using a turbocharged engine in automotive powertrains?
a) Reduced emissions
b) Improved thermal efficiency
c) Increased power output for a given engine size
d) Better cold-start performance

9) Which factor primarily affects the selection of an engine for a hybrid electric vehicle (HEV)? _____.
a) Engine capacity
b) Engine weight
c) Fuel type compatibility
d) Torque-speed characteristics

10) What is the main function of the synchronizer in a manual transmission?
a) Match the rotational speeds of gears
b) Enhance fuel efficiency
c) Reduce clutch slippage
d) Increase gear ratios

11) What is the key parameter for determining the efficiency of a clutch system?
a) Gear ratio
b) Friction coefficient
c) Clutch plate thickness
d) Input shaft speed

12) What is the primary function of the Anti-lock Braking System (ABS)?
a) Reduce braking distance
b) Increase braking force
c) Prevent wheel lockup during braking
d) Improve tire durability

13) Which parameter will primarily determines the stopping distance of a vehicle?
a) Brake type
b) Tire composition
c) Road condition
d) Vehicle speed

14) Which steering system component translates rotary motion into linear motion?

a) Rack-and-pinion
b) Tie rods
c) Kingpin
d) Steering column

Seat No.		Set	Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Introduction to Automobile Engineering (MechHon-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever needed mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain constant mesh gear box and state its limitation. **07**

b) Explain with neat sketch difference between 2 stroke and 4 stroke engine operation. **07**

Q.3 **a)** Explain need, construction and working of final drive. **07**

b) Explain with sketch working of single plate clutch. **07**

Q.4 **a)** Explain construction and working of Wheel cylinder in hydraulic braking. **07**

b) A Car has Vehicle weight 1200 kg, Frontal area 2.0 m^2, air resistance coefficient 0.3, Rolling resistance coefficient 0.02, Transmission efficiency 90%. Gear ratios 1^{st} gear 4.0, 2^{nd} gear 2.5, Wheel radius 0.32 m, Air density 1.2 kg/m^3, Vehicle speed in 1^{st} gear: 40 km/h, Road grade: 8%, Find: Engine brake power required at 40 km/h, Vehicle speed in 2^{nd} gear at the same engine speed, Tractive effort for gradeability. **07**

Section – II

Q.5 **a)** Explain necessity of front wheel steering geometry. Explain with figure different steering geometries for front wheel steering system. **07**

b) Explain telescopic shock absorber with neat sketch. **07**

Q.6 **a)** Explain recalculating ball type steering gearbox. **07**

b) Compare independent suspension system with conventional suspension system. **07**

Q.7 **a)** Explain with application in automobile for the different sensors and actuators. **07**

b) Explain starting system of automobile. **07**

SLR-QH-53

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Automobile Engineering (MechHon-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Give the correct option for the following questions. 14

1) You are tasked with selecting an engine for a sports car. Which characteristic would be most critical for this application?
a) High power-to-weight ratio
b) High torque at low RPM
c) Large displacement volume
d) Low thermal efficiency

2) During a powertrain analysis, how would you calculate the torque at the wheels?
a) Engine torque ÷ gear ratio
b) Engine torque × gear ratio × differential ratio
c) Engine power × speed ratio
d) Gear ratio ÷ engine torque

3) What is the main reason for balancing wheels?
a) Increase fuel economy
b) Improve braking efficiency
c) Prevent vibration at high speeds
d) Reduce tire weight

4) In a hybrid electric vehicle, the powertrain uses both ICE and electric motor. What is the primary advantage?
a) Elimination of the transmission system
b) Simplified vehicle architecture
c) Improved acceleration only
d) Enhanced fuel economy and reduced emissions

5) What is the key advantage of using a turbocharged engine in automotive powertrains?
   a) Reduced emissions
   b) Improved thermal efficiency
   c) Increased power output for a given engine size
   d) Better cold-start performance

6) Which factor primarily affects the selection of an engine for a hybrid electric vehicle (HEV)? _____.
   a) Engine capacity
   b) Engine weight
   c) Fuel type compatibility
   d) Torque-speed characteristics

7) What is the main function of the synchronizer in a manual transmission?
   a) Match the rotational speeds of gears
   b) Enhance fuel efficiency
   c) Reduce clutch slippage
   d) Increase gear ratios

8) What is the key parameter for determining the efficiency of a clutch system?
   a) Gear ratio
   b) Friction coefficient
   c) Clutch plate thickness
   d) Input shaft speed

9) What is the primary function of the Anti-lock Braking System (ABS)?
   a) Reduce braking distance
   b) Increase braking force
   c) Prevent wheel lockup during braking
   d) Improve tire durability

10) Which parameter will primarily determines the stopping distance of a vehicle?
   a) Brake type
   b) Tire composition
   c) Road condition
   d) Vehicle speed

11) Which steering system component translates rotary motion into linear motion?
   a) Rack-and-pinion
   b) Tie rods
   c) Kingpin
   d) Steering column

12) What is the steering ratio in a steering system?
   a) Speed of turning versus road speed
   b) Angle of steering wheel to tire angle
   c) Force input to force output ratio
   d) Torque output to input ratio

13) What does wheel toe-in adjustment affect?

a) Braking force
b) Vehicle weight
c) Steering response
d) Suspension travel

14) Which component converts AC power generated by the alternator to DC for battery charging?

a) Voltage regulator
b) Spark plug
c) Starter motor
d) Rectifier

SLR-QH-53

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Introduction to Automobile Engineering (MechHon-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever needed mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain constant mesh gear box and state its limitation. **07**

b) Explain with neat sketch difference between 2 stroke and 4 stroke engine operation. **07**

Q.3 **a)** Explain need, construction and working of final drive. **07**

b) Explain with sketch working of single plate clutch. **07**

Q.4 **a)** Explain construction and working of Wheel cylinder in hydraulic braking. **07**

b) A Car has Vehicle weight 1200 kg, Frontal area 2.0 m^2, air resistance coefficient 0.3, Rolling resistance coefficient 0.02, Transmission efficiency 90%. Gear ratios 1^{st} gear 4.0, 2^{nd} gear 2.5, Wheel radius 0.32 m, Air density 1.2 kg/m^3, Vehicle speed in 1^{st} gear: 40 km/h, Road grade: 8%, Find: Engine brake power required at 40 km/h, Vehicle speed in 2^{nd} gear at the same engine speed, Tractive effort for gradeability. **07**

Section – II

Q.5 **a)** Explain necessity of front wheel steering geometry. Explain with figure different steering geometries for front wheel steering system. **07**

b) Explain telescopic shock absorber with neat sketch. **07**

Q.6 **a)** Explain recalculating ball type steering gearbox. **07**

b) Compare independent suspension system with conventional suspension system. **07**

Q.7 **a)** Explain with application in automobile for the different sensors and actuators. **07**

b) Explain starting system of automobile. **07**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Automobile Engineering (MechHon-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Give the correct option for the following questions. 14

1) Which parameter will primarily determines the stopping distance of a vehicle?
a) Brake type b) Tire composition
c) Road condition d) Vehicle speed

2) Which steering system component translates rotary motion into linear motion?
a) Rack-and-pinion b) Tie rods
c) Kingpin d) Steering column

3) What is the steering ratio in a steering system?
a) Speed of turning versus road speed
b) Angle of steering wheel to tire angle
c) Force input to force output ratio
d) Torque output to input ratio

4) What does wheel toe-in adjustment affect?
a) Braking force b) Vehicle weight
c) Steering response d) Suspension travel

5) Which component converts AC power generated by the alternator to DC for battery charging?
a) Voltage regulator b) Spark plug
c) Starter motor d) Rectifier

6) You are tasked with selecting an engine for a sports car. Which characteristic would be most critical for this application?
   a) High power-to-weight ratio
   b) High torque at low RPM
   c) Large displacement volume
   d) Low thermal efficiency

7) During a powertrain analysis, how would you calculate the torque at the wheels?
   a) Engine torque ÷ gear ratio
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   d) Gear ratio ÷ engine torque

8) What is the main reason for balancing wheels?
   a) Increase fuel economy
   b) Improve braking efficiency
   c) Prevent vibration at high speeds
   d) Reduce tire weight

9) In a hybrid electric vehicle, the powertrain uses both ICE and electric motor. What is the primary advantage?
   a) Elimination of the transmission system
   b) Simplified vehicle architecture
   c) Improved acceleration only
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   a) Match the rotational speeds of gears
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   c) Reduce clutch slippage
   d) Increase gear ratios

13) What is the key parameter for determining the efficiency of a clutch system?

a) Gear ratio
b) Friction coefficient
c) Clutch plate thickness
d) Input shaft speed

14) What is the primary function of the Anti-lock Braking System (ABS)?

a) Reduce braking distance
b) Increase braking force
c) Prevent wheel lockup during braking
d) Improve tire durability

SLR-QH-53

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Introduction to Automobile Engineering (MechHon-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever needed mention it clearly.
4) Use of non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain constant mesh gear box and state its limitation. **07**

b) Explain with neat sketch difference between 2 stroke and 4 stroke engine operation. **07**

Q.3 **a)** Explain need, construction and working of final drive. **07**

b) Explain with sketch working of single plate clutch. **07**

Q.4 **a)** Explain construction and working of Wheel cylinder in hydraulic braking. **07**

b) A Car has Vehicle weight 1200 kg, Frontal area 2.0 m^2, air resistance coefficient 0.3, Rolling resistance coefficient 0.02, Transmission efficiency 90%. Gear ratios 1^{st} gear 4.0, 2^{nd} gear 2.5, Wheel radius 0.32 m, Air density 1.2 kg/m^3, Vehicle speed in 1^{st} gear: 40 km/h, Road grade: 8%, Find: Engine brake power required at 40 km/h, Vehicle speed in 2^{nd} gear at the same engine speed, Tractive effort for gradeability. **07**

Section – II

Q.5 **a)** Explain necessity of front wheel steering geometry. Explain with figure different steering geometries for front wheel steering system. **07**

b) Explain telescopic shock absorber with neat sketch. **07**

Q.6 **a)** Explain recalculating ball type steering gearbox. **07**

b) Compare independent suspension system with conventional suspension system. **07**

Q.7 **a)** Explain with application in automobile for the different sensors and actuators. **07**

b) Explain starting system of automobile. **07**

SLR-QH-54

Seat No.		Set	P

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Value education enables us _____.
a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

2) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

3) _____ is the basic unit of any human society.
a) Group b) Individual
c) Nature d) Society

4) Natural acceptance & _____ are the two processes of knowing.
a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

5) Present Education system gives more focus to skills.
a) True b) False
c) May be d) None of the above

6) Value of an entity is _____.
a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

7) _____ are as Basic Human Aspirations.
a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

8) Any course content on value education needs to be _____.
a) Universal b) Rational
c) Natural d) All of above

9) When we live with correct understanding of values, we feel _____.
a) Deprived b) Frustrated
c) Happy d) Unhappy

10) Following are the basic guidelines for value education except _____.
a) Universal b) Personal
c) Rational d) Natural

11) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

12) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
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13) Right Understanding and Physical Facilities leads to _____.
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16) _____ helps the human being to transform from Animal consciousness to human consciousness.
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17) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.

a) Value b) Skill
c) Technology d) All of above

18) _____ means physical facilities more than to satisfy my needs.

a) Health b) Prosperity
c) Happiness d) None of above

19) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

a) naturally acceptable b) pushed
c) common d) None of above

20) Physical facilities are necessary and complete for _____.

a) Animal b) Human being
c) Nature d) All of the above

21) Beside physical facilities human being want _____.

a) Name b) Fame
c) Relationship d) None of the above

22) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.

a) Swatantra b) Partantra
c) Prosperous d) None of the above

23) To be in state of _____ is unhappiness.

a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

24) Which of following leads to variety of problems at different levels of our living?

a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

25) Working only for physical facilities in living is called _____.

a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

26) Self and _____ are different in nature, materiality, needs and activities.

a) Trust b) Body
c) Belief d) None of the above

27) Sukh and _____ both are needed and can't replace each other.

a) Self b) Body
c) Suvidha d) Belief

28) In value education Sanyama means _____.
a) Self-regulation b) Health
c) Happiness d) Prosperity

29) Sadupyog of the Body mean _____ of the Body.
a) Self-regulation b) Care
c) Happiness d) Right utilization

30) Knowing means having the _____.
a) Assumption b) Right understanding
c) Right feeling d) None of the above

31) Each human being is co-existence of the _____ and the _____.
a) self, self b) body, body
c) self, body d) None of the above

32) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.
a) Swasthya b) Sanyam
c) Prosperity d) None of the above

33) The system of the body works in a _____ way.
a) Happy b) Self organized
c) Random d) Independent

34) The self is _____ in nature while body is _____ in nature.
a) Unconscious, Physico-chemical
b) Conscious, Physico-chemical
c) Physico-chemical, Conscious
d) Physico-chemical, Unconscious

35) The activity of desire, thought and expecting together is called as _____.
a) Body b) Health
c) Imagination d) Future

36) Harmony should be maintained in _____.
a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

37) Sah-astitva means _____.
a) Co-existence b) Co-operation
c) Co-ordination d) Corporate identity

38) The process of education and right living leads to _____ in the individual.

a) Right understanding b) Health
c) Prosperity d) None of the above

39) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness b) Confusion
c) Confidence d) Fear

40) _____ is the foundational value in relationship.

a) Respect b) Love
c) Trust d) Glory

41) To be assured of others at all time is the feeling of _____.

a) Respect b) Love
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42) _____ is the feeling for someone who has made efforts for excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

43) _____ is the feeling of acceptance for those who have made efforts for my excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

44) The feeling of relatedness to all human beings is called _____.

a) Love b) Affection
c) Gratitude d) Respect

45) All the units of nature can be classified into _____ orders.

a) Two b) Three
c) Four d) Six

46) Which of the following does not form an order in nature?

a) Bio b) Animal
c) Consciousness d) Human

47) Which of the following statement is not true?

a) There is interconnectedness in nature
b) There is recyclability and self-regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

48) Harmony in the family is the building block for harmony in the _____.

a) society b) individual
c) friend d) relative

49) _____ in the family means that the family is able to identify its needs.

a) wealth
b) prosperity
c) harmony
d) happiness

50) _____ means right evaluation.

a) Respect
b) Love
c) Trust
d) Glory

SLR-QH-54

Seat No.		Set	Q

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Beside physical facilities human being want _____.
a) Name b) Fame
c) Relationship d) None of the above

2) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.
a) Swatantra b) Partantra
c) Prosperous d) None of the above

3) To be in state of _____ is unhappiness.
a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

4) Which of following leads to variety of problems at different levels of our living?
a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

5) Working only for physical facilities in living is called _____.
a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

6) Self and _____ are different in nature, materiality, needs and activities.
a) Trust b) Body
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7) Sukh and _____ both are needed and can't replace each other.
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8) In value education Sanyama means _____.
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21) To be assured of others at all time is the feeling of _____.

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24) The feeling of relatedness to all human beings is called _____.

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29) _____ in the family means that the family is able to identify its needs.

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c) harmony d) happiness

30) _____ means right evaluation.

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a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

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a) Happy b) Sad
c) Laugh d) Earn Money

33) _____ is the basic unit of any human society.

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34) Natural acceptance & _____ are the two processes of knowing.

a) Self -Actualization b) Self Exploration
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35) Present Education system gives more focus to skills.

a) True b) False
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36) Value of an entity is _____.

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b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

37) _____ are as Basic Human Aspirations.

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b) Relationship without money
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38) Any course content on value education needs to be _____.

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48) _____ means physical facilities more than to satisfy my needs.
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49) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

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b) Human being
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d) All of the above

SLR-QH-54

Seat No.		Set	R

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) To be assured of others at all time is the feeling of _____.
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SLR-QH-54

Seat No.		Set	S

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

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Answer

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b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

42) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

43) _____ is the basic unit of any human society.

a) Group b) Individual
c) Nature d) Society

44) Natural acceptance & _____ are the two processes of knowing.

a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

45) Present Education system gives more focus to skills.

a) True b) False
c) May be d) None of the above

46) Value of an entity is _____.

a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

47) _____ are as Basic Human Aspirations.

a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

48) Any course content on value education needs to be _____.

a) Universal b) Rational
c) Natural d) All of above

49) When we live with correct understanding of values, we feel _____.

a) Deprived b) Frustrated

c) Happy d) Unhappy

50) Following are the basic guidelines for value education except _____.

a) Universal b) Personal

c) Rational d) Natural

SLR-QH-55

Seat No.	

Set P

S.Y. (B. Tech.) (Mechanical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Internal Combustion Engines (BTN02306)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and state it clearly.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) In which of the following engine CRDI is used _____.
a) S.I. Engine b) C.I. Engine
c) Steam engine d) None of above

2) Fuel injector is used in _____.
a) S.I. Engine b) C.I. Engine
c) Gas engine d) None of above

3) Brake specific fuel consumption is defined as _____.
a) fuel consumption per hour
b) fuel consumption per km
c) fuel consumption per hour per brake power
d) fuel consumption per BHP

4) One of the major exhaust emissions from CI Engine compared to SI Engine _____.
a) Oxides of nitrogen b) Particulates
c) Unburnt hydrocarbons d) CO and CO_2

5) In which of the following engine supercharging is essential _____.
a) S.I. Engine b) C.I. Engine
c) Aircraft engine d) Marine engine

6) Turbocharging air compressor is driven by _____.
a) Exhaust gas turbine b) Engine itself
c) Separate electric motor d) None of the above

7) Venturi in the carburetor results in _____.
a) increase in air velocity
b) decrease in air velocity
c) decrease of fuel flow
d) increase of manifold pressure

8) For maximum thermal efficiency, the fuel-air mixture in SI engines should be _____.
a) rich
b) lean
c) Stoichiometric
d) may be rich or lean

9) Octane number of n-heptane is _____.
a) 30
b) 60
c) 100
d) 0

10) 4-S4-cylinder engine consist of _____.
a) 1 revolution of crankshaft
b) 2 revolution of crankshaft
c) 3 revolution of crankshaft
d) 4 revolution of crankshaft

11) Material used for cylinder is _____.
a) Steel
b) cast iron
c) white metal
d) leaded bronze

12) Increasing the compression ratio in SI engines the knocking tendency _____.
a) Increases
b) Not affected
c) Decreases
d) None of the above

13) Brake power is measured by _____.
a) Morse test
b) Burette test
c) Dynamometers
d) Motoring test

14) Spark advance is usually specified in terms of _____.
a) engine speed in rev/min
b) degrees of crank rotation
c) time in seconds
d) None of the above

SLR-QH-55

Seat No.	

Set P

S.Y. (B. Tech.) (Mechanical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Internal Combustion Engines (BTN02306)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicates full marks.
3) Assume additional suitable data if necessary and state it clearly.
4) Use of scientific calculator is allowed.
5) Use university graph paper & semi-log paper if required.

Section – I

Q.2	**a)**	Compare four stroke and two stroke engines based on construction, performance and advantages.	**04**
	b)	Explain assumption made in air standard cycle and draw air standard Otto cycle on P-V and T-s plane.	**05**
	c)	Discuss the differences between ideal and actual valve timing diagram of a petrol engine.	**05**
Q.3	**a)**	Enlist the types of injector nozzles used in engines and explain any one with neat sketch.	**05**
	b)	Classify fuel injection system used in CI engines. Draw and explain any one type of fuel injection systems used in CI engines.	**04**
	c)	Explain the working of single jet carburettor with a neat sketch.	**05**
Q.4	**a)**	Compare supercharger with turbocharger.	**05**
	b)	Explain difference in thermodynamic cycle between naturally aspirated engine and supercharged engine.	**04**
	c)	Explain limitations of supercharging for S.I. and C.I. Engines.	**05**

Section – II

Q.5	**a)**	Explain briefly combustion phenomenon in SI engines.	**05**
	b)	Explain statement “Good CI engine fuel is bad SI engine fuel”.	**04**
	c)	Explain knocking in CI engines. Explain various factors influencing knocking in C.I engine.	**05**

Q.6	**a)**	Explain the pollution norms requirements and enlist historical achievements by Government of India.	**05**
	b)	Explain need of alternative fuels in engine. Name some of the alternative fuels.	**05**
	c)	Explain need of additives in fuels also enlist the names of additives used in SI and Cl engine fuels with their benefits.	**04**
Q.7	**a)**	A 6 cylinder gasoline engine operates on 4 stroke cycle. Bore of cylinder is 80mm and stroke 100mm. Clearance volume per cylinder is 70CC. At 4000 RPM, Fuel consumption is 20kg/hr and the torque developed is 150Nm. Calculate: i) BP ii) Brake mean effective pressure iii) Brake thermal efficiency If CV of the fuel is 43000kJ/kg, find relative efficiency on brake power basis, assuming engine works on Constant volume cycle and gamma for air = 1.4.	**05**
	b)	Explain with neat sketch three-way catalytic converter.	**04**
	c)	Explain Morse test for measurement of friction power.	**05**

SLR-QH-55

Seat No.	

Set Q

S.Y. (B. Tech.) (Mechanical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Internal Combustion Engines (BTN02306)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and state it clearly.
5) Use of scientific calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) For maximum thermal efficiency, the fuel-air mixture in SI engines should be _____.
a) rich b) lean
c) Stoichiometric d) may be rich or lean

2) Octane number of n-heptane is _____.
a) 30 b) 60
c) 100 d) 0

3) 4-S4-cylinder engine consist of _____.
a) 1 revolution of crankshaft b) 2 revolution of crankshaft
c) 3 revolution of crankshaft d) 4 revolution of crankshaft

4) Material used for cylinder is _____.
a) Steel b) cast iron
c) white metal d) leaded bronze

5) Increasing the compression ratio in SI engines the knocking tendency _____.
a) Increases b) Not affected
c) Decreases d) None of the above

6) Brake power is measured by _____.
a) Morse test b) Burette test
c) Dynamometers d) Motoring test

7) Spark advance is usually specified in terms of _____.
a) engine speed in rev/min b) degrees of crank rotation
c) time in seconds d) None of the above

8) In which of the following engine CRDI is used _____.
a) S.I. Engine b) C.I. Engine
c) Steam engine d) None of above

9) Fuel injector is used in _____.
a) S.I. Engine b) C.I. Engine
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10) Brake specific fuel consumption is defined as _____.
a) fuel consumption per hour
b) fuel consumption per km
c) fuel consumption per hour per brake power
d) fuel consumption per BHP

11) One of the major exhaust emissions from CI Engine compared to SI Engine _____.
a) Oxides of nitrogen b) Particulates
c) Unburnt hydrocarbons d) CO and CO_2

12) In which of the following engine supercharging is essential _____.
a) S.I. Engine b) C.I. Engine
c) Aircraft engine d) Marine engine

13) Turbocharging air compressor is driven by _____.
a) Exhaust gas turbine b) Engine itself
c) Separate electric motor d) None of the above

14) Venturi in the carburetor results in _____.
a) increase in air velocity
b) decrease in air velocity
c) decrease of fuel flow
d) increase of manifold pressure

SLR-QH-55

Seat No.	

Set Q

S.Y. (B. Tech.) (Mechanical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Internal Combustion Engines (BTN02306)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicates full marks.
3) Assume additional suitable data if necessary and state it clearly.
4) Use of scientific calculator is allowed.
5) Use university graph paper & semi-log paper if required.

Section – I

Q.2	**a)**	Compare four stroke and two stroke engines based on construction, performance and advantages.	**04**
	b)	Explain assumption made in air standard cycle and draw air standard Otto cycle on P-V and T-s plane.	**05**
	c)	Discuss the differences between ideal and actual valve timing diagram of a petrol engine.	**05**
Q.3	**a)**	Enlist the types of injector nozzles used in engines and explain any one with neat sketch.	**05**
	b)	Classify fuel injection system used in CI engines. Draw and explain any one type of fuel injection systems used in CI engines.	**04**
	c)	Explain the working of single jet carburettor with a neat sketch.	**05**
Q.4	**a)**	Compare supercharger with turbocharger.	**05**
	b)	Explain difference in thermodynamic cycle between naturally aspirated engine and supercharged engine.	**04**
	c)	Explain limitations of supercharging for S.I. and C.I. Engines.	**05**

Section – II

Q.5	**a)**	Explain briefly combustion phenomenon in SI engines.	**05**
	b)	Explain statement “Good CI engine fuel is bad SI engine fuel”.	**04**
	c)	Explain knocking in CI engines. Explain various factors influencing knocking in C.I engine.	**05**

Q.6 **a)** Explain the pollution norms requirements and enlist historical achievements by Government of India. **05**

b) Explain need of alternative fuels in engine. Name some of the alternative fuels. **05**

c) Explain need of additives in fuels also enlist the names of additives used in SI and Cl engine fuels with their benefits. **04**

Q.7 **a)** A 6 cylinder gasoline engine operates on 4 stroke cycle. Bore of cylinder is 80mm and stroke 100mm. Clearance volume per cylinder is 70CC. At 4000 RPM, Fuel consumption is 20kg/hr and the torque developed is 150Nm. Calculate: **05**

i) BP

ii) Brake mean effective pressure

iii) Brake thermal efficiency

If CV of the fuel is 43000kJ/kg, find relative efficiency on brake power basis, assuming engine works on Constant volume cycle and gamma for air = 1.4.

b) Explain with neat sketch three-way catalytic converter. **04**

c) Explain Morse test for measurement of friction power. **05**

SLR-QH-55

Seat No.	

Set R

S.Y. (B. Tech.) (Mechanical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Internal Combustion Engines (BTN02306)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Material used for cylinder is _____.
a) Steel b) cast iron
c) white metal d) leaded bronze

2) Increasing the compression ratio in SI engines the knocking tendency _____.
a) Increases b) Not affected
c) Decreases d) None of the above

3) Brake power is measured by _____.
a) Morse test b) Burette test
c) Dynamometers d) Motoring test

4) Spark advance is usually specified in terms of _____.
a) engine speed in rev/min b) degrees of crank rotation
c) time in seconds d) None of the above

5) In which of the following engine CRDI is used _____.
a) S.I. Engine b) C.I. Engine
c) Steam engine d) None of above

6) Fuel injector is used in _____.
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7) Brake specific fuel consumption is defined as _____.
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b) fuel consumption per km
c) fuel consumption per hour per brake power
d) fuel consumption per BHP

8) One of the major exhaust emissions from CI Engine compared to SI Engine _____.
a) Oxides of nitrogen
b) Particulates
c) Unburnt hydrocarbons
d) CO and CO_2

9) In which of the following engine supercharging is essential _____.
a) S.I. Engine
b) C.I. Engine
c) Aircraft engine
d) Marine engine

10) Turbocharging air compressor is driven by _____.
a) Exhaust gas turbine
b) Engine itself
c) Separate electric motor
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11) Venturi in the carburetor results in _____.
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b) decrease in air velocity
c) decrease of fuel flow
d) increase of manifold pressure

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b) lean
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13) Octane number of n-heptane is _____.
a) 30
b) 60
c) 100
d) 0

14) 4-S4-cylinder engine consist of _____.
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b) 2 revolution of crankshaft
c) 3 revolution of crankshaft
d) 4 revolution of crankshaft

SLR-QH-55

Seat No.	

Set R

S.Y. (B. Tech.) (Mechanical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Internal Combustion Engines (BTN02306)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicates full marks.
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5) Use university graph paper & semi-log paper if required.

Section – I

Q.2	**a)**	Compare four stroke and two stroke engines based on construction, performance and advantages.	**04**
	b)	Explain assumption made in air standard cycle and draw air standard Otto cycle on P-V and T-s plane.	**05**
	c)	Discuss the differences between ideal and actual valve timing diagram of a petrol engine.	**05**
Q.3	**a)**	Enlist the types of injector nozzles used in engines and explain any one with neat sketch.	**05**
	b)	Classify fuel injection system used in CI engines. Draw and explain any one type of fuel injection systems used in CI engines.	**04**
	c)	Explain the working of single jet carburettor with a neat sketch.	**05**
Q.4	**a)**	Compare supercharger with turbocharger.	**05**
	b)	Explain difference in thermodynamic cycle between naturally aspirated engine and supercharged engine.	**04**
	c)	Explain limitations of supercharging for S.I. and C.I. Engines.	**05**

Section – II

Q.5	**a)**	Explain briefly combustion phenomenon in SI engines.	**05**
	b)	Explain statement “Good CI engine fuel is bad SI engine fuel”.	**04**
	c)	Explain knocking in CI engines. Explain various factors influencing knocking in C.I engine.	**05**

Q.6	**a)**	Explain the pollution norms requirements and enlist historical achievements by Government of India.	**05**
	b)	Explain need of alternative fuels in engine. Name some of the alternative fuels.	**05**
	c)	Explain need of additives in fuels also enlist the names of additives used in SI and Cl engine fuels with their benefits.	**04**
Q.7	**a)**	A 6 cylinder gasoline engine operates on 4 stroke cycle. Bore of cylinder is 80mm and stroke 100mm. Clearance volume per cylinder is 70CC. At 4000 RPM, Fuel consumption is 20kg/hr and the torque developed is 150Nm. Calculate: i) BP ii) Brake mean effective pressure iii) Brake thermal efficiency If CV of the fuel is 43000kJ/kg, find relative efficiency on brake power basis, assuming engine works on Constant volume cycle and gamma for air = 1.4.	**05**
	b)	Explain with neat sketch three-way catalytic converter.	**04**
	c)	Explain Morse test for measurement of friction power.	**05**

SLR-QH-55

Seat No.	

Set S

S.Y. (B. Tech.) (Mechanical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Internal Combustion Engines (BTN02306)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Turbocharging air compressor is driven by _____.
a) Exhaust gas turbine b) Engine itself
c) Separate electric motor d) None of the above

2) Venturi in the carburetor results in _____.
a) increase in air velocity
b) decrease in air velocity
c) decrease of fuel flow
d) increase of manifold pressure

3) For maximum thermal efficiency, the fuel-air mixture in SI engines should be _____.
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5) 4-S4-cylinder engine consist of _____.
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8) Brake power is measured by _____.

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9) Spark advance is usually specified in terms of _____.

a) engine speed in rev/min b) degrees of crank rotation
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a) Oxides of nitrogen b) Particulates
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a) S.I. Engine b) C.I. Engine
c) Aircraft engine d) Marine engine

SLR-QH-55

Seat No.	

Set S

S.Y. (B. Tech.) (Mechanical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Internal Combustion Engines (BTN02306)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicates full marks.
3) Assume additional suitable data if necessary and state it clearly.
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5) Use university graph paper & semi-log paper if required.

Section – I

Q.2	**a)**	Compare four stroke and two stroke engines based on construction, performance and advantages.	**04**
	b)	Explain assumption made in air standard cycle and draw air standard Otto cycle on P-V and T-s plane.	**05**
	c)	Discuss the differences between ideal and actual valve timing diagram of a petrol engine.	**05**
Q.3	**a)**	Enlist the types of injector nozzles used in engines and explain any one with neat sketch.	**05**
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	c)	Explain the working of single jet carburettor with a neat sketch.	**05**
Q.4	**a)**	Compare supercharger with turbocharger.	**05**
	b)	Explain difference in thermodynamic cycle between naturally aspirated engine and supercharged engine.	**04**
	c)	Explain limitations of supercharging for S.I. and C.I. Engines.	**05**

Section – II

Q.5	**a)**	Explain briefly combustion phenomenon in SI engines.	**05**
	b)	Explain statement “Good CI engine fuel is bad SI engine fuel”.	**04**
	c)	Explain knocking in CI engines. Explain various factors influencing knocking in C.I engine.	**05**

Q.6	**a)**	Explain the pollution norms requirements and enlist historical achievements by Government of India.	**05**
	b)	Explain need of alternative fuels in engine. Name some of the alternative fuels.	**05**
	c)	Explain need of additives in fuels also enlist the names of additives used in SI and Cl engine fuels with their benefits.	**04**
Q.7	**a)**	A 6 cylinder gasoline engine operates on 4 stroke cycle. Bore of cylinder is 80mm and stroke 100mm. Clearance volume per cylinder is 70CC. At 4000 RPM, Fuel consumption is 20kg/hr and the torque developed is 150Nm. Calculate: i) BP ii) Brake mean effective pressure iii) Brake thermal efficiency If CV of the fuel is 43000kJ/kg, find relative efficiency on brake power basis, assuming engine works on Constant volume cycle and gamma for air = 1.4.	**05**
	b)	Explain with neat sketch three-way catalytic converter.	**04**
	c)	Explain Morse test for measurement of friction power.	**05**

SLR-QH-56

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Kinematics and Theory of Machine (MECHPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The mechanism forms a structure, when Degree of Freedom $=$ _____.
a) 0 b) -1
c) 1 d) 2

2) Which of the following is an inversion of single slider crank chain?
a) Beam Engine
b) Elliptical Trammel
c) Whitworth Quick Return Mechanism
d) Watt's indicator mechanism

3) The total number of instantaneous centres for a mechanism consisting of n links are _____.
a) $n/2$ b) n
c) $(n-1)/2$ d) $n(n-1)/2$

4) The component of acceleration along the link is called as _____.
a) Radial component b) Tangential component
c) Coriolis component d) None

5) Which of the following is an inversion of double slider crank chain?
a) Coupling rod of a locomotive
b) Pendulum pump
c) Elliptical trammels
d) Oscillating cylinder engine

6) A circle drawn with centre as the cam centre and radius equal to the distance between the cam centre and the point on the pitch curve at which the pressure angle is maximum, is called _____.
a) Base circle b) Pitch circle
c) Prime circle d) Pitch curve

7) Offset is provided to a cam follower mechanism to _____.
a) minimise the side thrust b) Accelerate
c) avoid jerk d) none of these

8) An imaginary circle which by pure rolling action, gives the same motion as the actual gear, is called _____.
a) addendum circle b) dedendum circle
c) pitch circle d) clearance circle

9) The module is the reciprocal of _____.
a) diametral pitch b) circular pitch
c) pitch diameter d) none of these

10) In a clock mechanism, the gear train used to connect minute hand to hour hand, is _____.
a) epicyclic gear train b) reverted gear train
c) compound gear train d) simple gear train

11) A Hartnell governor is a_____.
a) pendulum type governor b) spring loaded governor
c) dead weight governor d) inertia governor

12) The height of a Watt's governor (in metres) in equal to _____.
a) $8.95/N^2$ b) $89.5/N^2$
c) $895/N^2$ d) $8950/N^2$

13) For dynamic balancing of a shaft, _____.
a) the net dynamic force acting on the shaft is equal to zero
b) the net couple due to dynamic forces acting on the shaft is equal to zero
c) both a) and b)
d) none of the above

14) A disturbing mass $m1$ attached to a rotating shaft may be balanced by a single mass $m2$ attached in the same plane of rotation as that of $m1$ such that _____.
a) $m_1.r_2 = m_2.r_1$ b) $m_1.r_1 = m_2.r_2$
c) $m_1.m_2 = r_1.r_2$ d) $m_1.r_1^2 = m_2.r_2^2$

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Kinematics and Theory of Machine (MECHPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume additional suitable data if necessary and state it clearly.
4) Use university graph paper & semi-log paper if required.
5) Use of scientific calculator is allowed.

Section – I

Q.2 **a)** Explain different kinds of kinematic pairs giving example for each of them. **06**

b) In a slider-crank mechanism, the crank is 480 mm long and rotates at 20 rad/s in the counter-clockwise direction. The length of the connecting rod is 1.6 m. When the crank turns 60° from the inner dead centre, determine the following using relative velocity methos **08**

i) velocity of the slider
ii) velocity of a point E located at a distance 450 mm on the connecting rod extended
iii) position and velocity of a point F on the connecting rod having the least absolute velocity

Q.3 **a)** Explain with neat sketch any two inversions of double slider crank mechanism. **06**

b) In a pin jointed four bar mechanism ABCD, AB = 300 mm, BC = CD = 360 mm, and AD = 600 mm. The angle BAD = 60°. The crank AB rotates uniformly at 100 r.p.m. Locate all the instantaneous centres and find the angular velocity of the link BC. **08**

Q.4 **a)** Define the following terms related to cam: **06**

i) Base circle
ii) Lift or Stroke
iii) Prime circle
iv) Pitch curve
v) Pitch circle
vi) Pressure angle

b) A cam with a minimum radius of 25 mm is to be designed for a knife-edge follower with the following data: **08**

i) To raise the follower through 35 mm during 60° rotation of the cam
ii) Dwell for next 40° of the cam rotation
iii) Descending of the follower during the next 90° of the cam rotation
iv) Dwell during the rest of the cam rotation

Draw the profile of the cam if the ascending and descending of the cam is with simple harmonic motion and the line of stroke of the follower is offset 10 mm from the axis of the cam shaft.

Section – II

Q.5 **a)** Define the following terms related to gears. **04**

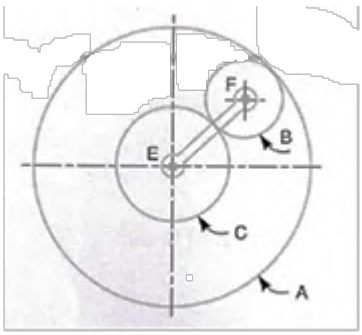
i) Diametral pitch
ii) Module
iii) Dedendum
iv) Path of contact

b) Explain tabular method for epicyclic gear train. **04**

c) A Porter governor has equal arms each 250 mm long and pivoted on the axis of rotation. Each ball has a mass of 5 kg and the mass of the central load on the sleeve is 25 kg. The radius of rotation of the ball is 150 mm when the governor begins to lift and 200 mm when the governor is at maximum speed. Find the minimum and maximum speeds and range of speed of the governor. **06**

Q.6 **a)** What is the function of governor? State the different types of the governors. **06**

b) An epicyclic gear consists of three gears A, B and C as shown in figure. The gear A has 72 internal teeth and gear C has 32 external teeth. The gear B meshes with both A and C and is carried on an arm EF which rotates about the centre of A at 18 r.p.m.. If the gear A is fixed, determine the speed of gears B and C. **08**



Q.7 **a)** Write a short note on static balancing and dynamic balancing. **04**

b) Four masses A, B, C and D as shown below are to be completely balanced. **10**

	A	B	C	D
Mass (Kg)	---	30	50	40
Radius (mm)	180	240	120	150

The planes containing masses B and C are 300 mm apart. The angle between planes containing B and C is 90°. B and C make angles of 210° and 120° respectively with D in the same sense. Find

i) The magnitude and the angular position of mass A;

ii) The position of planes A and D.

SLR-QH-56

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Kinematics and Theory of Machine (MECHPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) An imaginary circle which by pure rolling action, gives the same motion as the actual gear, is called _____.
a) addendum circle b) dedendum circle
c) pitch circle d) clearance circle

2) The module is the reciprocal of _____.
a) diametral pitch b) circular pitch
c) pitch diameter d) none of these

3) In a clock mechanism, the gear train used to connect minute hand to hour hand, is _____.
a) epicyclic gear train b) reverted gear train
c) compound gear train d) simple gear train

4) A Hartnell governor is a_____.
a) pendulum type governor b) spring loaded governor
c) dead weight governor d) inertia governor

5) The height of a Watt's governor (in metres) in equal to _____.
a) $8.95/N^2$ b) $89.5/N^2$
c) $895/N^2$ d) $8950/N^2$

6) For dynamic balancing of a shaft, _____.
a) the net dynamic force acting on the shaft is equal to zero
b) the net couple due to dynamic forces acting on the shaft is equal to zero
c) both a) and b)
d) none of the above

7) A disturbing mass $m1$ attached to a rotating shaft may be balanced by a single mass $m2$ attached in the same plane of rotation as that of $m1$ such that _____.

a) $m_1.r_2 = m_2.r_1$ b) $m_1.r_1 = m_2.r_2$

c) $m_1.m_2 = r_1.r_2$ d) $m_1.r_1^2 = m_2.r_2^2$

8) The mechanism forms a structure, when Degree of Freedom = _____.

a) 0 b) -1

c) 1 d) 2

9) Which of the following is an inversion of single slider crank chain?

a) Beam Engine
b) Elliptical Trammel
c) Whitworth Quick Return Mechanism
d) Watt's indicator mechanism

10) The total number of instantaneous centres for a mechanism consisting of n links are _____.

a) $n/2$ b) n

c) $(n-1)/2$ d) $n(n-1)/2$

11) The component of acceleration along the link is called as _____.

a) Radial component b) Tangential component

c) Coriolis component d) None

12) Which of the following is an inversion of double slider crank chain?

a) Coupling rod of a locomotive
b) Pendulum pump
c) Elliptical trammels
d) Oscillating cylinder engine

13) A circle drawn with centre as the cam centre and radius equal to the distance between the cam centre and the point on the pitch curve at which the pressure angle is maximum, is called _____.

a) Base circle b) Pitch circle

c) Prime circle d) Pitch curve

14) Offset is provided to a cam follower mechanism to _____.

a) minimise the side thrust b) Accelerate

c) avoid jerk d) none of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Kinematics and Theory of Machine (MECHPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume additional suitable data if necessary and state it clearly.
4) Use university graph paper & semi-log paper if required.
5) Use of scientific calculator is allowed.

Section – I

Q.2 **a)** Explain different kinds of kinematic pairs giving example for each of them. **06**

b) In a slider-crank mechanism, the crank is 480 mm long and rotates at 20 rad/s in the counter-clockwise direction. The length of the connecting rod is 1.6 m. When the crank turns 60° from the inner dead centre, determine the following using relative velocity methos **08**

i) velocity of the slider
ii) velocity of a point E located at a distance 450 mm on the connecting rod extended
iii) position and velocity of a point F on the connecting rod having the least absolute velocity

Q.3 **a)** Explain with neat sketch any two inversions of double slider crank mechanism. **06**

b) In a pin jointed four bar mechanism ABCD, AB = 300 mm, BC = CD = 360 mm, and AD = 600 mm. The angle BAD = 60°. The crank AB rotates uniformly at 100 r.p.m. Locate all the instantaneous centres and find the angular velocity of the link BC. **08**

Q.4 **a)** Define the following terms related to cam: **06**

i) Base circle
ii) Lift or Stroke
iii) Prime circle
iv) Pitch curve
v) Pitch circle
vi) Pressure angle

b) A cam with a minimum radius of 25 mm is to be designed for a knife-edge follower with the following data: **08**

i) To raise the follower through 35 mm during 60° rotation of the cam
ii) Dwell for next 40° of the cam rotation
iii) Descending of the follower during the next 90° of the cam rotation
iv) Dwell during the rest of the cam rotation

Draw the profile of the cam if the ascending and descending of the cam is with simple harmonic motion and the line of stroke of the follower is offset 10 mm from the axis of the cam shaft.

Section – II

Q.5 **a)** Define the following terms related to gears. **04**

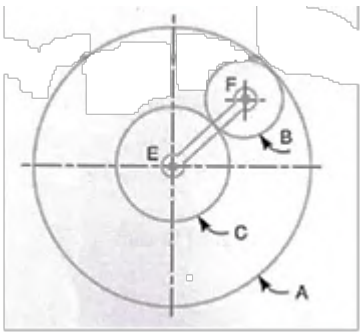
i) Diametral pitch
ii) Module
iii) Dedendum
iv) Path of contact

b) Explain tabular method for epicyclic gear train. **04**

c) A Porter governor has equal arms each 250 mm long and pivoted on the axis of rotation. Each ball has a mass of 5 kg and the mass of the central load on the sleeve is 25 kg. The radius of rotation of the ball is 150 mm when the governor begins to lift and 200 mm when the governor is at maximum speed. Find the minimum and maximum speeds and range of speed of the governor. **06**

Q.6 **a)** What is the function of governor? State the different types of the governors. **06**

b) An epicyclic gear consists of three gears A, B and C as shown in figure. The gear A has 72 internal teeth and gear C has 32 external teeth. The gear B meshes with both A and C and is carried on an arm EF which rotates about the centre of A at 18 r.p.m.. If the gear A is fixed, determine the speed of gears B and C. **08**



Q.7 **a)** Write a short note on static balancing and dynamic balancing. **04**

b) Four masses A, B, C and D as shown below are to be completely balanced. **10**

	A	B	C	D
Mass (Kg)	---	30	50	40
Radius (mm)	180	240	120	150

The planes containing masses B and C are 300 mm apart. The angle between planes containing B and C is 90°. B and C make angles of 210° and 120° respectively with D in the same sense. Find

i) The magnitude and the angular position of mass A;

ii) The position of planes A and D.

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Kinematics and Theory of Machine (MECHPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A Hartnell governor is a_____.
a) pendulum type governor b) spring loaded governor
c) dead weight governor d) inertia governor

2) The height of a Watt's governor (in metres) in equal to _____.
a) $8.95/N^2$ b) $89.5/N^2$
c) $895/N^2$ d) $8950/N^2$

3) For dynamic balancing of a shaft, _____.
a) the net dynamic force acting on the shaft is equal to zero
b) the net couple due to dynamic forces acting on the shaft is equal to zero
c) both a) and b)
d) none of the above

4) A disturbing mass $m1$ attached to a rotating shaft may be balanced by a single mass $m2$ attached in the same plane of rotation as that of $m1$ such that _____.
a) $m_1.r_2 = m_2.r_1$ b) $m_1.r_1 = m_2.r_2$
c) $m_1.m_2 = r_1.r_2$ d) $m_1.r_1^2 = m_2.r_2^2$

5) The mechanism forms a structure, when Degree of Freedom = _____.
a) 0 b) -1
c) 1 d) 2

6) Which of the following is an inversion of single slider crank chain?
a) Beam Engine
b) Elliptical Trammel
c) Whitworth Quick Return Mechanism
d) Watt's indicator mechanism

7) The total number of instantaneous centres for a mechanism consisting of n links are _____.
a) $n/2$ b) n
c) $(n-1)/2$ d) $n(n-1)/2$

8) The component of acceleration along the link is called as _____.
a) Radial component b) Tangential component
c) Coriolis component d) None

9) Which of the following is an inversion of double slider crank chain?
a) Coupling rod of a locomotive
b) Pendulum pump
c) Elliptical trammels
d) Oscillating cylinder engine

10) A circle drawn with centre as the cam centre and radius equal to the distance between the cam centre and the point on the pitch curve at which the pressure angle is maximum, is called _____.
a) Base circle b) Pitch circle
c) Prime circle d) Pitch curve

11) Offset is provided to a cam follower mechanism to _____.
a) minimise the side thrust b) Accelerate
c) avoid jerk d) none of these

12) An imaginary circle which by pure rolling action, gives the same motion as the actual gear, is called _____.
a) addendum circle b) dedendum circle
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13) The module is the reciprocal of _____.
a) diametral pitch b) circular pitch
c) pitch diameter d) none of these

14) In a clock mechanism, the gear train used to connect minute hand to hour hand, is _____.
a) epicyclic gear train b) reverted gear train
c) compound gear train d) simple gear train

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Kinematics and Theory of Machine (MECHPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume additional suitable data if necessary and state it clearly.
4) Use university graph paper & semi-log paper if required.
5) Use of scientific calculator is allowed.

Section – I

Q.2 **a)** Explain different kinds of kinematic pairs giving example for each of them. **06**

b) In a slider-crank mechanism, the crank is 480 mm long and rotates at 20 rad/s in the counter-clockwise direction. The length of the connecting rod is 1.6 m. When the crank turns 60° from the inner dead centre, determine the following using relative velocity methos **08**

i) velocity of the slider
ii) velocity of a point E located at a distance 450 mm on the connecting rod extended
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Q.3 **a)** Explain with neat sketch any two inversions of double slider crank mechanism. **06**

b) In a pin jointed four bar mechanism ABCD, AB = 300 mm, BC = CD = 360 mm, and AD = 600 mm. The angle BAD = 60°. The crank AB rotates uniformly at 100 r.p.m. Locate all the instantaneous centres and find the angular velocity of the link BC. **08**

Q.4 **a)** Define the following terms related to cam: **06**

i) Base circle
ii) Lift or Stroke
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v) Pitch circle
vi) Pressure angle

b) A cam with a minimum radius of 25 mm is to be designed for a knife-edge follower with the following data: **08**

i) To raise the follower through 35 mm during 60° rotation of the cam
ii) Dwell for next 40° of the cam rotation
iii) Descending of the follower during the next 90° of the cam rotation
iv) Dwell during the rest of the cam rotation

Draw the profile of the cam if the ascending and descending of the cam is with simple harmonic motion and the line of stroke of the follower is offset 10 mm from the axis of the cam shaft.

Section – II

Q.5 **a)** Define the following terms related to gears. **04**

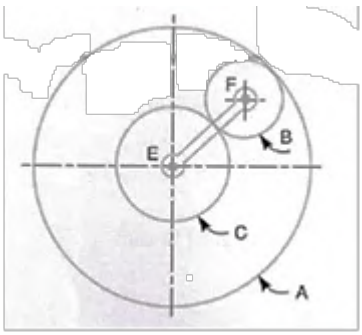
i) Diametral pitch
ii) Module
iii) Dedendum
iv) Path of contact

b) Explain tabular method for epicyclic gear train. **04**

c) A Porter governor has equal arms each 250 mm long and pivoted on the axis of rotation. Each ball has a mass of 5 kg and the mass of the central load on the sleeve is 25 kg. The radius of rotation of the ball is 150 mm when the governor begins to lift and 200 mm when the governor is at maximum speed. Find the minimum and maximum speeds and range of speed of the governor. **06**

Q.6 **a)** What is the function of governor? State the different types of the governors. **06**

b) An epicyclic gear consists of three gears A, B and C as shown in figure. The gear A has 72 internal teeth and gear C has 32 external teeth. The gear B meshes with both A and C and is carried on an arm EF which rotates about the centre of A at 18 r.p.m.. If the gear A is fixed, determine the speed of gears B and C. **08**



Q.7 **a)** Write a short note on static balancing and dynamic balancing. **04**

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Radius (mm)	180	240	120	150

The planes containing masses B and C are 300 mm apart. The angle between planes containing B and C is 90°. B and C make angles of 210° and 120° respectively with D in the same sense. Find

i) The magnitude and the angular position of mass A;

ii) The position of planes A and D.

SLR-QH-56

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Kinematics and Theory of Machine (MECHPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A circle drawn with centre as the cam centre and radius equal to the distance between the cam centre and the point on the pitch curve at which the pressure angle is maximum, is called _____.
a) Base circle b) Pitch circle
c) Prime circle d) Pitch curve

2) Offset is provided to a cam follower mechanism to _____.
a) minimise the side thrust b) Accelerate
c) avoid jerk d) none of these

3) An imaginary circle which by pure rolling action, gives the same motion as the actual gear, is called _____.
a) addendum circle b) dedendum circle
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4) The module is the reciprocal of _____.
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5) In a clock mechanism, the gear train used to connect minute hand to hour hand, is _____.
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7) The height of a Watt's governor (in metres) in equal to _____.
a) $8.95/N^2$ b) $89.5/N^2$
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8) For dynamic balancing of a shaft, _____.
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10) The mechanism forms a structure, when Degree of Freedom $=$ _____.
a) 0 b) -1
c) 1 d) 2

11) Which of the following is an inversion of single slider crank chain?
a) Beam Engine
b) Elliptical Trammel
c) Whitworth Quick Return Mechanism
d) Watt's indicator mechanism

12) The total number of instantaneous centres for a mechanism consisting of n links are _____.
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13) The component of acceleration along the link is called as _____.
a) Radial component b) Tangential component
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14) Which of the following is an inversion of double slider crank chain?
a) Coupling rod of a locomotive
b) Pendulum pump
c) Elliptical trammels
d) Oscillating cylinder engine

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Kinematics and Theory of Machine (MECHPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume additional suitable data if necessary and state it clearly.
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5) Use of scientific calculator is allowed.

Section – I

Q.2 **a)** Explain different kinds of kinematic pairs giving example for each of them. **06**

b) In a slider-crank mechanism, the crank is 480 mm long and rotates at 20 rad/s in the counter-clockwise direction. The length of the connecting rod is 1.6 m. When the crank turns 60° from the inner dead centre, determine the following using relative velocity methos **08**

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Q.3 **a)** Explain with neat sketch any two inversions of double slider crank mechanism. **06**

b) In a pin jointed four bar mechanism ABCD, AB = 300 mm, BC = CD = 360 mm, and AD = 600 mm. The angle BAD = 60°. The crank AB rotates uniformly at 100 r.p.m. Locate all the instantaneous centres and find the angular velocity of the link BC. **08**

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Section – II

Q.5 **a)** Define the following terms related to gears. **04**

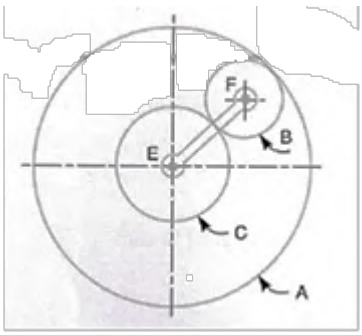
i) Diametral pitch
ii) Module
iii) Dedendum
iv) Path of contact

b) Explain tabular method for epicyclic gear train. **04**

c) A Porter governor has equal arms each 250 mm long and pivoted on the axis of rotation. Each ball has a mass of 5 kg and the mass of the central load on the sleeve is 25 kg. The radius of rotation of the ball is 150 mm when the governor begins to lift and 200 mm when the governor is at maximum speed. Find the minimum and maximum speeds and range of speed of the governor. **06**

Q.6 **a)** What is the function of governor? State the different types of the governors. **06**

b) An epicyclic gear consists of three gears A, B and C as shown in figure. The gear A has 72 internal teeth and gear C has 32 external teeth. The gear B meshes with both A and C and is carried on an arm EF which rotates about the centre of A at 18 r.p.m.. If the gear A is fixed, determine the speed of gears B and C. **08**



Q.7 **a)** Write a short note on static balancing and dynamic balancing. **04**

b) Four masses A, B, C and D as shown below are to be completely balanced. **10**

	A	B	C	D
Mass (Kg)	---	30	50	40
Radius (mm)	180	240	120	150

The planes containing masses B and C are 300 mm apart. The angle between planes containing B and C is 90°. B and C make angles of 210° and 120° respectively with D in the same sense. Find

i) The magnitude and the angular position of mass A;

ii) The position of planes A and D.

SLR-QH-57

Seat No.	

Set P

S. Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Machine Drawing (MECHPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

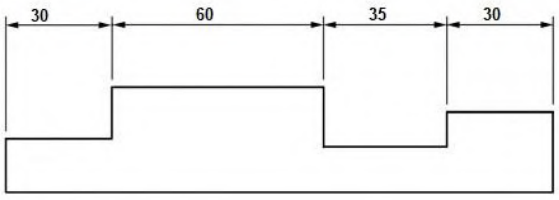
Q.1 Choose the correct answer. **14**

1) In shaft basis system the upper deviation of shaft is _____.
a) Zero b) Varying
c) More than zero d) None of the above

2) Standard size for A1 drawing sheet as per BIS in mm is _____.
a) 594×841 b) 297×420
c) 210×297 d) 420×594

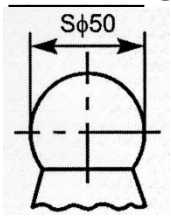
3) Which type of dimensioning places the dimensions aligned with the entity being measured?
a) Chain dimensioning b) Parallel dimensioning
c) Aligned dimensioning d) Unidirectional dimensioning

4) Which type of dimensioning is used in the given figure?



a) Parallel dimensioning b) Chain dimensioning
c) Angular dimensioning d) Aligned dimensioning

5) In the fig symbol Sϕ represents _____ Shape identification symbol.



a) Diameter b) Radius
c) Square d) Spherical Diameter

6) BIS convention of in the given figure is of _____

a) internal thread
b) external thread
c) bearing
d) Knurling

7) What is the included angle of the Sharp V-thread?
a) 30°
b) 45°
c) 60°
d) 90°

8) Which bolt is commonly used in foundations and masonry work?
a) T-headed bolt
b) Rag foundation bolt
c) Cup headed bolt
d) Stud bolt

9) Which key is semi circular in shape?
a) Flat saddle key
b) Gib head key
c) Feather key
d) Woodruff key

10) In a lap joint, the plates are joined by _____.
a) Welding
b) Overlapping each other
c) Threading
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11) It is used to lift the heavy load _____.
a) Screw jack
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d) None

12) Which type of fit always provides a space between the hole and shaft?
a) Interference fit
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d) Tight fit

13) Which roughness grade has the finest surface finish?
a) N12
b) N8
c) N4
d) N1

14) The algebraic difference between the minimum limit of size and the corresponding basic size is known as _____.
a) Deviation
b) Upper deviation
c) Allowance
d) Lower deviation

SLR-QH-57

Seat No.	

Set | **P**

S. Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Machine Drawing (MECHPCC-05)

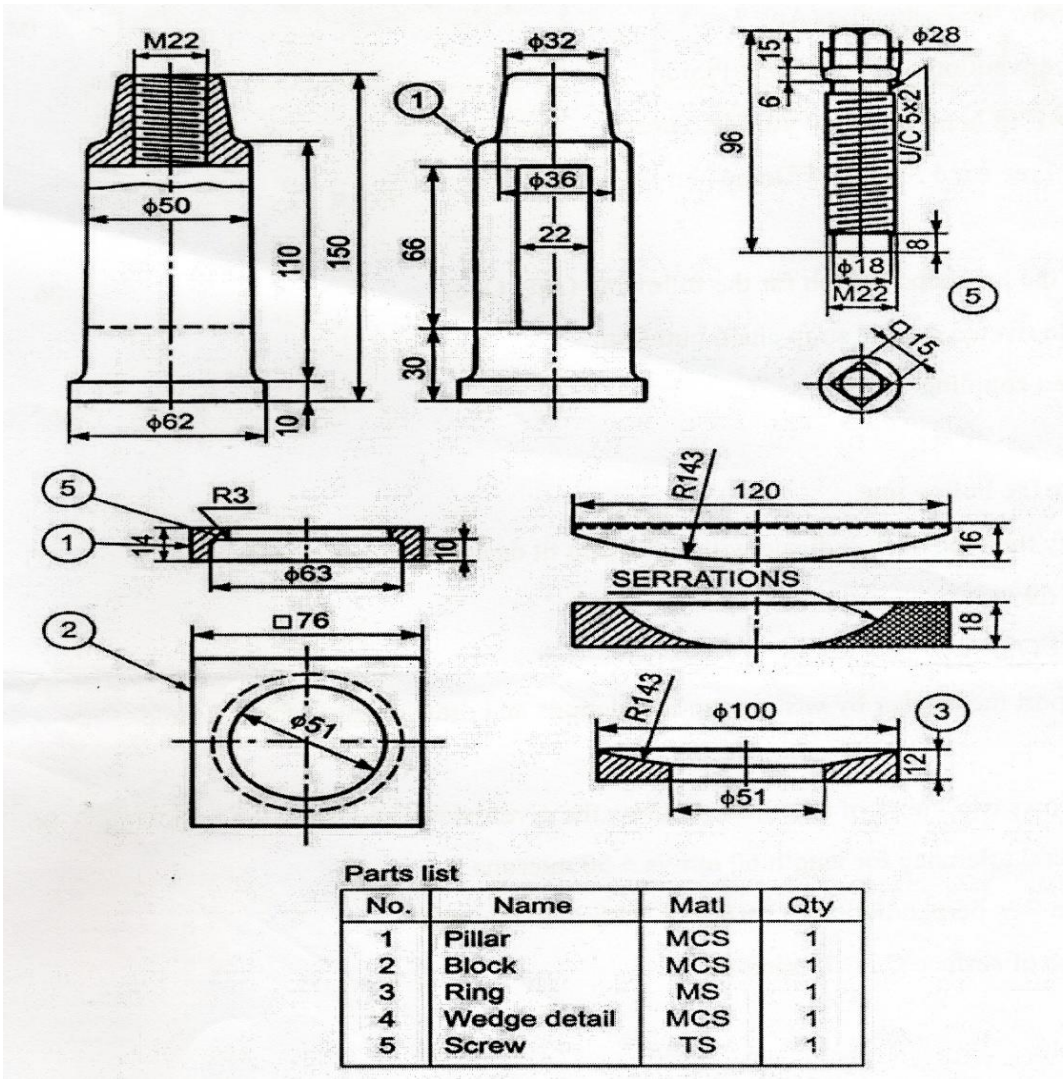
Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable dimensions if not given.
4) Use first angle Method of projections.

Q.2 Figure below shows the details of Single tool post. Assemble the given parts and draw: **22**

i) Front view
ii) Side view

Prepare the List of Material and give the entire dimension.



Parts list

No.	Name	Matl	Qty
1	Pillar	MCS	1
2	Block	MCS	1
3	Ring	MS	1
4	Wedge detail	MCS	1
5	Screw	TS	1

Q.3 **a)** Draw the BIS Convention. Solve any Four out of five. (Eveny bit has 2 marks) **08**

i) Square on Shaft
ii) Concrete
iii) Rack and Pinion
iv) Square butt weld
v) Draw chain and combined dimensioning

b) Draw freehand sketch for the following (Any One) **05**

i) Knuckle Joint
ii) Rag foundation bolt

Q.4 **a)** **Draw the following (Any Two).** **04**

i) BIS convention of Ratchet and Pinion
ii) Draw Free hand sketch of ACME Thread
iii) Draw Free hand sketch of Dome Nut

b) **Draw the Freehand Sketch for the following (Any One).** **06**

i) Double riveted double strap chain butt joint
ii) Flanged coupling

Q.5 **Solve the Following.**

a) Identify the type of fit indicate with following fit designation. (Any One) **05**

i) 30 H8 d9
ii) 150 H7 f7

Also support the answer by writing the calculations and draw diagram for the same.

b) Fig. shows two views of an object. Redraw the given views and show the following **06**

i) Unilateral tolerance for length 60 mm is $\pm$ 50 microns
ii) Surface B is perpendicular to surface A within 40 microns
iii) Flatness of surface C is 20 microns.

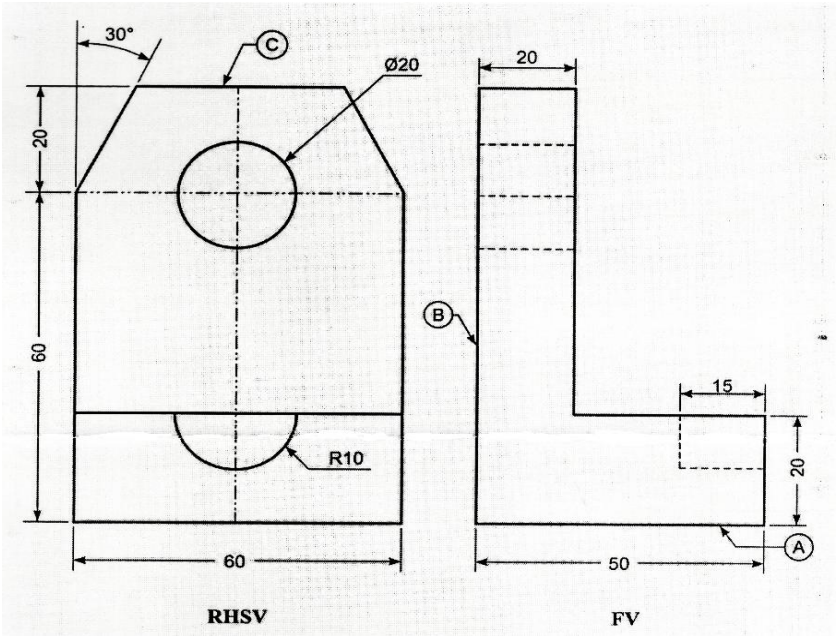


TABLE 18-14(i)
(Values in microns)

Nominal sizes	Tolerances of holes					Tolerances of shafts				
	H7	H8	H9	H10	H11	d9	e8	f7	g6	h6
From 1 Upto 3	+ 10 0	+ 14 0	+ 25 0	+ 40 0	+ 60 0	- 20 - 45	- 14 - 28	- 6 - 16	- 2 - 8	0 - 6
Over 3 Upto 6	+ 12 0	+ 18 0	+ 30 0	+ 45 0	+ 75 0	- 30 - 60	- 20 - 38	- 10 - 22	- 4 - 12	0 - 8
Over 6 Upto 10	+ 15 0	+ 22 0	+ 36 0	+ 58 0	+ 90 0	- 40 - 75	- 25 - 47	- 13 - 28	- 5 - 14	0 - 9
Over 10 Upto 18	+ 18 0	+ 27 0	+ 43 0	+ 70 0	+ 110 0	- 50 - 93	- 32 - 59	- 16 - 34	- 6 - 17	0 - 11
Over 18 Upto 30	+ 21 0	+ 33 0	+ 52 0	+ 84 0	+ 130 0	- 65 - 117	- 40 - 73	- 20 - 41	- 7 - 20	0 - 13
Over 30 Upto 50	+ 25 0	+ 39 0	+ 62 0	+ 100 0	+ 160 0	- 80 - 142	- 50 - 89	- 25 - 50	- 9 - 25	0 - 16
Over 50 Upto 80	+ 30 0	+ 46 0	+ 76 0	+ 120 0	+ 190 0	- 100 - 174	- 60 - 105	- 30 - 60	- 10 - 29	0 - 19
Over 80 Upto 120	+ 35 0	+ 54 0	+ 87 0	+ 140 0	+ 220 0	- 120 - 207	- 72 - 126	- 36 - 71	- 12 - 34	0 - 22
Over 120 Upto 180	+ 40 0	+ 63 0	+ 100 0	+ 160 0	+ 250 0	- 145 - 245	- 85 - 148	- 43 - 83	- 14 - 39	0 - 25
Over 180 Upto 250	+ 45 0	+ 72 0	+ 115 0	+ 185 0	+ 290 0	- 170 - 285	- 100 - 172	- 50 - 96	- 15 - 44	0 - 29
Over 250 Upto 315	+ 52 0	+ 81 0	+ 130 0	+ 210 0	+ 320 0	- 190 - 320	- 110 - 191	- 56 - 108	- 17 - 49	0 - 32
Over 315 Upto 400	+ 57 0	+ 89 0	+ 140 0	+ 230 0	+ 360 0	- 210 - 350	- 125 - 214	- 62 - 119	- 18 - 54	0 - 35
Over 400 Upto 500	+ 63 0	+ 97 0	+ 155 0	+ 250 0	+ 400 0	- 230 - 385	- 135 - 232	- 68 - 131	- 20 - 60	0 - 40

Note: Upto means including. Over means excluding.

SLR-QH-57

Seat No.	

Set Q

S. Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Machine Drawing (MECHPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which bolt is commonly used in foundations and masonry work?
a) T-headed bolt b) Rag foundation bolt
c) Cup headed bolt d) Stud bolt

2) Which key is semi circular in shape?
a) Flat saddle key b) Gib head key
c) Feather key d) Woodruff key

3) In a lap joint, the plates are joined by _____.
a) Welding b) Overlapping each other
c) Threading d) Brazing

4) It is used to lift the heavy load _____.
a) Screw jack b) Plummer block
c) Tail stock d) None

5) Which type of fit always provides a space between the hole and shaft?
a) Interference fit b) Transition fit
c) Clearance fit d) Tight fit

6) Which roughness grade has the finest surface finish?
a) N12 b) N8
c) N4 d) N1

7) The algebraic difference between the minimum limit of size and the corresponding basic size is known as _____.
a) Deviation b) Upper deviation
c) Allowance d) Lower deviation

8) In shaft basis system the upper deviation of shaft is _____.

a) Zero
b) Varying
c) More than zero
d) None of the above

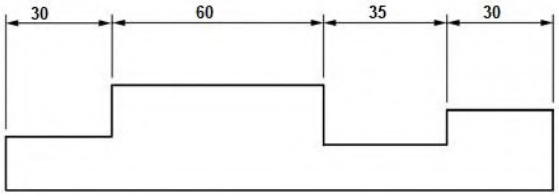
9) Standard size for A1 drawing sheet as per BIS in mm is _____.

a) 594×841
b) 297×420
c) 210×297
d) 420×594

10) Which type of dimensioning places the dimensions aligned with the entity being measured?

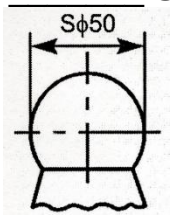
a) Chain dimensioning
b) Parallel dimensioning
c) Aligned dimensioning
d) Unidirectional dimensioning

11) Which type of dimensioning is used in the given figure?



a) Parallel dimensioning
b) Chain dimensioning
c) Angular dimensioning
d) Aligned dimensioning

12) In the fig symbol Sϕ represents _____ Shape identification symbol.



a) Diameter
b) Radius
c) Square
d) Spherical Diameter

13) BIS convention of in the given figure is of _____

a) internal thread
b) external thread
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d) Knurling

14) What is the included angle of the Sharp V-thread?

a) 30°
b) 45°
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SLR-QH-57

Seat No.	

Set Q

S. Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Machine Drawing (MECHPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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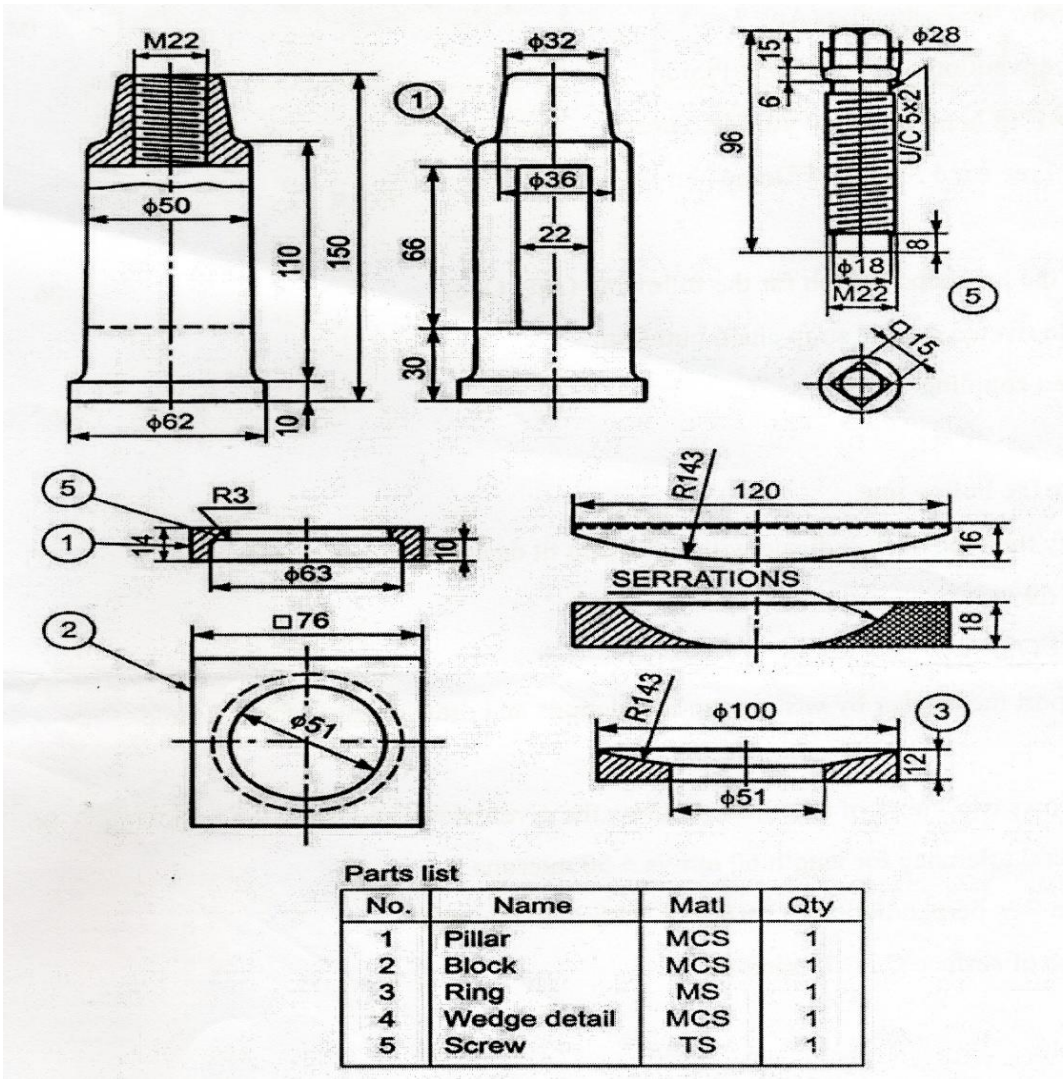
3) Assume suitable dimensions if not given.
4) Use first angle Method of projections.

Q.2 Figure below shows the details of Single tool post. Assemble the given parts and draw: **22**

i) Front view
ii) Side view

Prepare the List of Material and give the entire dimension.



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No.	Name	Matl	Qty
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2	Block	MCS	1
3	Ring	MS	1
4	Wedge detail	MCS	1
5	Screw	TS	1

Q.3 **a)** Draw the BIS Convention. Solve any Four out of five. (Eveny bit has 2 marks) **08**

i) Square on Shaft
ii) Concrete
iii) Rack and Pinion
iv) Square butt weld
v) Draw chain and combined dimensioning

b) Draw freehand sketch for the following (Any One) **05**

i) Knuckle Joint
ii) Rag foundation bolt

Q.4 **a)** **Draw the following (Any Two).** **04**

i) BIS convention of Ratchet and Pinion
ii) Draw Free hand sketch of ACME Thread
iii) Draw Free hand sketch of Dome Nut

b) **Draw the Freehand Sketch for the following (Any One).** **06**

i) Double riveted double strap chain butt joint
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a) Identify the type of fit indicate with following fit designation. (Any One) **05**

i) 30 H8 d9
ii) 150 H7 f7

Also support the answer by writing the calculations and draw diagram for the same.

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i) Unilateral tolerance for length 60 mm is $\pm$ 50 microns
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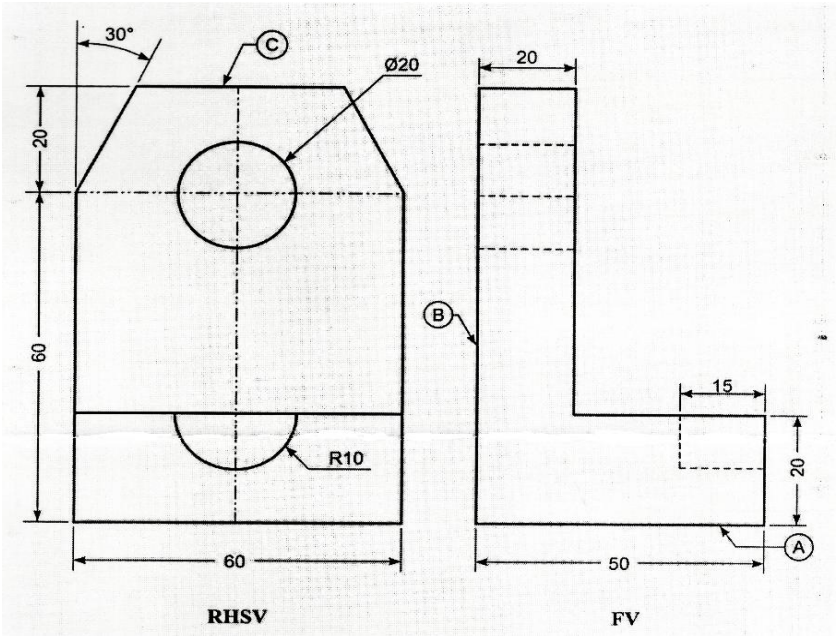

TABLE 18-14(i)
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Over 80 Upto 120	+ 35 0	+ 54 0	+ 87 0	+ 140 0	+ 220 0	− 120 − 207	− 72 − 126	− 36 − 71	− 12 − 34	0 − 22
Over 120 Upto 180	+ 40 0	+ 63 0	+ 100 0	+ 160 0	+ 250 0	− 145 − 245	− 85 − 148	− 43 − 83	− 14 − 39	0 − 25
Over 180 Upto 250	+ 45 0	+ 72 0	+ 115 0	+ 185 0	+ 290 0	− 170 − 285	− 100 − 172	− 50 − 96	− 15 − 44	0 − 29
Over 250 Upto 315	+ 52 0	+ 81 0	+ 130 0	+ 210 0	+ 320 0	− 190 − 320	− 110 − 191	− 56 − 108	− 17 − 49	0 − 32
Over 315 Upto 400	+ 57 0	+ 89 0	+ 140 0	+ 230 0	+ 360 0	− 210 − 350	− 125 − 214	− 62 − 119	− 18 − 54	0 − 35
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Note: Upto means including. Over means excluding.

SLR-QH-57

Seat No.	

Set R

S. Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Machine Drawing (MECHPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page
3) Figures to the right indicates full marks

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) It is used to lift the heavy load _____.
a) Screw jack b) Plummer block
c) Tail stock d) None

2) Which type of fit always provides a space between the hole and shaft?
a) Interference fit b) Transition fit
c) Clearance fit d) Tight fit

3) Which roughness grade has the finest surface finish?
a) N12 b) N8
c) N4 d) N1

4) The algebraic difference between the minimum limit of size and the corresponding basic size is known as _____.
a) Deviation b) Upper deviation
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5) In shaft basis system the upper deviation of shaft is _____.
a) Zero b) Varying
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6) Standard size for A1 drawing sheet as per BIS in mm is _____.
a) 594×841 b) 297×420
c) 210×297 d) 420×594

7) Which type of dimensioning places the dimensions aligned with the entity being measured?
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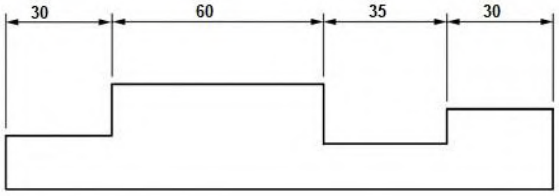

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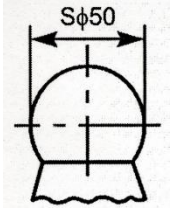

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14) In a lap joint, the plates are joined by _____.

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c) Threading
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SLR-QH-57

Seat No.	

Set | **R**

S. Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Machine Drawing (MECHPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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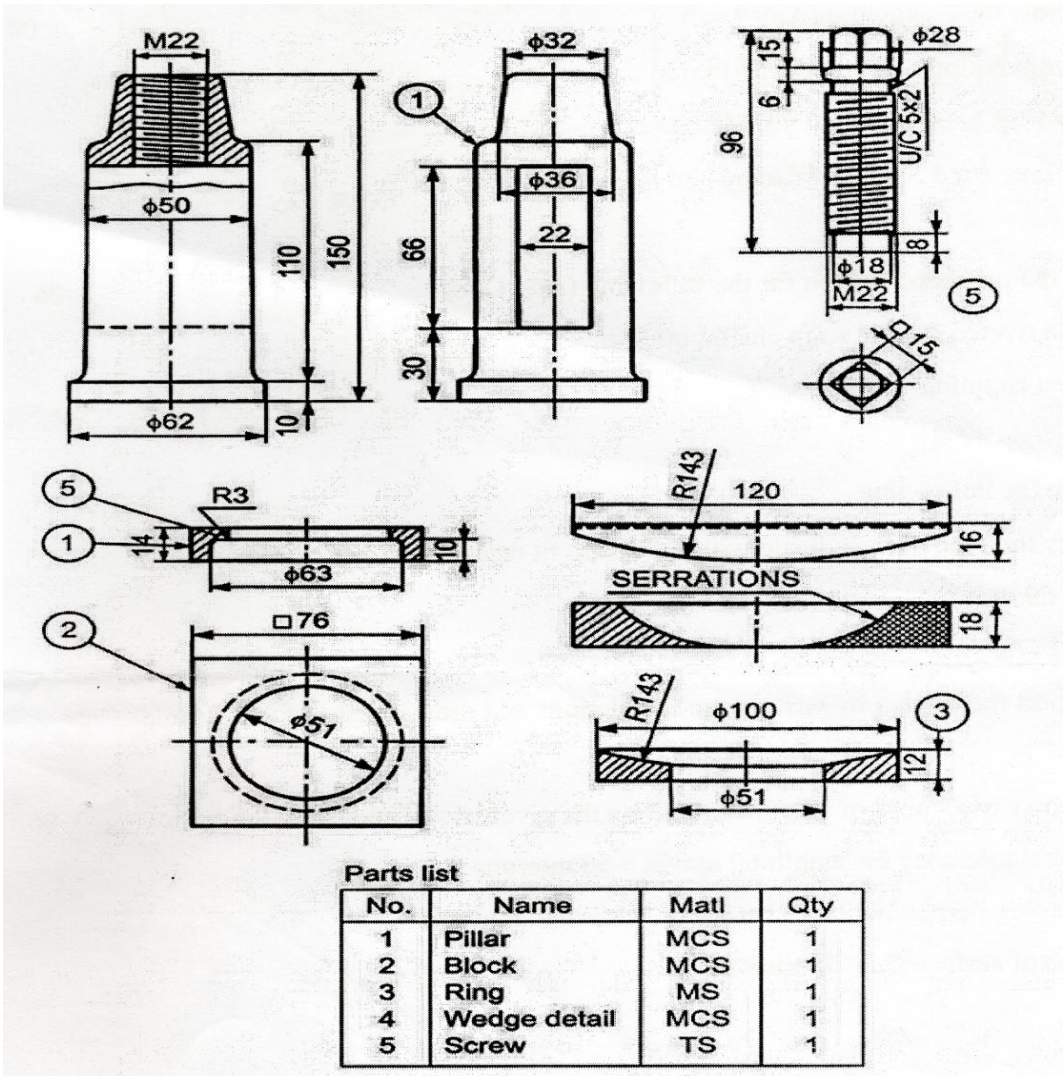

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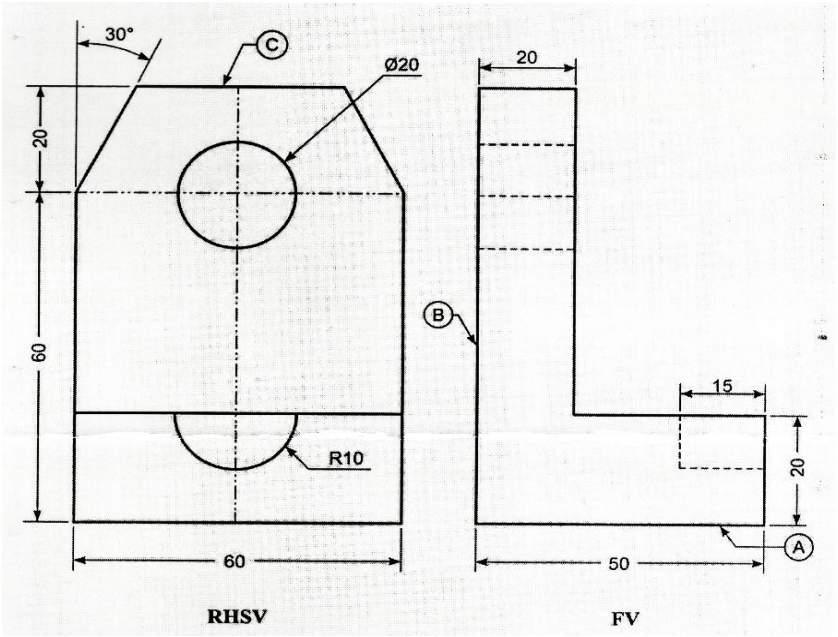

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Note: Upto means including. Over means excluding.

SLR-QH-57

Seat No.	

Set S

S. Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Machine Drawing (MECHPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) BIS convention of in the given figure is of _____

a) internal thread b) external thread
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2) What is the included angle of the Sharp V-thread?
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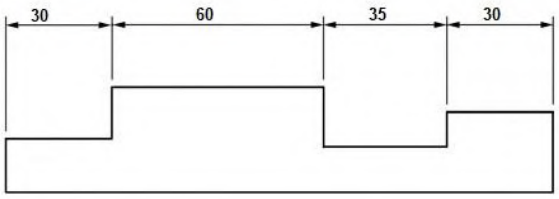
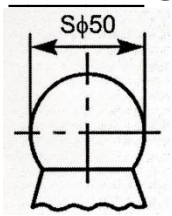
c) Aligned dimensioning d) Unidirectional dimensioning

13) Which type of dimensioning is used in the given figure?



a) Parallel dimensioning b) Chain dimensioning
c) Angular dimensioning d) Aligned dimensioning

14) In the fig symbol Sϕ represents _____ Shape identification symbol.



a) Diameter b) Radius
c) Square d) Spherical Diameter

SLR-QH-57

Seat No.		Set	S

S. Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Machine Drawing (MECHPCC-05)

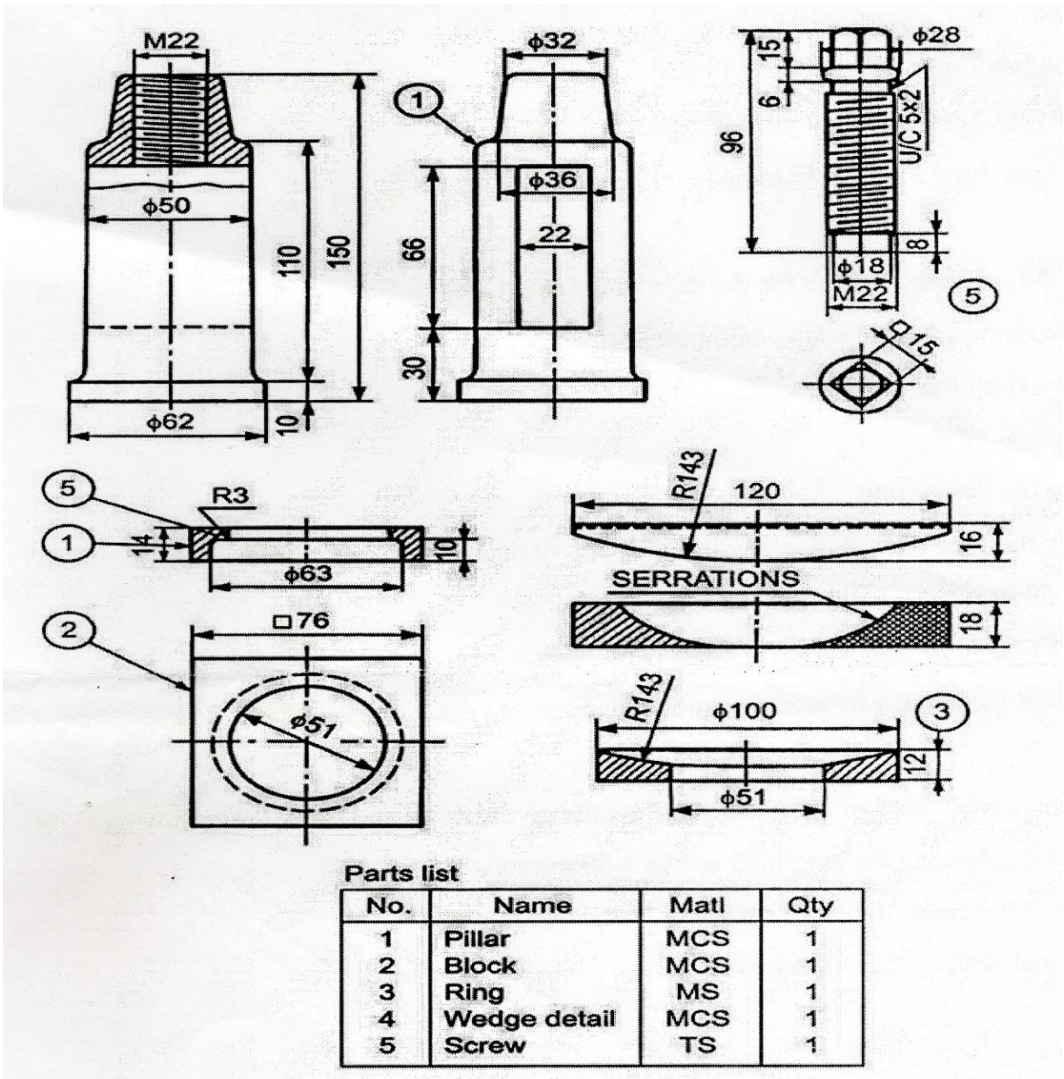
Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable dimensions if not given.
4) Use first angle Method of projections.

Q.2 Figure below shows the details of Single tool post. Assemble the given parts and draw: **22**

i) Front view
ii) Side view

Prepare the List of Material and give the entire dimension.



Parts list

No.	Name	Matl	Qty
1	Pillar	MCS	1
2	Block	MCS	1
3	Ring	MS	1
4	Wedge detail	MCS	1
5	Screw	TS	1

Q.3 **a)** Draw the BIS Convention. Solve any Four out of five. (Eveny bit has 2 marks) **08**

i) Square on Shaft
ii) Concrete
iii) Rack and Pinion
iv) Square butt weld
v) Draw chain and combined dimensioning

b) Draw freehand sketch for the following (Any One) **05**

i) Knuckle Joint
ii) Rag foundation bolt

Q.4 **a)** **Draw the following (Any Two).** **04**

i) BIS convention of Ratchet and Pinion
ii) Draw Free hand sketch of ACME Thread
iii) Draw Free hand sketch of Dome Nut

b) **Draw the Freehand Sketch for the following (Any One).** **06**

i) Double riveted double strap chain butt joint
ii) Flanged coupling

Q.5 **Solve the Following.**

a) Identify the type of fit indicate with following fit designation. (Any One) **05**

i) 30 H8 d9
ii) 150 H7 f7

Also support the answer by writing the calculations and draw diagram for the same.

b) Fig. shows two views of an object. Redraw the given views and show the following **06**

i) Unilateral tolerance for length 60 mm is $\pm$ 50 microns
ii) Surface B is perpendicular to surface A within 40 microns
iii) Flatness of surface C is 20 microns.

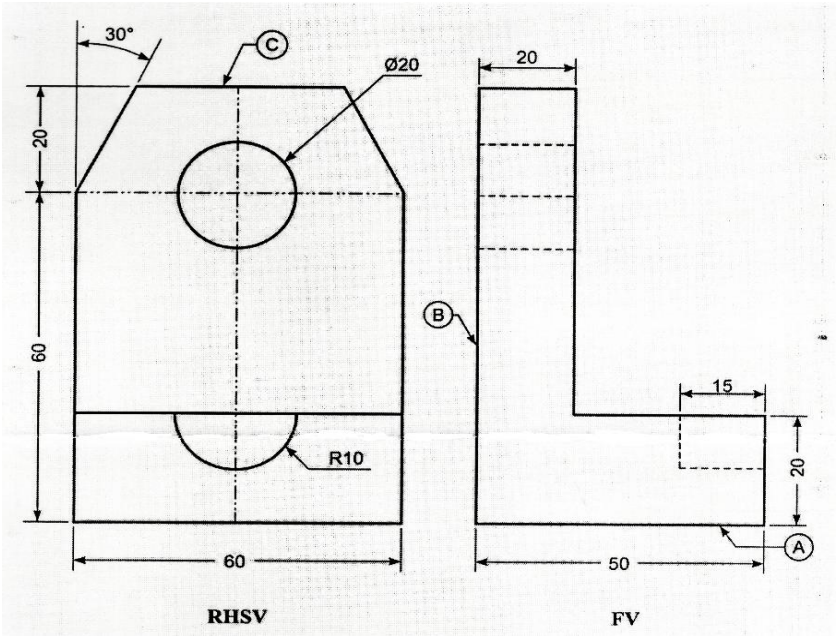


TABLE 18-14(i)
(Values in microns)

Nominal sizes	Tolerances of holes					Tolerances of shafts				
	H7	H8	H9	H10	H11	d9	e8	f7	g6	h6
From 1 Upto 3	+ 10 0	+ 14 0	+ 25 0	+ 40 0	+ 60 0	- 20 - 45	- 14 - 28	- 6 - 16	- 2 - 8	0 - 6
Over 3 Upto 6	+ 12 0	+ 18 0	+ 30 0	+ 45 0	+ 75 0	- 30 - 60	- 20 - 38	- 10 - 22	- 4 - 12	0 - 8
Over 6 Upto 10	+ 15 0	+ 22 0	+ 36 0	+ 58 0	+ 90 0	- 40 - 75	- 25 - 47	- 13 - 28	- 5 - 14	0 - 9
Over 10 Upto 18	+ 18 0	+ 27 0	+ 43 0	+ 70 0	+ 110 0	- 50 - 93	- 32 - 59	- 16 - 34	- 6 - 17	0 - 11
Over 18 Upto 30	+ 21 0	+ 33 0	+ 52 0	+ 84 0	+ 130 0	- 65 - 117	- 40 - 73	- 20 - 41	- 7 - 20	0 - 13
Over 30 Upto 50	+ 25 0	+ 39 0	+ 62 0	+ 100 0	+ 160 0	- 80 - 142	- 50 - 89	- 25 - 50	- 9 - 25	0 - 16
Over 50 Upto 80	+ 30 0	+ 46 0	+ 76 0	+ 120 0	+ 190 0	- 100 - 174	- 60 - 105	- 30 - 60	- 10 - 29	0 - 19
Over 80 Upto 120	+ 35 0	+ 54 0	+ 87 0	+ 140 0	+ 220 0	- 120 - 207	- 72 - 126	- 36 - 71	- 12 - 34	0 - 22
Over 120 Upto 180	+ 40 0	+ 63 0	+ 100 0	+ 160 0	+ 250 0	- 145 - 245	- 85 - 148	- 43 - 83	- 14 - 39	0 - 25
Over 180 Upto 250	+ 45 0	+ 72 0	+ 115 0	+ 185 0	+ 290 0	- 170 - 285	- 100 - 172	- 50 - 96	- 15 - 44	0 - 29
Over 250 Upto 315	+ 52 0	+ 81 0	+ 130 0	+ 210 0	+ 320 0	- 190 - 320	- 110 - 191	- 56 - 108	- 17 - 49	0 - 32
Over 315 Upto 400	+ 57 0	+ 89 0	+ 140 0	+ 230 0	+ 360 0	- 210 - 350	- 125 - 214	- 62 - 119	- 18 - 54	0 - 35
Over 400 Upto 500	+ 63 0	+ 97 0	+ 155 0	+ 250 0	+ 400 0	- 230 - 385	- 135 - 232	- 68 - 131	- 20 - 60	0 - 40

Note: Upto means including. Over means excluding.

SLR-QH-58

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Fluid Mechanics and Fluid Machines (MECHPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume additional suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) Kaplan turbine is _____.
a) Tangential flow b) Radial flow
c) Axial flow d) Mixed flow

2) The S.I. unit of total pressure on a plane immersed surface is _____.
a) Newton per meter square b) Newton
c) Newton square per meter d) Newton per meter cube

3) Buoyancy acts on a floating body _____.
a) vertically upward
b) horizontally
c) vertically downward
d) both vertically upward and horizontally

4) If $\emptyset$ is a potential in two-dimensional flow the velocity components u and v are defined as _____.
a) $u = \partial\emptyset/\partial y, v = \partial\emptyset/\partial x$ b) $u = \partial\emptyset/\partial x, v = \partial\emptyset/\partial y$
c) $u = -\partial\emptyset/\partial x, v = -\partial\emptyset/\partial y$ d) None of the above

5) The Venturi meter is advantageous because _____.
a) it has a much smaller head loss
b) its accuracy is quite good
c) its coefficient of discharge is more than for an orifice meter
d) All the above

6) Total Energy Line is always _____ Hydraulic Gradient Line.
a) above b) below
c) parallel to d) None of the above

7) Darcy - Weisbach equation is used to find loss of head due to _____.
a) Friction
b) Sudden enlargement
c) Sudden contraction
d) All of the above

8) The velocity of water in an open channel can be measured by _____.
a) Venturimeter
b) Rotameter
c) Pitot tube
d) Orifice plate

9) The Buckingham-Pi theorem is widely used in the dimensional analysis and expresses the resulting equation in terms of _____.
a) the dependent and independent variables
b) n dimensionless parameters
c) (n - m) dimensionless parameters
d) geometric, kinematic and dynamic variables

10) The process of filling the liquid into the suction pipe and the pump casing up to the level of the delivery valve is called _____.
a) filling
b) pumping
c) priming
d) leveling

11) The turbine preferred for 50 m to 250 m head of water is _____.
a) Pelton wheel
b) Kaplan turbine
c) Tube turbine
d) Francis turbine

12) Design of Pelton wheel means the following data is to be determined _____.
a) Width of buckets
b) Number of buckets
c) Depth of buckets
d) All of the mentioned

13) In a centrifugal pump, the liquid enters the pump _____.
a) at the top
b) at the bottom
c) at the centre
d) from sides

14) The fundamental dimension of kinematic viscosity is _____.
a) $M^1L^1T^{-1}$
b) $M^2L^2T^{-1}$
c) $M^3L^1T^1$
d) $M^0L^2T^{-1}$

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Fluid Mechanics and Fluid Machines (MECHPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Use of scientific calculator is allowed.
3) Figures to the right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.
5) Use university graph paper & semi-log paper if required.

Section – I

Q.2 Solve the following.

a) With neat sketch explain the conditions of the equilibrium for floating body. **04**

b) Derive an expression for total pressure and center of pressure on a vertical plane surface immersed in a static liquid. **05**

c) A rectangular plane surface 2 m wide and 3 m deep lies in water in such a way that its plane makes an angle of 30° with the free surface of water. Determine the total pressure and position of center of pressure when the upper edge of the plate is 1.5 m below the free water surface. **05**

Q.3 Solve the following.

a) What are the different types of fluid flow? Explain with an example. **05**

b) What is a venturi meter? Explain with neat sketch. **04**

c) The velocity vector in fluid flow is given by: **05**
$V = 4x^3 i - 10x^2 yj + 2tk$
Find velocity and acceleration of fluid particle at (2,1,3) at time t = 1

Q.4 a) Explain the different losses that occur in the pipeline connection, with the help of formulae. **05**

b) Derive the Darcy-Weisbach equation for finding loss of head due to friction in pipes. **04**

c) The difference in water surface levels in two tanks, which are connected by three pipes in series of lengths 300 m, 170 m and 210 m and of diameters 300 mm, 200 mm and 400 mm respectively, is 12 m. Determine the rate of flow of water if the coefficient of friction are 0.005, 0.0052 and 0.0048 respectively, by neglecting minor losses. **05**

Section – II

Q.5 Solve the following.

a) The resisting force (R) of a supersonic flight can be considered as dependent upon length of aircraft (l), velocity (V), air viscosity (μ), air density (ρ), and bulk modulus of air (K). Obtain the functional relationship between these variables and the resisting force. **05**

b) Explain the terms **04**

i) Drag

ii) Lift

c) How do you classify water turbines? **05**

Q.6 a) A Pelton wheel is to be designed for the following specifications: Shaft power = 11,772 kW; Head = 380 meters; Speed = 750 r.p.m.; Overall efficiency = 86%; Jet diameter is not to exceed one - sixth of the wheel diameter. **05**

Determine:

i) The wheel diameter

ii) The number of jets required, and

iii) Diameter of Jet

Take Cv = 0.985 and Ku = 0.45

b) State the difference between Impulse Turbine and Reaction Turbine. **05**

c) By means of neat sketch explain the governing mechanism of Pelton turbine. **04**

Q.7 a) A Francis turbine works at 450 rpm under a head of 120 m. The diameter of runner at inlet is 1.2 m and flow area of 0.4 m^2. At the inlet the absolute and relative velocities make an angle of 20° and 60° respectively with tangential velocity. **05**

Determine:

i) The volume flow rate

ii) runner power and

iii) hydraulic efficiency

Assume the velocity of whirl at the outlet to be zero.

b) Derive the minimum starting speed of centrifugal pump. **04**

c) Explain multistage pumps. **05**

SLR-QH-58

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Fluid Mechanics and Fluid Machines (MECHPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume additional suitable data if necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) The velocity of water in an open channel can be measured by _____.
a) Venturimeter b) Rotameter
c) Pitot tube d) Orifice plate

2) The Buckingham-Pi theorem is widely used in the dimensional analysis and expresses the resulting equation in terms of _____.
a) the dependent and independent variables
b) n dimensionless parameters
c) (n - m) dimensionless parameters
d) geometric, kinematic and dynamic variables

3) The process of filling the liquid into the suction pipe and the pump casing up to the level of the delivery valve is called _____.
a) filling b) pumping
c) priming d) leveling

4) The turbine preferred for 50 m to 250 m head of water is _____.
a) Pelton wheel b) Kaplan turbine
c) Tube turbine d) Francis turbine

5) Design of Pelton wheel means the following data is to be determined _____.
a) Width of buckets b) Number of buckets
c) Depth of buckets d) All of the mentioned

6) In a centrifugal pump, the liquid enters the pump _____.
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7) The fundamental dimension of kinematic viscosity is _____.
a) $M^1L^1T^{-1}$ b) $M^2L^2T^{-1}$
c) $M^3L^1T^1$ d) $M^0L^2T^{-1}$

8) Kaplan turbine is _____.
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b) its accuracy is quite good
c) its coefficient of discharge is more than for an orifice meter
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13) Total Energy Line is always _____ Hydraulic Gradient Line.
a) above b) below
c) parallel to d) None of the above

14) Darcy - Weisbach equation is used to find loss of head due to _____.
a) Friction b) Sudden enlargement
c) Sudden contraction d) All of the above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Fluid Mechanics and Fluid Machines (MECHPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Use of scientific calculator is allowed.
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4) Assume additional suitable data if necessary and state it clearly.
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Section – I

Q.2 Solve the following.

a) With neat sketch explain the conditions of the equilibrium for floating body. **04**

b) Derive an expression for total pressure and center of pressure on a vertical plane surface immersed in a static liquid. **05**

c) A rectangular plane surface 2 m wide and 3 m deep lies in water in such a way that its plane makes an angle of 30° with the free surface of water. Determine the total pressure and position of center of pressure when the upper edge of the plate is 1.5 m below the free water surface. **05**

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a) What are the different types of fluid flow? Explain with an example. **05**

b) What is a venturi meter? Explain with neat sketch. **04**

c) The velocity vector in fluid flow is given by: **05**
$V = 4x^3 i - 10x^2 yj + 2tk$
Find velocity and acceleration of fluid particle at (2,1,3) at time t = 1

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b) Derive the Darcy-Weisbach equation for finding loss of head due to friction in pipes. **04**

c) The difference in water surface levels in two tanks, which are connected by three pipes in series of lengths 300 m, 170 m and 210 m and of diameters 300 mm, 200 mm and 400 mm respectively, is 12 m. Determine the rate of flow of water if the coefficient of friction are 0.005, 0.0052 and 0.0048 respectively, by neglecting minor losses. **05**

Section – II

Q.5 Solve the following.

a) The resisting force (R) of a supersonic flight can be considered as dependent upon length of aircraft (l), velocity (V), air viscosity (μ), air density (ρ), and bulk modulus of air (K). Obtain the functional relationship between these variables and the resisting force. **05**

b) Explain the terms **04**

i) Drag

ii) Lift

c) How do you classify water turbines? **05**

Q.6 a) A Pelton wheel is to be designed for the following specifications: Shaft power = 11,772 kW; Head = 380 meters; Speed = 750 r.p.m.; Overall efficiency = 86%; Jet diameter is not to exceed one - sixth of the wheel diameter. **05**

Determine:

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ii) The number of jets required, and

iii) Diameter of Jet

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c) By means of neat sketch explain the governing mechanism of Pelton turbine. **04**

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Determine:

i) The volume flow rate

ii) runner power and

iii) hydraulic efficiency

Assume the velocity of whirl at the outlet to be zero.

b) Derive the minimum starting speed of centrifugal pump. **04**

c) Explain multistage pumps. **05**

SLR-QH-58

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Fluid Mechanics and Fluid Machines (MECHPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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1) The turbine preferred for 50 m to 250 m head of water is _____.
a) Pelton wheel b) Kaplan turbine
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12) The velocity of water in an open channel can be measured by _____.

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Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Fluid Mechanics and Fluid Machines (MECHPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
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Section – I

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Section – II

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Determine:

i) The volume flow rate

ii) runner power and

iii) hydraulic efficiency

Assume the velocity of whirl at the outlet to be zero.

b) Derive the minimum starting speed of centrifugal pump. **04**

c) Explain multistage pumps. **05**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Fluid Mechanics and Fluid Machines (MECHPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: **14**

1) Total Energy Line is always _____ Hydraulic Gradient Line.
a) above b) below
c) parallel to d) None of the above

2) Darcy - Weisbach equation is used to find loss of head due to _____.
a) Friction b) Sudden enlargement
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4) The Buckingham-Pi theorem is widely used in the dimensional analysis and expresses the resulting equation in terms of _____.
a) the dependent and independent variables
b) n dimensionless parameters
c) (n - m) dimensionless parameters
d) geometric, kinematic and dynamic variables

5) The process of filling the liquid into the suction pipe and the pump casing up to the level of the delivery valve is called _____.
a) filling b) pumping
c) priming d) leveling

6) The turbine preferred for 50 m to 250 m head of water is _____.
a) Pelton wheel b) Kaplan turbine
c) Tube turbine d) Francis turbine

7) Design of Pelton wheel means the following data is to be determined _____.
a) Width of buckets
b) Number of buckets
c) Depth of buckets
d) All of the mentioned

8) In a centrifugal pump, the liquid enters the pump _____.
a) at the top
b) at the bottom
c) at the centre
d) from sides

9) The fundamental dimension of kinematic viscosity is _____.
a) $\mathrm{M^1L^1T^{-1}}$
b) $\mathrm{M^2L^2T^{-1}}$
c) $\mathrm{M^3L^1T^1}$
d) $\mathrm{M^0L^2T^{-1}}$

10) Kaplan turbine is _____.
a) Tangential flow
b) Radial flow
c) Axial flow
d) Mixed flow

11) The S.I. unit of total pressure on a plane immersed surface is _____.
a) Newton per meter square
b) Newton
c) Newton square per meter
d) Newton per meter cube

12) Buoyancy acts on a floating body _____.
a) vertically upward
b) horizontally
c) vertically downward
d) both vertically upward and horizontally

13) If $\emptyset$ is a potential in two-dimensional flow the velocity components u and v are defined as _____.
a) $u = \partial\emptyset/\partial y, v = \partial\emptyset/\partial x$
b) $u = \partial\emptyset/\partial x, v = \partial\emptyset/\partial y$
c) $u = -\partial\emptyset/\partial x, v = -\partial\emptyset/\partial y$
d) None of the above

14) The Venturi meter is advantageous because _____.
a) it has a much smaller head loss
b) its accuracy is quite good
c) its coefficient of discharge is more than for an orifice meter
d) All the above

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Fluid Mechanics and Fluid Machines (MECHPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Use of scientific calculator is allowed.
3) Figures to the right indicate full marks.
4) Assume additional suitable data if necessary and state it clearly.
5) Use university graph paper & semi-log paper if required.

Section – I

Q.2 Solve the following.

a) With neat sketch explain the conditions of the equilibrium for floating body. **04**

b) Derive an expression for total pressure and center of pressure on a vertical plane surface immersed in a static liquid. **05**

c) A rectangular plane surface 2 m wide and 3 m deep lies in water in such a way that its plane makes an angle of 30° with the free surface of water. Determine the total pressure and position of center of pressure when the upper edge of the plate is 1.5 m below the free water surface. **05**

Q.3 Solve the following.

a) What are the different types of fluid flow? Explain with an example. **05**

b) What is a venturi meter? Explain with neat sketch. **04**

c) The velocity vector in fluid flow is given by: **05**
$V = 4x^3 i - 10x^2 yj + 2tk$
Find velocity and acceleration of fluid particle at (2,1,3) at time t = 1

Q.4 a) Explain the different losses that occur in the pipeline connection, with the help of formulae. **05**

b) Derive the Darcy-Weisbach equation for finding loss of head due to friction in pipes. **04**

c) The difference in water surface levels in two tanks, which are connected by three pipes in series of lengths 300 m, 170 m and 210 m and of diameters 300 mm, 200 mm and 400 mm respectively, is 12 m. Determine the rate of flow of water if the coefficient of friction are 0.005, 0.0052 and 0.0048 respectively, by neglecting minor losses. **05**

Section – II

Q.5 Solve the following.

a) The resisting force (R) of a supersonic flight can be considered as dependent upon length of aircraft (l), velocity (V), air viscosity (μ), air density (ρ), and bulk modulus of air (K). Obtain the functional relationship between these variables and the resisting force. **05**

b) Explain the terms **04**

i) Drag

ii) Lift

c) How do you classify water turbines? **05**

Q.6 a) A Pelton wheel is to be designed for the following specifications: Shaft power = 11,772 kW; Head = 380 meters; Speed = 750 r.p.m.; Overall efficiency = 86%; Jet diameter is not to exceed one - sixth of the wheel diameter. **05**

Determine:

i) The wheel diameter

ii) The number of jets required, and

iii) Diameter of Jet

Take Cv = 0.985 and Ku = 0.45

b) State the difference between Impulse Turbine and Reaction Turbine. **05**

c) By means of neat sketch explain the governing mechanism of Pelton turbine. **04**

Q.7 a) A Francis turbine works at 450 rpm under a head of 120 m. The diameter of runner at inlet is 1.2 m and flow area of 0.4 m^2. At the inlet the absolute and relative velocities make an angle of 20° and 60° respectively with tangential velocity. **05**

Determine:

i) The volume flow rate

ii) runner power and

iii) hydraulic efficiency

Assume the velocity of whirl at the outlet to be zero.

b) Derive the minimum starting speed of centrifugal pump. **04**

c) Explain multistage pumps. **05**

SLR-QH-59

Seat No.	

Set P

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Innovation provides _____.
a) Stability b) Competitive advantage
c) Similarity d) Confusion

2) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

3) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

4) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

5) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

6) Six Thinking Hats tool was developed by _____.
a) Peter Drucker
b) Steve Jobs
c) Edward de Bono
d) Clayton Christensen

7) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

8) Which is not a type of innovation strategy?
a) Pioneering
b) Imitative
c) Disruptive
d) Delaying

9) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

10) Continuous learning is essential for _____.
a) Innovation growth
b) Routine operations
c) Cost reduction
d) Project closure

11) Failure in innovation can occur due to _____.
a) Over-regulation
b) Poor planning
c) Lack of feedback
d) All of these

12) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

13) Legal consideration in entrepreneurship includes _____.
a) Product packaging
b) Compliance and regulations
c) Floor layout
d) Office color

14) Entrepreneurial process starts with _____.
a) HR hiring
b) Opportunity identification
c) Revenue calculation
d) Market monopoly

SLR-QH-59

Seat No.	

Set P

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-59

Seat No.	

Set Q

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
c) Disruptive d) Delaying

2) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

3) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

4) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

5) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

6) Legal consideration in entrepreneurship includes _____.
a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

7) Entrepreneurial process starts with _____.
a) HR hiring
b) Opportunity identification
c) Revenue calculation
d) Market monopoly

8) Innovation provides _____.
a) Stability
b) Competitive advantage
c) Similarity
d) Confusion

9) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

10) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

11) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

12) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

13) Six Thinking Hats tool was developed by _____.
a) Peter Drucker
b) Steve Jobs
c) Edward de Bono
d) Clayton Christensen

14) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

SLR-QH-59

Seat No.	

Set Q

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-59

Seat No.	

Set R

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

2) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

3) Legal consideration in entrepreneurship includes _____.
a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

4) Entrepreneurial process starts with _____.
a) HR hiring b) Opportunity identification
c) Revenue calculation d) Market monopoly

5) Innovation provides _____.
a) Stability b) Competitive advantage
c) Similarity d) Confusion

6) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

7) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

8) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

9) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

10) Six Thinking Hats tool was developed by _____.
a) Peter Drucker
b) Steve Jobs
c) Edward de Bono
d) Clayton Christensen

11) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

12) Which is not a type of innovation strategy?
a) Pioneering
b) Imitative
c) Disruptive
d) Delaying

13) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

14) Continuous learning is essential for _____.
a) Innovation growth
b) Routine operations
c) Cost reduction
d) Project closure

SLR-QH-59

Seat No.	

Set R

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-59

Seat No.	

Set S

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Six Thinking Hats tool was developed by _____.
a) Peter Drucker b) Steve Jobs
c) Edward de Bono d) Clayton Christensen

2) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

3) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
c) Disruptive d) Delaying

4) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

5) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

6) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

7) Crafting a business model involves _____.
   a) Ignoring customers
   b) Defining value, segments, and revenue streams
   c) Random investments
   d) Borrowing

8) Legal consideration in entrepreneurship includes _____.
   a) Product packaging
   b) Compliance and regulations
   c) Floor layout
   d) Office color

9) Entrepreneurial process starts with _____.
   a) HR hiring
   b) Opportunity identification
   c) Revenue calculation
   d) Market monopoly

10) Innovation provides _____.
   a) Stability
   b) Competitive advantage
   c) Similarity
   d) Confusion

11) Managerial competency involves _____.
   a) Fundraising only
   b) Communication, planning, and leadership
   c) Imitation
   d) None

12) Entrepreneurship as a style of management focuses on _____.
   a) Routine activities
   b) Risk avoidance
   c) Innovation and opportunity recognition
   d) Only HR

13) A corporate entrepreneur is _____.
   a) Owner of small business
   b) Government employee
   c) Innovator within an organization
   d) None

14) Technology transfer occurs when _____.
   a) Knowledge is shared from research to application
   b) Patents expire
   c) Innovation fails
   d) Licenses are revoked

SLR-QH-59

Seat No.	

Set S

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-61

Seat No.	

Set P

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

2) What is a key characteristic of solar energy?
a) Utilizes sunlight for power generation
b) Requires fossil fuels for operation
c) Has no environmental benefits
d) ls non-renewable

3) Which renewable energy is best suited for coastal areas?
a) Biomass energy b) Geothermal energy
c) Wave and tidal energy d) Oil shale energy

4) What is solar radiation?
a) Radiation from the Earth b) Radiation from the Moon
c) Radiation from the Sun d) None of the above

5) What is solar radiation measured in?
a) Kilograms
b) Liters
c) Watts per square meter (W/m^2)
d) Newtons

6) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

7) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

8) What happens when electricity demand is higher than generation?
   a) Energy storage can provide additional power
   b) Renewable energy sources produce more electricity
   c) Power plants automatically increase supply
   d) Transmission lines store energy

9) Which of the following sectors benefits the most from energy storage?
   a) Agriculture
   b) Construction
   c) Transport
   d) Power generation

10) What does the efficiency of an energy storage device indicate?
   a) The time taken to store energy
   b) The total cost of the device
   c) The percentage of stored energy that can be retrieved
   d) The size of the storage system

11) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
   a) Penstock
   b) Reservoir
   c) Fore bay
   d) Spillways

12) Tidal energy is caused primarily by the _____.
   a) Moon's gravity
   b) Sun's gravity
   c) Earth's rotation
   d) Ocean currents

13) Green hydrogen is produced by _____.
   a) Coal gasification
   b) Methane reforming
   c) Water electrolysis using renewable energy
   d) Nuclear fission

14) Which is the cleanest method of hydrogen production?
   a) Electrolysis using solar/wind energy
   b) Coal gasification
   c) Nuclear thermal splitting
   d) Steam methane reforming

SLR-QH-61

Seat No.	

Set P

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

Seat No.	

Set **Q**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) What happens when electricity demand is higher than generation?
a) Energy storage can provide additional power
b) Renewable energy sources produce more electricity
c) Power plants automatically increase supply
d) Transmission lines store energy

2) Which of the following sectors benefits the most from energy storage?
a) Agriculture b) Construction
c) Transport d) Power generation

3) What does the efficiency of an energy storage device indicate?
a) The time taken to store energy
b) The total cost of the device
c) The percentage of stored energy that can be retrieved
d) The size of the storage system

4) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock b) Reservoir
c) Fore bay d) Spillways

5) Tidal energy is caused primarily by the _____.
a) Moon's gravity b) Sun's gravity
c) Earth's rotation d) Ocean currents

6) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

7) Which is the cleanest method of hydrogen production?
   a) Electrolysis using solar/wind energy
   b) Coal gasification
   c) Nuclear thermal splitting
   d) Steam methane reforming

8) Which of the following is a key goal of sustainable development?
   a) Increase in fossil fuel consumption
   b) Balanced use of resources
   c) Maximum economic growth only
   d) Eliminating renewable energy use

9) What is a key characteristic of solar energy?
   a) Utilizes sunlight for power generation
   b) Requires fossil fuels for operation
   c) Has no environmental benefits
   d) ls non-renewable

10) Which renewable energy is best suited for coastal areas?
   a) Biomass energy
   b) Geothermal energy
   c) Wave and tidal energy
   d) Oil shale energy

11) What is solar radiation?
   a) Radiation from the Earth
   b) Radiation from the Moon
   c) Radiation from the Sun
   d) None of the above

12) What is solar radiation measured in?
   a) Kilograms
   b) Liters
   c) Watts per square meter (W/m^2)
   d) Newtons

13) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

14) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

SLR-QH-61

Seat No.	

Set Q

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

Seat No.	

Set **R**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock b) Reservoir
c) Fore bay d) Spillways

2) Tidal energy is caused primarily by the _____.
a) Moon's gravity b) Sun's gravity
c) Earth's rotation d) Ocean currents

3) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

4) Which is the cleanest method of hydrogen production?
a) Electrolysis using solar/wind energy
b) Coal gasification
c) Nuclear thermal splitting
d) Steam methane reforming

5) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

6) What is a key characteristic of solar energy?
   a) Utilizes sunlight for power generation
   b) Requires fossil fuels for operation
   c) Has no environmental benefits
   d) ls non-renewable

7) Which renewable energy is best suited for coastal areas?
   a) Biomass energy
   b) Geothermal energy
   c) Wave and tidal energy
   d) Oil shale energy

8) What is solar radiation?
   a) Radiation from the Earth
   b) Radiation from the Moon
   c) Radiation from the Sun
   d) None of the above

9) What is solar radiation measured in?
   a) Kilograms
   b) Liters
   c) Watts per square meter (W/m^2)
   d) Newtons

10) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

11) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

12) What happens when electricity demand is higher than generation?
   a) Energy storage can provide additional power
   b) Renewable energy sources produce more electricity
   c) Power plants automatically increase supply
   d) Transmission lines store energy

13) Which of the following sectors benefits the most from energy storage?
   a) Agriculture
   b) Construction
   c) Transport
   d) Power generation

14) What does the efficiency of an energy storage device indicate?
   a) The time taken to store energy
   b) The total cost of the device
   c) The percentage of stored energy that can be retrieved
   d) The size of the storage system

SLR-QH-61

Seat No.	

Set R

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

Seat No.	

Set **S**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) What is the primary difference between pyrolysis and gasification?
a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
b) Pyrolysis produces syngas, while gasification produces bio-oil
c) Gasification is a biochemical process, while pyrolysis is thermo chemical
d) Pyrolysis requires higher temperatures than gasification

2) Which of the following is a disadvantage of biomass energy?
a) Reduces waste
b) Can lead to deforestation
c) Low carbon footprint
d) Independent of weather conditions

3) What happens when electricity demand is higher than generation?
a) Energy storage can provide additional power
b) Renewable energy sources produce more electricity
c) Power plants automatically increase supply
d) Transmission lines store energy

4) Which of the following sectors benefits the most from energy storage?
a) Agriculture b) Construction
c) Transport d) Power generation

5) What does the efficiency of an energy storage device indicate?
a) The time taken to store energy
b) The total cost of the device
c) The percentage of stored energy that can be retrieved
d) The size of the storage system

6) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock
b) Reservoir
c) Fore bay
d) Spillways

7) Tidal energy is caused primarily by the _____.
a) Moon's gravity
b) Sun's gravity
c) Earth's rotation
d) Ocean currents

8) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

9) Which is the cleanest method of hydrogen production?
a) Electrolysis using solar/wind energy
b) Coal gasification
c) Nuclear thermal splitting
d) Steam methane reforming

10) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

11) What is a key characteristic of solar energy?
a) Utilizes sunlight for power generation
b) Requires fossil fuels for operation
c) Has no environmental benefits
d) ls non-renewable

12) Which renewable energy is best suited for coastal areas?
a) Biomass energy
b) Geothermal energy
c) Wave and tidal energy
d) Oil shale energy

13) What is solar radiation?
a) Radiation from the Earth
b) Radiation from the Moon
c) Radiation from the Sun
d) None of the above

14) What is solar radiation measured in?
a) Kilograms
b) Liters
c) Watts per square meter (W/m^2)
d) Newtons

SLR-QH-61

Seat No.	

Set S

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

SLR-QH-62

Seat No.	

Set P

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

2) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

3) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

4) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

5) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

6) In a DSO, the input signals are _____.
   a) directly applied to oscilloscope
   b) multiplexed, converted to digital form and stored and applied to oscilloscope
   c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
   d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

7) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
   a) n wattmeters
   b) (n + 1) wattmeters
   c) (n - 2) wattmeters
   d) (n - 1) wattmeters

8) Which transducer does not require any external power supply for working?
   a) Strain gauge transducer
   b) Piezoelectric Crystals
   c) Hydraulic transducer
   d) Pneumatic transducer

9) Piezoelectric accelerometer converts _____ energy to _____ energy.
   a) mechanical, sound
   b) mechanical, electrical
   c) sound, electrical
   d) None of these

10) Which factor affects the least while selection of sensor?
   a) Size
   b) Accuracy
   c) Colour
   d) Durability

11) Which sensor should be used for calculating pressure?
   a) DHT11
   b) LM335Z/NOPB
   c) HC-SR04
   d) MPX10DP

12) Which of the following represents range of frequency measured by ADC?
   a) Bandwidth
   b) Threshold frequency
   c) Peak frequency
   d) None of the mentioned

13) Thermistor is a _____.
   a) sensor
   b) ADC
   c) transducer
   d) micro controller

14) Which of the following type output is provided by ADC?
   a) Serial type
   b) Parallel type
   c) Both serial and parallel type
   d) None of the mentioned

Seat No.	

Set **P**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

SLR-QH-62

Seat No.	

Set Q

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) Which transducer does not require any external power supply for working?
a) Strain gauge transducer b) Piezoelectric Crystals
c) Hydraulic transducer d) Pneumatic transducer

2) Piezoelectric accelerometer converts _____ energy to _____ energy.
a) mechanical, sound b) mechanical, electrical
c) sound, electrical d) None of these

3) Which factor affects the least while selection of sensor?
a) Size b) Accuracy
c) Colour d) Durability

4) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

5) Which of the following represents range of frequency measured by ADC?
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6) Thermistor is a _____.
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7) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

8) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

9) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
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10) A moving iron instrument can be used for _____.
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c) Both D.C. and A.C. d) None

11) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
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13) In a DSO, the input signals are _____.
a) directly applied to oscilloscope
b) multiplexed, converted to digital form and stored and applied to oscilloscope
c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

14) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
a) n wattmeters b) (n + 1) wattmeters
c) (n - 2) wattmeters d) (n - 1) wattmeters

Seat No.	

Set **Q**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

SLR-QH-62

Seat No.	

Set R

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

2) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

3) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

4) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

5) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

6) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

7) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

8) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.

a) Substitution
b) Loss of charge
c) Wheatstone bridge
d) Kelvin's double bridge

9) Instrument transformers are _____.

a) Potential transformers
b) Current transformers
c) Both (a) and (b)
d) Power transformers

10) In a DSO, the input signals are _____.

a) directly applied to oscilloscope
b) multiplexed, converted to digital form and stored and applied to oscilloscope
c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

11) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.

a) n wattmeters
b) (n + 1) wattmeters
c) (n - 2) wattmeters
d) (n - 1) wattmeters

12) Which transducer does not require any external power supply for working?

a) Strain gauge transducer
b) Piezoelectric Crystals
c) Hydraulic transducer
d) Pneumatic transducer

13) Piezoelectric accelerometer converts _____ energy to _____ energy.

a) mechanical, sound
b) mechanical, electrical
c) sound, electrical
d) None of these

14) Which factor affects the least while selection of sensor?

a) Size
b) Accuracy
c) Colour
d) Durability

Seat No.	

Set **R**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

SLR-QH-62

Seat No.	

Set S

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) In a DSO, the input signals are _____.
a) directly applied to oscilloscope
b) multiplexed, converted to digital form and stored and applied to oscilloscope
c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

2) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
a) n wattmeters b) (n + 1) wattmeters
c) (n - 2) wattmeters d) (n - 1) wattmeters

3) Which transducer does not require any external power supply for working?
a) Strain gauge transducer b) Piezoelectric Crystals
c) Hydraulic transducer d) Pneumatic transducer

4) Piezoelectric accelerometer converts _____ energy to _____ energy.
a) mechanical, sound b) mechanical, electrical
c) sound, electrical d) None of these

5) Which factor affects the least while selection of sensor?
a) Size b) Accuracy
c) Colour d) Durability

6) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

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c) Peak frequency d) None of the mentioned

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c) transducer d) micro controller

9) Which of the following type output is provided by ADC?
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c) Recording d) Integrating

12) A moving iron instrument can be used for _____.
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c) Both D.C. and A.C. d) None

13) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

14) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

SLR-QH-62

Seat No.		Set	S

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

SLR-QH-63

Seat No.		Set	P

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

2) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
c) Simplex Method d) Integer Programming

3) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

4) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (-1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

5) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
c) Faster Solution d) Slower Solution

6) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

7) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

8) At the Break-Even Point _____.
a) Profit > Loss
b) Profit < Loss
c) Profit = Loss
d) None of these

9) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource
b) Reconciliation
c) Reconsideration
d) Review

10) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum
b) Average
c) Safety
d) Standard

11) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

12) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

13) In a project network, the critical path _____.
a) may be the shortest path
b) is the longest path
c) may be the longest path
d) is the shortest path

14) The inventory carrying costs are also called as _____.
a) Procurement costs
b) Set-up costs
c) Storage costs
d) None of the above

Seat No.	

Set **P**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
	to	tm	tp
$1-2$	1	1	7
$1-3$	1	4	7
$1-4$	2	2	8
$2-5$	1	1	1
$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

SLR-QH-63

Seat No.		Set	Q

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) At the Break-Even Point _____.
a) Profit > Loss b) Profit < Loss
c) Profit = Loss d) None of these

2) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

3) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

4) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

5) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

6) In a project network, the critical path _____.
a) may be the shortest path b) is the longest path
c) may be the longest path d) is the shortest path

7) The inventory carrying costs are also called as _____.
a) Procurement costs b) Set-up costs
c) Storage costs d) None of the above

8) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

9) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
c) Simplex Method d) Integer Programming

10) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

11) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (−1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

12) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
c) Faster Solution d) Slower Solution

13) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

14) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

Seat No.	

Set **Q**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

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Probability Factor	Probability
0	50%
1	84.13 %
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Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

SLR-QH-63

Seat No.	

Set R

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

2) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
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3) In a project network, the critical path _____.
a) may be the shortest path b) is the longest path
c) may be the longest path d) is the shortest path

4) The inventory carrying costs are also called as _____.
a) Procurement costs b) Set-up costs
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a) Profit $>$ Loss b) Profit $<$ Loss
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13) The PERT in project management means Program Evaluation and _____ Technique.
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c) Reconsideration d) Review

14) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
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c) Safety d) Standard

Seat No.	

Set **R**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
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3	13	12	10	11
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S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

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Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
	to	tm	tp
$1-2$	1	1	7
$1-3$	1	4	7
$1-4$	2	2	8
$2-5$	1	1	1
$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

SLR-QH-63

Seat No.		Set	S

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

2) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

3) At the Break-Even Point _____.
a) Profit > Loss b) Profit < Loss
c) Profit = Loss d) None of these

4) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

5) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

6) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

7) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

8) In a project network, the critical path _____.
a) may be the shortest path
b) is the longest path
c) may be the longest path
d) is the shortest path

9) The inventory carrying costs are also called as _____.
a) Procurement costs
b) Set-up costs
c) Storage costs
d) None of the above

10) When total supply = total demand, the transportation problem is called _____.
a) Balanced
b) Equated
c) Simple
d) Zero

11) Which technique is used to solve Assignment Model?
a) Hungarian Method
b) Graphical Method
c) Simplex Method
d) Integer Programming

12) Allocated cells in the IBFS are also called as _____.
a) Stone Cells
b) Water Cells
c) Air Cells
d) None of these

13) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (-1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

14) Advantage of VAM of transportation is _____.
a) Near to optimal Solution
b) Least Cost
c) Faster Solution
d) Slower Solution

Seat No.	

Set **S**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
	to	tm	tp
$1-2$	1	1	7
$1-3$	1	4	7
$1-4$	2	2	8
$2-5$	1	1	1
$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

SLR-QH-64

Seat No.		Set	P

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

2) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

3) The Gauss-Seidel method is used for solving _____.
a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

4) Which of the following is a disadvantage of the Gauss-Jacobi method?
a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

5) The use of Romberg's method is _____.
a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

6) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

7) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

8) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

9) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

10) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

11) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

12) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

13) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

14) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

Seat No.	

Set **P**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.	

Set **Q**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

2) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

3) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

4) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

5) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

6) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

7) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

8) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

9) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

10) The Gauss-Seidel method is used for solving _____.
a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

11) Which of the following is a disadvantage of the Gauss-Jacobi method?
a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

12) The use of Romberg's method is _____.
a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

13) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

14) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

Seat No.	

Set **Q**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

SLR-QH-64

Seat No.		Set	R

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

2) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

3) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

4) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

5) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

6) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.

a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

7) The Gauss-Seidel method is used for solving _____.

a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

8) Which of the following is a disadvantage of the Gauss-Jacobi method?

a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

9) The use of Romberg's method is _____.

a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

10) The order of convergence of Newton-Raphson method is _____.

a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

11) Power Method is used to find _____.

a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

12) To find the numerically largest Eigen value using iterative method we use the equation _____.

a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

13) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.

a) 0.905 b) 1.905
c) 2.905 d) None

14) Runge-Kutta method is self-starting method _____.

a) True b) False
c) We can't say d) None

Seat No.	

Set **R**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.		Set	S

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

2) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

3) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

4) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

5) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

6) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

7) In the power method, the vector is normalized in each iteration mainly to _____.
   a) increase the determinant
   b) prevent values from becoming too large
   c) eliminate eigen values
   d) make the matrix symmetric

8) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
   a) multiple of 2
   b) multiple of 3
   c) multiple of 4
   d) odd only

9) Picard's method is mainly used to solve _____.
   a) linear programming problems
   b) differential equations
   c) eigen value problems
   d) interpolation problems

10) A transcendental equation is an equation that involves _____.
   a) Only algebraic terms
   b) Only transcendental functions
   c) Both algebraic and transcendental functions
   d) Linear terms only

11) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
   a) $(1, 2)$
   b) $(0, 1)$
   c) $(2, 3)$
   d) $(3, 4)$

12) The Gauss-Seidel method is used for solving _____.
   a) Nonlinear equations
   b) Systems of linear equations
   c) Ordinary differential equations
   d) Partial differential equations

13) Which of the following is a disadvantage of the Gauss-Jacobi method?
   a) It converges faster than most direct methods
   b) It requires a large number of iterations for a good approximation
   c) It cannot be used for systems with more than two equations
   d) It works only for symmetric systems

14) The use of Romberg's method is _____.
   a) To solve simultaneous linear equation
   b) To find root of linear equation
   c) To evaluate definite integration
   d) To find the Eigen values

Seat No.	

Set **S**

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

SLR-QH-65

Seat No.	

Set P

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.
a) Decoding b) Encoding
c) Feedback d) Channeling

2) A message sent without words using facial expressions or gestures is called _____.
a) Written communication b) Verbal communication
c) Non-verbal communication d) Grapevine communication

3) Which channel characteristic most reduces chances of immediate feedback?
a) Face-to-face conversation b) Telephone call
c) Email d) Video conference

4) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.
a) Noise b) Semantic barrier
c) Perceptual barrier d) Channel barrier

5) Body language, eye contact and posture are examples of ____.
a) Verbal codes b) Non-verbal codes
c) Written codes d) Graphic communication

6) Upward communication flows from _____.
a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

7) An advantage of face-to-face communication over written communication is _____.
a) Permanent record
b) Easier legal reference
c) Immediate feedback
d) More formal tone

8) Which element is essential for an effective welcome speech?
a) Detailed technical data
b) Acknowledgement of guests
c) Long biographical note
d) Complex statistics

9) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
b) Summarize research findings
c) Express gratitude to contributors and audience
d) Present the event budget

10) Which is a best practice when delivering a professional presentation?
a) Reading every slide verbatim
b) Using too many small fonts
c) Maintaining eye contact and varying tone
d) Using no structure or flow

11) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
a) Enquiry letter
b) Complaint letter
c) Order letter
d) Quotation letter

12) A purchase order is principally used to _____.
a) Complain about defects
b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

13) Which part of a business letter contains the main message or details the writer wants to communicate?
a) Heading
b) Salutation
c) Body
d) Signature block

14) Which report type is typically written to describe a workplace accident and recommend corrective actions?
a) Progress report
b) Accident report
c) Sales report
d) Quotation report

SLR-QH-65

Seat No.	

Set P

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

SLR-QH-65

Seat No.	

Set Q

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Which element is essential for an effective welcome speech?
a) Detailed technical data b) Acknowledgement of guests
c) Long biographical note d) Complex statistics

2) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
b) Summarize research findings
c) Express gratitude to contributors and audience
d) Present the event budget

3) Which is a best practice when delivering a professional presentation?
a) Reading every slide verbatim
b) Using too many small fonts
c) Maintaining eye contact and varying tone
d) Using no structure or flow

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b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

6) Which part of a business letter contains the main message or details the writer wants to communicate?

a) Heading
b) Salutation
c) Body
d) Signature block

7) Which report type is typically written to describe a workplace accident and recommend corrective actions?

a) Progress report
b) Accident report
c) Sales report
d) Quotation report

8) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.

a) Decoding
b) Encoding
c) Feedback
d) Channeling

9) A message sent without words using facial expressions or gestures is called _____.

a) Written communication
b) Verbal communication
c) Non-verbal communication
d) Grapevine communication

10) Which channel characteristic most reduces chances of immediate feedback?

a) Face-to-face conversation
b) Telephone call
c) Email
d) Video conference

11) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.

a) Noise
b) Semantic barrier
c) Perceptual barrier
d) Channel barrier

12) Body language, eye contact and posture are examples of ____.

a) Verbal codes
b) Non-verbal codes
c) Written codes
d) Graphic communication

13) Upward communication flows from _____.

a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

14) An advantage of face-to-face communication over written communication is _____.

a) Permanent record
b) Easier legal reference
c) Immediate feedback
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SLR-QH-65

Seat No.	

Set Q

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

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c) Describe the process of communication in detail.

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a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

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c) Explain purchase order, work order, and complaint letter.

Seat No.	

Set R

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
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c) Order letter d) Quotation letter

2) A purchase order is principally used to _____.
a) Complain about defects
b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

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SLR-QH-65

Seat No.	

Set R

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

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SECTION – II

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SLR-QH-65

Seat No.	

Set S

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Upward communication flows from _____.
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b) Peers to peers
c) Workers to management
d) External stakeholders to company

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a) Verbal codes b) Non-verbal codes
c) Written codes d) Graphic communication

SLR-QH-65

Seat No.	

Set S

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

SLR-QH-67

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Sem - II) (New) (CBCS)
Examination: March/April - 2026
Introduction to Electric and Hybrid Vehicles (MechHon-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer from the given options. 14

1) The performance of an electric vehicle is significantly affected by _____.
a) Ambient light b) Vehicle mass
c) Tire pressure only d) Vehicle color

2) Slow charging is generally preferred for _____.
a) Increasing charging station turnover
b) Emergency situations
c) Quick trips
d) Daily overnight home charging

3) For AV induction motors, torque control is typically achieved by_____.
a) Voltage modulation
b) Changing both voltage and frequency
c) Frequency modulation
d) Adjusting capacitance

4) The drivetrain in electric vehicles is simpler than in ICE vehicles because _____.
a) Requires constant gear shifting
b) No need for fuel injection
c) Fewer moving parts and no multi-speed transmission
d) EVs don't require acceleration

5) Which of the following reduces operational costs in EVs?
a) Using air conditioning b) Regenerative braking
c) Frequent charging d) High electricity cost

6) A plug-in hybrid is advantageous because it _____.
   a) Can be driven longer distances on electric power alone
   b) Requires no battery
   c) Needs daily engine tuning
   d) Increases fuel usage

7) What does HEV stand for _____.
   a) Hydrogen Electric Vehicle
   b) High Energy Vehicle
   c) Hybrid Electric Vehicle
   d) Heavy Electric Van

8) The operational cost of EVs is primarily dependent on _____.
   a) Paint quality
   b) Insurance
   c) Number of passengers
   d) Electricity rates and maintenance

9) What is the main advantage of BLDC motors over conventional DC motors?
   a) Lower efficiency
   b) No brushes, hence less maintenance
   c) High torque at low speed only
   d) No need for electronic control

10) Tractive effort is defined as _____.
   a) Force available at the wheels to move the vehicle
   b) Energy to move the vehicle uphill
   c) Force required to stop the vehicle
   d) Inertia of the motor

11) Inverters are mainly used to _____.
   a) Convert AC to DC
   b) Convert DC to AC
   c) Control torque of DC motors
   d) Regulate battery voltage

12) Which device is primarily used to control the voltage applied to a DC motor for speed control?
   a) Inverter
   b) Chopper
   c) VFD
   d) Rectifier

13) The India Drive Cycle (IDC) is specifically designed to _____.
   a) Simulate European driving conditions
   b) Evaluate fuel efficiency under Indian traffic conditions
   c) Test battery performance at high speeds
   d) Analyze highway-only driving

14) Which of the following is not a key parameter typically considered in a drive cycle?
   a) Speed
   b) Acceleration
   c) Battery chemistry
   d) Idling

SLR-QH-67

Seat No.		Set	P

S.Y. (B.Tech.) (Mechanical Engineering) (Sem - II) (New) (CBCS)
Examination: March/April-2026
Introduction to Electric and Hybrid Vehicles (MechHon-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.

SECTION - I

Q.2	**a)**	Discuss the roles of the key components in an electric vehicle.	**05**
	b)	Provide an overview of the latest market developments for electric vehicles globally and in India.	**05**
	c)	Discuss the role of energy efficiency in enhancing the effectiveness of electric vehicles.	**04**
Q.3	**a)**	Describe the different types of electric vehicle configurations and their characteristics.	**05**
	b)	What is tractive effort? Discuss its significance in the performance of a vehicle.	**05**
	c)	Discuss the role of regenerative braking in conserving energy during vehicle operation.	**04**
Q.4	**a)**	Define a Hybrid Electric Drive Train and explain its basic concept.	**08**
	b)	What are the key considerations in the mass analysis and packaging of HEV components?	**06**

SECTION – II

Q.5	**a)**	Discuss the basic components and working mechanism of a DC motor.	**05**
	b)	Discuss how permanent magnets function in BLDC and synchronous motor operation.	**05**
	c)	Describe how a Switched Reluctance Motor (SRM) is constructed and how it functions.	**04**
Q.6	**a)**	Describe the role of a chopper circuit in the control of a DC motor.	**05**
	b)	Explain the function of a Variable Frequency Drive (VFD) and its method of controlling the speed of an AC motor.	**05**
	c)	Describe how Pulse Width Modulation (PWM) techniques contribute to higher efficiency in motor control systems.	**04**

Q.7	**a)**	Explain the methods used to measure energy efficiency in electric vehicle drive cycles.	**08**
	b)	Describe the main features of the Indian Drive Cycle (IDC).	**06**

SLR-QH-67

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Sem - II) (New) (CBCS)
Examination: March/April - 2026
Introduction to Electric and Hybrid Vehicles (MechHon-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer from the given options. 14

1) The operational cost of EVs is primarily dependent on _____.
a) Paint quality
b) Insurance
c) Number of passengers
d) Electricity rates and maintenance

2) What is the main advantage of BLDC motors over conventional DC motors?
a) Lower efficiency
b) No brushes, hence less maintenance
c) High torque at low speed only
d) No need for electronic control

3) Tractive effort is defined as _____.
a) Force available at the wheels to move the vehicle
b) Energy to move the vehicle uphill
c) Force required to stop the vehicle
d) Inertia of the motor

4) Inverters are mainly used to _____.
a) Convert AC to DC b) Convert DC to AC
c) Control torque of DC motors d) Regulate battery voltage

5) Which device is primarily used to control the voltage applied to a DC motor for speed control?
a) Inverter b) Chopper
c) VFD d) Rectifier

6) The India Drive Cycle (IDC) is specifically designed to _____.
a) Simulate European driving conditions
b) Evaluate fuel efficiency under Indian traffic conditions
c) Test battery performance at high speeds
d) Analyze highway-only driving

7) Which of the following is not a key parameter typically considered in a drive cycle?
a) Speed
b) Acceleration
c) Battery chemistry
d) Idling

8) The performance of an electric vehicle is significantly affected by _____.
a) Ambient light
b) Vehicle mass
c) Tire pressure only
d) Vehicle color

9) Slow charging is generally preferred for _____.
a) Increasing charging station turnover
b) Emergency situations
c) Quick trips
d) Daily overnight home charging

10) For AV induction motors, torque control is typically achieved by_____.
a) Voltage modulation
b) Changing both voltage and frequency
c) Frequency modulation
d) Adjusting capacitance

11) The drivetrain in electric vehicles is simpler than in ICE vehicles because _____.
a) Requires constant gear shifting
b) No need for fuel injection
c) Fewer moving parts and no multi-speed transmission
d) EVs don't require acceleration

12) Which of the following reduces operational costs in EVs?
a) Using air conditioning
b) Regenerative braking
c) Frequent charging
d) High electricity cost

13) A plug-in hybrid is advantageous because it _____.
a) Can be driven longer distances on electric power alone
b) Requires no battery
c) Needs daily engine tuning
d) Increases fuel usage

14) What does HEV stand for _____.
a) Hydrogen Electric Vehicle
b) High Energy Vehicle
c) Hybrid Electric Vehicle
d) Heavy Electric Van

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Sem - II) (New) (CBCS)
Examination: March/April - 2026
Introduction to Electric and Hybrid Vehicles (MechHon-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.

SECTION - I

Q.2	**a)**	Discuss the roles of the key components in an electric vehicle.	**05**
	b)	Provide an overview of the latest market developments for electric vehicles globally and in India.	**05**
	c)	Discuss the role of energy efficiency in enhancing the effectiveness of electric vehicles.	**04**
Q.3	**a)**	Describe the different types of electric vehicle configurations and their characteristics.	**05**
	b)	What is tractive effort? Discuss its significance in the performance of a vehicle.	**05**
	c)	Discuss the role of regenerative braking in conserving energy during vehicle operation.	**04**
Q.4	**a)**	Define a Hybrid Electric Drive Train and explain its basic concept.	**08**
	b)	What are the key considerations in the mass analysis and packaging of HEV components?	**06**

SECTION – II

Q.5	**a)**	Discuss the basic components and working mechanism of a DC motor.	**05**
	b)	Discuss how permanent magnets function in BLDC and synchronous motor operation.	**05**
	c)	Describe how a Switched Reluctance Motor (SRM) is constructed and how it functions.	**04**
Q.6	**a)**	Describe the role of a chopper circuit in the control of a DC motor.	**05**
	b)	Explain the function of a Variable Frequency Drive (VFD) and its method of controlling the speed of an AC motor.	**05**
	c)	Describe how Pulse Width Modulation (PWM) techniques contribute to higher efficiency in motor control systems.	**04**

Q.7	**a)**	Explain the methods used to measure energy efficiency in electric vehicle drive cycles.	**08**
	b)	Describe the main features of the Indian Drive Cycle (IDC).	**06**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Sem - II) (New) (CBCS)
Examination: March/April - 2026
Introduction to Electric and Hybrid Vehicles (MechHon-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer from the given options. **14**

1) Inverters are mainly used to _____.
a) Convert AC to DC
b) Convert DC to AC
c) Control torque of DC motors
d) Regulate battery voltage

2) Which device is primarily used to control the voltage applied to a DC motor for speed control?
a) Inverter
b) Chopper
c) VFD
d) Rectifier

3) The India Drive Cycle (IDC) is specifically designed to _____.
a) Simulate European driving conditions
b) Evaluate fuel efficiency under Indian traffic conditions
c) Test battery performance at high speeds
d) Analyze highway-only driving

4) Which of the following is not a key parameter typically considered in a drive cycle?
a) Speed
b) Acceleration
c) Battery chemistry
d) Idling

5) The performance of an electric vehicle is significantly affected by _____.
a) Ambient light
b) Vehicle mass
c) Tire pressure only
d) Vehicle color

6) Slow charging is generally preferred for _____.
a) Increasing charging station turnover
b) Emergency situations
c) Quick trips
d) Daily overnight home charging

7) For AV induction motors, torque control is typically achieved by_____.
   a) Voltage modulation
   b) Changing both voltage and frequency
   c) Frequency modulation
   d) Adjusting capacitance

8) The drivetrain in electric vehicles is simpler than in ICE vehicles because _____.
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   a) Using air conditioning
   b) Regenerative braking
   c) Frequent charging
   d) High electricity cost

10) A plug-in hybrid is advantageous because it _____.
   a) Can be driven longer distances on electric power alone
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   c) Needs daily engine tuning
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11) What does HEV stand for _____.
   a) Hydrogen Electric Vehicle
   b) High Energy Vehicle
   c) Hybrid Electric Vehicle
   d) Heavy Electric Van

12) The operational cost of EVs is primarily dependent on _____.
   a) Paint quality
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   c) Number of passengers
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   b) Energy to move the vehicle uphill
   c) Force required to stop the vehicle
   d) Inertia of the motor

SLR-QH-67

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Sem - II) (New) (CBCS)
Examination: March/April-2026
Introduction to Electric and Hybrid Vehicles (MechHon-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.

SECTION - I

Q.2	**a)**	Discuss the roles of the key components in an electric vehicle.	**05**
	b)	Provide an overview of the latest market developments for electric vehicles globally and in India.	**05**
	c)	Discuss the role of energy efficiency in enhancing the effectiveness of electric vehicles.	**04**
Q.3	**a)**	Describe the different types of electric vehicle configurations and their characteristics.	**05**
	b)	What is tractive effort? Discuss its significance in the performance of a vehicle.	**05**
	c)	Discuss the role of regenerative braking in conserving energy during vehicle operation.	**04**
Q.4	**a)**	Define a Hybrid Electric Drive Train and explain its basic concept.	**08**
	b)	What are the key considerations in the mass analysis and packaging of HEV components?	**06**

SECTION – II

Q.5	**a)**	Discuss the basic components and working mechanism of a DC motor.	**05**
	b)	Discuss how permanent magnets function in BLDC and synchronous motor operation.	**05**
	c)	Describe how a Switched Reluctance Motor (SRM) is constructed and how it functions.	**04**
Q.6	**a)**	Describe the role of a chopper circuit in the control of a DC motor.	**05**
	b)	Explain the function of a Variable Frequency Drive (VFD) and its method of controlling the speed of an AC motor.	**05**
	c)	Describe how Pulse Width Modulation (PWM) techniques contribute to higher efficiency in motor control systems.	**04**

Q.7	**a)**	Explain the methods used to measure energy efficiency in electric vehicle drive cycles.	**08**
	b)	Describe the main features of the Indian Drive Cycle (IDC).	**06**

SLR-QH-67

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Sem - II) (New) (CBCS)
Examination: March/April-2026
Introduction to Electric and Hybrid Vehicles (MechHon-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer from the given options. **14**

1) A plug-in hybrid is advantageous because it _____.
a) Can be driven longer distances on electric power alone
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c) Needs daily engine tuning
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2) What does HEV stand for _____.
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c) Hybrid Electric Vehicle
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d) Regulate battery voltage

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a) Using air conditioning
b) Regenerative braking
c) Frequent charging
d) High electricity cost

SLR-QH-67

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Sem - II) (New) (CBCS)
Examination: March/April-2026
Introduction to Electric and Hybrid Vehicles (MechHon-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Solve any two questions from each section.
2) Figures to the right indicate full marks.

SECTION - I

Q.2	**a)**	Discuss the roles of the key components in an electric vehicle.	**05**
	b)	Provide an overview of the latest market developments for electric vehicles globally and in India.	**05**
	c)	Discuss the role of energy efficiency in enhancing the effectiveness of electric vehicles.	**04**
Q.3	**a)**	Describe the different types of electric vehicle configurations and their characteristics.	**05**
	b)	What is tractive effort? Discuss its significance in the performance of a vehicle.	**05**
	c)	Discuss the role of regenerative braking in conserving energy during vehicle operation.	**04**
Q.4	**a)**	Define a Hybrid Electric Drive Train and explain its basic concept.	**08**
	b)	What are the key considerations in the mass analysis and packaging of HEV components?	**06**

SECTION – II

Q.5	**a)**	Discuss the basic components and working mechanism of a DC motor.	**05**
	b)	Discuss how permanent magnets function in BLDC and synchronous motor operation.	**05**
	c)	Describe how a Switched Reluctance Motor (SRM) is constructed and how it functions.	**04**
Q.6	**a)**	Describe the role of a chopper circuit in the control of a DC motor.	**05**
	b)	Explain the function of a Variable Frequency Drive (VFD) and its method of controlling the speed of an AC motor.	**05**
	c)	Describe how Pulse Width Modulation (PWM) techniques contribute to higher efficiency in motor control systems.	**04**

Q.7	**a)**	Explain the methods used to measure energy efficiency in electric vehicle drive cycles.	**08**
	b)	Describe the main features of the Indian Drive Cycle (IDC).	**06**

SLR-QH-68

Seat No.		Set	P

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

2) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

3) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

4) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

5) The value of respect entails _____.
a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

6) Which value involves being accountable for one's decisions and actions?
a) Responsibility b) Flexibility
c) Confidence d) Arrogance

7) The value of integrity entails _____.
a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

8) Which value involves being considerate and thoughtful towards others?
a) Kindness
b) Determination
c) Independence
d) Indifference

9) The value of wisdom involves _____.
a) Making sound and informed judgments based on knowledge and experience
b) Pursuing personal interests at the expense of others
c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

10) Which value involves being truthful and sincere in one's actions and words?
a) Honesty
b) Tolerance
c) Flexibility
d) Arrogance

11) What is the primary goal of engineering ethics?
a) To maximize profits for companies
b) To ensure engineers work efficiently
c) To protect public safety and welfare
d) To follow industry standards

12) Which of the following is considered an ethical responsibility of an engineer?
a) Ignoring environmental concerns to meet deadlines
b) Ensuring the safety of the public
c) Disregarding laws and regulations
d) Making decisions based on personal interests

13) Ethical engineering practices promote _____.
a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
d) The minimization of safety regulations

14) Ethical engineers should consider which of the following when making decisions?
a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

15) Which of the following is NOT part of an engineer's ethical responsibility?
a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

16) Ethical engineering involves making decisions based on _____.
a) Personal opinions and values
b) Financial incentives and company pressure
c) Objective analysis, codes of ethics, and consideration for the public good
d) Trends in the field of engineering

17) What should an engineer do if they discover a colleague is involved in unethical practices?
a) Ignore the situation to avoid conflict
b) Report the unethical behavior to management or relevant authorities
c) Cover up the situation to protect the colleague
d) Allow the behavior to continue if it does not affect the project

18) Ethical engineering practices include _____.
a) Following industry standards and regulations
b) Ensuring profitability is the main priority
c) Cutting costs by any means necessary
d) Avoiding the reporting of safety hazards

19) What is the primary focus of Kohlberg's theory?
a) Cognitive development b) Social development
c) Moral development d) Emotional development

20) Which term refers to an agreement that is made through discussions and compromises among parties?
a) Conflict b) Consensus
c) Dispute d) Isolation

21) What is the primary goal of risk assessment?
a) To eliminate all risks
b) To identify and mitigate potential risks
c) To ignore potential risks
d) To transfer risks to others

22) What is the primary goal of safety protocols?
a) To increase productivity
b) To reduce costs
c) To prevent injuries and illnesses
d) To improve employee morale

23) What is the difference between a hazard and a risk?
a) A hazard is a potential risk, while a risk is a real danger
b) A hazard is a real danger, while a risk is a potential danger
c) A hazard is a physical danger, while a risk is a financial danger
d) A hazard is a financial danger, while a risk is a physical danger

24) What should you do if you identify a potential risk in the workplace?
a) Ignore it and hope it goes away
b) Report it to your supervisor or HR
c) Try to mitigate it on your own
d) Transfer the risk to someone else

25) According to the theory of ethical egoism, what should guide an individual's moral actions?
a) The well-being of others
b) The individual's own self-interest
c) Social norms and conventions
d) Universal moral principles

26) Collegiality in a professional setting refers to _____.
a) Loyalty to your employer
b) Cooperation and mutual respect among colleagues
c) Competing for individual success
d) Avoiding work conflicts

27) Professional loyalty involves _____.
a) Reporting colleagues' mistakes publicly
b) Protecting the interests of the team or organization
c) Ignoring safety violations to avoid
d) Disclosing confidential information for personal conflict gain

28) Employee rights include _____.
a) The right to work without discrimination
b) The right to disregard company policies
c) The right to personal opinion but not affecting work
d) The right to ignore workplace safety standards

29) Intellectual Property Rights (IPR) protect _____.
a) The financial interests of corporations
b) The ownership and use of creative ideas and inventions
c) The physical assets of a company
d) Workplace performance evaluations

30) *Risk assessment* is important because it helps in _____.
a) Evaluating the potential impact of hazards on health and safety
b) Minimizing workplace productivity
c) Defining job roles
d) Ignoring environmental issues

31) In risk management, mitigation strategies aim to _____.
a) Accept all risks in the workplace
b) Reduce or eliminate identified risks
c) Increase the likelihood of hazards
d) Focus only on maximizing profits

32) Which of the following is a potential consequence of *occupational crime?*
a) Increased workplace productivity
b) Legal consequences and loss of reputation
c) Improvement in company safety standards
d) Higher employee satisfaction

33) Risk reduction in engineering refers to _____.
a) Implementing measures to lower the work chances of accidents
b) Increasing the number of hazards in the work environment
c) Ignoring potential risks
d) Cutting costs by removing safety measures

34) Public safety regulations are primarily designed to _____.
a) Ensure the safety of the company's assets
b) Protect the general public from potential harm
c) Increase revenue for the government
d) Focus only on preventing natural disasters

35) Multinational corporations (MNCs) are characterized by _____.
a) Operations in multiple countries with a centralized headquarters
b) Operating only in their home country
c) Limited influence on global markets
d) No responsibility toward environmental concerns

36) Environmental ethics primarily deals with _____.
a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
d) Treating employees equally

37) Which of the following is NOT an example of environmental ethics?
a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

38) Computer ethics involves _____.
   a) Programming and coding without considering social consequences
   b) Understanding the moral implications of computing technologies
   c) Focusing only on technological innovation
   d) Ignoring privacy issues

39) Weapons development ethics deals with _____.
   a) The development of new technologies to enhance military capabilities
   b) Restricting the use of all technological advancements
   c) Focusing only on civilian safety
   d) Only addressing the legal aspects of weapon development

40) Engineers as managers are expected to _____.
   a) Focus solely on technical tasks
   b) Lead teams, make strategic decisions, and manage projects
   c) Ignore the business aspects of their work
   d) Avoid taking responsibility for team outcomes

41) Consulting engineers are hired to _____.
   a) Work on projects within the company they are employed
   b) Provide expert advice on technical and engineering problems
   c) Manage public relations for a company
   d) Conduct legal investigations

42) Engineers acting as expert witnesses typically _____.
   a) Present evidence and offer testimony in legal cases
   b) Focus on public relations during a case
   c) Manage engineering projects for legal firms
   d) Directly represent the interests of a company court

43) Sample Code of Ethics of professional organizations typically includes _____.
   a) Guidelines for acceptable behavior and decision-making
   b) Rules for maximizing profits at any cost
   c) Detailed technical specifications for projects
   d) Guidelines for political involvement in engineering

44) ASME stands for _____.
   a) American Society of Mechanical Engineers
   b) American Society of Management Engineers
   c) Association of Safety and Mechanical Engineers
   d) Association of Scientific and Mechanical Engineers

45) The ASCE Code of Ethics emphasizes _____.
a) Following only local regulations
b) Maintaining professional integrity and responsibility
c) Focusing on personal financial gain
d) Ignoring environmental impacts

46) The IEEE Code of Ethics is primarily concerned with _____.
a) Fostering professional competence and integrity
b) Protecting corporate secrets
c) Maximizing technological advancements at any cost
d) Developing weapons for defense purposes

47) Global issues in engineering ethics include _____.
a) Cultural differences in engineering practices
b) Lack of understanding between technical and ethical concerns
c) Addressing both local and international engineering challenges
d) All of the above

48) A key challenge faced by multinational corporations is _____.
a) Balancing profits with social and environmental
b) Competing only within their home country responsibilities
c) Focusing solely on domestic issues
d) Ignoring corporate social responsibility

49) Empathy is the ability to _____.
a) Solve problems logically
b) Understand and share the feelings of others
c) Be indifferent to others' emotions
d) Only care about your own well-being

50) The quality of "caring" includes _____.
a) Showing concern for others' well-being
b) Ignoring the needs of others
c) Only helping family and friends
d) Seeking praise for helping others

SLR-QH-68

Seat No.		Set	Q

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) What is the primary goal of risk assessment?
a) To eliminate all risks
b) To identify and mitigate potential risks
c) To ignore potential risks
d) To transfer risks to others

2) What is the primary goal of safety protocols?
a) To increase productivity
b) To reduce costs
c) To prevent injuries and illnesses
d) To improve employee morale

3) What is the difference between a hazard and a risk?
a) A hazard is a potential risk, while a risk is a real danger
b) A hazard is a real danger, while a risk is a potential danger
c) A hazard is a physical danger, while a risk is a financial danger
d) A hazard is a financial danger, while a risk is a physical danger

4) What should you do if you identify a potential risk in the workplace?
a) Ignore it and hope it goes away
b) Report it to your supervisor or HR
c) Try to mitigate it on your own
d) Transfer the risk to someone else

5) According to the theory of ethical egoism, what should guide an individual's moral actions?
a) The well-being of others
b) The individual's own self-interest
c) Social norms and conventions
d) Universal moral principles

6) Collegiality in a professional setting refers to _____.
   a) Loyalty to your employer
   b) Cooperation and mutual respect among colleagues
   c) Competing for individual success
   d) Avoiding work conflicts

7) Professional loyalty involves _____.
   a) Reporting colleagues' mistakes publicly
   b) Protecting the interests of the team or organization
   c) Ignoring safety violations to avoid
   d) Disclosing confidential information for personal conflict gain

8) Employee rights include _____.
   a) The right to work without discrimination
   b) The right to disregard company policies
   c) The right to personal opinion but not affecting work
   d) The right to ignore workplace safety standards

9) Intellectual Property Rights (IPR) protect _____.
   a) The financial interests of corporations
   b) The ownership and use of creative ideas and inventions
   c) The physical assets of a company
   d) Workplace performance evaluations

10) *Risk assessment* is important because it helps in _____.
   a) Evaluating the potential impact of hazards on health and safety
   b) Minimizing workplace productivity
   c) Defining job roles
   d) Ignoring environmental issues

11) In risk management, mitigation strategies aim to _____.
   a) Accept all risks in the workplace
   b) Reduce or eliminate identified risks
   c) Increase the likelihood of hazards
   d) Focus only on maximizing profits

12) Which of the following is a potential consequence of *occupational crime?*
   a) Increased workplace productivity
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   c) Improvement in company safety standards
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13) Risk reduction in engineering refers to _____.
   a) Implementing measures to lower the work chances of accidents
   b) Increasing the number of hazards in the work environment
   c) Ignoring potential risks
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14) Public safety regulations are primarily designed to _____.
a) Ensure the safety of the company's assets
b) Protect the general public from potential harm
c) Increase revenue for the government
d) Focus only on preventing natural disasters

15) Multinational corporations (MNCs) are characterized by _____.
a) Operations in multiple countries with a centralized headquarters
b) Operating only in their home country
c) Limited influence on global markets
d) No responsibility toward environmental concerns

16) Environmental ethics primarily deals with _____.
a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
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17) Which of the following is NOT an example of environmental ethics?
a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

18) Computer ethics involves _____.
a) Programming and coding without considering social consequences
b) Understanding the moral implications of computing technologies
c) Focusing only on technological innovation
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19) Weapons development ethics deals with _____.
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21) Consulting engineers are hired to _____.
a) Work on projects within the company they are employed
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c) Manage public relations for a company
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22) Engineers acting as expert witnesses typically _____.
a) Present evidence and offer testimony in legal cases
b) Focus on public relations during a case
c) Manage engineering projects for legal firms
d) Directly represent the interests of a company court

23) Sample Code of Ethics of professional organizations typically includes _____.
a) Guidelines for acceptable behavior and decision-making
b) Rules for maximizing profits at any cost
c) Detailed technical specifications for projects
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24) ASME stands for _____.
a) American Society of Mechanical Engineers
b) American Society of Management Engineers
c) Association of Safety and Mechanical Engineers
d) Association of Scientific and Mechanical Engineers

25) The ASCE Code of Ethics emphasizes _____.
a) Following only local regulations
b) Maintaining professional integrity and responsibility
c) Focusing on personal financial gain
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26) The IEEE Code of Ethics is primarily concerned with _____.
a) Fostering professional competence and integrity
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c) Maximizing technological advancements at any cost
d) Developing weapons for defense purposes

27) Global issues in engineering ethics include _____.
a) Cultural differences in engineering practices
b) Lack of understanding between technical and ethical concerns
c) Addressing both local and international engineering challenges
d) All of the above

28) A key challenge faced by multinational corporations is _____.
a) Balancing profits with social and environmental
b) Competing only within their home country responsibilities
c) Focusing solely on domestic issues
d) Ignoring corporate social responsibility

29) Empathy is the ability to _____.
a) Solve problems logically
b) Understand and share the feelings of others
c) Be indifferent to others' emotions
d) Only care about your own well-being

30) The quality of "caring" includes _____.
a) Showing concern for others' well-being
b) Ignoring the needs of others
c) Only helping family and friends
d) Seeking praise for helping others

31) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

32) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

33) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

34) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

35) The value of respect entails _____.
a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

36) Which value involves being accountable for one's decisions and actions?
a) Responsibility b) Flexibility
c) Confidence d) Arrogance

37) The value of integrity entails _____.
a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

38) Which value involves being considerate and thoughtful towards others?

a) Kindness
b) Determination
c) Independence
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39) The value of wisdom involves _____.

a) Making sound and informed judgments based on knowledge and experience
b) Pursuing personal interests at the expense of others
c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

40) Which value involves being truthful and sincere in one's actions and words?

a) Honesty
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41) What is the primary goal of engineering ethics?

a) To maximize profits for companies
b) To ensure engineers work efficiently
c) To protect public safety and welfare
d) To follow industry standards

42) Which of the following is considered an ethical responsibility of an engineer?

a) Ignoring environmental concerns to meet deadlines
b) Ensuring the safety of the public
c) Disregarding laws and regulations
d) Making decisions based on personal interests

43) Ethical engineering practices promote _____.

a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
d) The minimization of safety regulations

44) Ethical engineers should consider which of the following when making decisions?

a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

45) Which of the following is NOT part of an engineer's ethical responsibility?

a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

46) Ethical engineering involves making decisions based on _____.

a) Personal opinions and values
b) Financial incentives and company pressure
c) Objective analysis, codes of ethics, and consideration for the public good
d) Trends in the field of engineering

47) What should an engineer do if they discover a colleague is involved in unethical practices?

a) Ignore the situation to avoid conflict
b) Report the unethical behavior to management or relevant authorities
c) Cover up the situation to protect the colleague
d) Allow the behavior to continue if it does not affect the project

48) Ethical engineering practices include _____.

a) Following industry standards and regulations
b) Ensuring profitability is the main priority
c) Cutting costs by any means necessary
d) Avoiding the reporting of safety hazards

49) What is the primary focus of Kohlberg's theory?

a) Cognitive development b) Social development
c) Moral development d) Emotional development

50) Which term refers to an agreement that is made through discussions and compromises among parties?

a) Conflict b) Consensus
c) Dispute d) Isolation

SLR-QH-68

Seat No.		Set	R

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

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c) Competing for individual success
d) Avoiding work conflicts

37) Professional loyalty involves _____.
a) Reporting colleagues' mistakes publicly
b) Protecting the interests of the team or organization
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d) Disclosing confidential information for personal conflict gain

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- b) Legal consequences and loss of reputation
- c) Improvement in company safety standards
- d) Higher employee satisfaction

43) Risk reduction in engineering refers to _____.
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45) Multinational corporations (MNCs) are characterized by _____.
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- b) Operating only in their home country
- c) Limited influence on global markets
- d) No responsibility toward environmental concerns

46) Environmental ethics primarily deals with _____.

a) Human responsibility to manage the environment and natural resources
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c) Technological advancements in engineering
d) Treating employees equally

47) Which of the following is NOT an example of environmental ethics?

a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

48) Computer ethics involves _____.

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b) Understanding the moral implications of computing technologies
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50) Engineers as managers are expected to _____.

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SLR-QH-68

Seat No.		Set	S

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B. Tech) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
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Answer

Q.1 Answer the following Objective Type Questions. **50**

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a) To maximize profits for companies
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2) Which of the following is considered an ethical responsibility of an engineer?
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3) Ethical engineering practices promote _____.
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44) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

45) The value of respect entails _____.

a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

46) Which value involves being accountable for one's decisions and actions?

a) Responsibility b) Flexibility
c) Confidence d) Arrogance

47) The value of integrity entails _____.

a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

48) Which value involves being considerate and thoughtful towards others?

a) Kindness b) Determination
c) Independence d) Indifference

49) The value of wisdom involves _____.

a) Making sound and informed judgments based on knowledge and experience
b) Pursuing personal interests at the expense of others
c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

50) Which value involves being truthful and sincere in one's actions and words?

a) Honesty b) Tolerance
c) Flexibility d) Arrogance

SLR-QH-69

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Engineering Mathematics - III (BTN02401)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) If the differential equation $\frac{d^n y}{dx^n} + P_1 \frac{d^{n-1}y}{dx^{n-1}} + \cdots + P_n\, y = X$ is a linear differential equation with constant coefficients, then the R.H.S. is a _____.

a) constant b) function of x only
c) function of y only d) function of x and y

2) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) $\log x$
c) x d) 1

3) $L^{-1}\left(\frac{s+2}{(s+2)^2-5^2}\right) =$ _____.

a) $e^{2t}\sinh 5t$ b) $e^{-2t}\cosh 5t$
c) $e^{-2t}\sinh 5t$ d) $e^{-2t}\cosh 4t$

4) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \le x \le 1$ then $k =$ _____.

a) 2 b) 6
c) 5 d) 3

5) $\frac{1}{D^2-4D+3}e^{2x}$ is equal to _____.

a) e^x b) $-e^{2x}$
c) e^{2x} d) e^{-x}

6) Error in the Trapezoidal rule is of order _____.

a) h^4 b) h^2

c) h^5 d) h^6

7) The Laplace transform of $t\cosh t$ is _____.

a) $-\frac{s^2-1}{(s+1)^2}$ b) $\frac{s^2-1}{(s^2+1)^2}$

c) $\frac{s^2+1}{(s^2-1)^2}$ d) $-\frac{s^2+1}{(s^2-1)^2}$

8) The conditions for expansion of a function in a Fourier series are known as _____.

a) Harmonic b) Riemann conditions

c) Periodic d) Dirichlet's conditions

9) If $x\sin x = 1 - \frac{1}{2}\cos x - \frac{2}{3}\cos 2x + \frac{2}{8}\cos 3x - \cdots$ in the interval $(-\pi, \pi)$ then $\frac{1}{1.3} - \frac{1}{3.5} + \frac{1}{5.7} - \frac{1}{7.9} + \cdots =$_____.

a) $\frac{\pi}{4}$ b) $\frac{\pi-1}{2}$

c) $\frac{\pi-3}{4}$ d) $\frac{\pi-2}{4}$

10) If $b_{yx} = \frac{5}{18}, b_{xy} = \frac{8}{5}$, then $r =$ _____.

a) $\frac{2}{5}$ b) $\frac{1}{2}$

c) $\frac{3}{2}$ d) $\frac{2}{3}$

11) If x_n is the nth iterate, then the Newton Raphson is _____.

a) $x_n = x_{n-1} + \frac{f(x_n)}{f'(x_n)}$ b) $x_n = x_{n-1} - \frac{f(x_n)}{f'(x_n)}$

c) $x_n = x_{n-1} - \frac{f(x_{n+1})}{f'(x_{n+1})}$ d) $x_n = x_{n-1} - \frac{f(x_{n-1})}{f'(x_{n-1})}$

12) For a S. N. V. z the probability that z is less than or equal to 1.68 is _____.

(Given: For a S. N. V z area between $z = 0$ to $z = 1.68$ is 0.4535)

a) 0.5465 b) 0.4535

c) 0.5453 d) 0.9535

13) The solution of the equation $pq = p + q$ is _____.

a) $z = ax + (a+1)y + c$

b) $z = (a+1)x + a(a-1)y + c$

c) $z = (a-1)x + a(a+1)y + c$

d) $z(a-1) = a(a-1)x + ay + c$

14) $z = a(x + y) + c$ is the general solution of _____.

a) $p.q = 1$ b) $p = 1 - q$

c) $p + q = 0$ d) $p = q$

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Engineering Mathematics - III (BTN02401)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt the following. (Any Three) **09**

a) Solve $(D^3 + 3D^2 + 3D + 1)y = e^{-x}$

b) Solve $(D^2 - 2D + 1)y = x.e^x \sin x$

c) Solve $x(y-z)p + y(z-x)q = z(x-y)$

d) Solve $pq = x^m y^n z^{2l}$

e) Obtain half range sine series for

$$f(x) = \begin{cases} x, & 0 < x < 1 \\ 2 - x, & 1 < x < 2 \end{cases}$$

Q.3 Attempt the following. (Any Three) **09**

a) Solve $p(1+q) = qz$

b) Solve $(D^2 + 3D + 2)y = \sin e^x$

c) Solve $(D^2 + 5D + 6)y = e^{-2x} \sec^2 x(1 + 2\tan x)$

d) Obtain Fourier series expansion of $f(x) = x$ in $(-1, 1)$

e) Find the Fourier series of the function

$$f(x) = \begin{cases} x, & 0 < x < \pi \\ 2\pi - x, & \pi < x < 2\pi \end{cases}$$

Q.4 Attempt the following. (Any Two) **10**

a) Solve the following differential equation $4\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} = 3u$ given that $u(0, y) = 3e^{-y}$ by the method of separation of variables.

b) Obtain half range cosine series for

$$f(x) = \begin{cases} x, & 0 < x < \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} < x < \pi \end{cases}$$

c) Solve $(D^2 - D - 2)y = 2\log x + \frac{1}{x} + \frac{1}{x^2}$

Section – II

Q.5 Attempt the following. (Any Three) **09**

a) Find the probability that at most 4 defective bulbs will be found in a box of 200 bulbs if it is known that 2 percent of the bulbs are defective.

b) Calculate Spearman's coefficient of rank of correlation from the data on height and weight of 8 students.

Height (in inches)	60	62	64	66	68	70	72	74
Weight (in lbs.)	92	83	101	110	128	119	137	146

c) Calculate $L\left\{\int_0^t u.e^{-3u}\sin 4u\ du\right\}$

d) Calculate $L\left\{\cosh t\int_0^t e^u.\cosh u\ du\right\}$

e) Find an iterative formula for $\sqrt{N}$ and hence find the values of $\sqrt{35}$

Q.6 Attempt the following. (any Three) **09**

a) Evaluate $\int_0^\infty e^{-t}\left(\frac{\sin 3t+\sin 2t}{t}\right)dt$

b) Solve for a positive root by false position method.
$xe^x=\cos x$

c) Using Newton's-Raphson method, solve for a positive root of
$x^4-x=10$

d) A hospital switch board receives an average of 4 emergency calls in a 10 minutes interval. What is the Probability that:
i) there are at least 2 emergency calls
ii) there are exactly 3 emergency call in an interval of 10 minutes

e) Calculate $L\{t.e^{-2t}\sinh 4t\}$

Q.7 Attempt the following. (Any Two) **10**

a) If the mean life time and S.D. of battery cells are 12 hrs. and 3 hrs. What % of batteries will have life
i) between 10 and 14 hrs.
ii) More than 15 hrs.
iii) Less than 6 hrs.
(Given For S.N.V. z area from $z=0$ to $z=0.67$ is 0.2486, that from $z=0$ to $z=1$ is 0.3413 that from $z=0$ to $z=2$ is 0.4772)

b) Calculate $L^{-1}\left\{\frac{s^2}{(s^2+4)(s^2+9)}\right\}$ by using Convolution Method.

c) Compute the value of $\int_{0.2}^{1.4}(\sin x-\log x+e^x)dx$ taking $h=0.2$ and using Trapezoidal rule, Simpson's rule and Weddle's rule. Compare your results by integration.

SLR-QH-69

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Engineering Mathematics - III (BTN02401)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The conditions for expansion of a function in a Fourier series are known as _____.

a) Harmonic b) Riemann conditions
c) Periodic d) Dirichlet's conditions

2) If $x \sin x = 1 - \frac{1}{2}\cos x - \frac{2}{3}\cos 2x + \frac{2}{8}\cos 3x - \cdots$ in the interval $(-\pi, \pi)$ then $\frac{1}{1.3} - \frac{1}{3.5} + \frac{1}{5.7} - \frac{1}{7.9} + \cdots =$_____.

a) $\frac{\pi}{4}$ b) $\frac{\pi-1}{2}$
c) $\frac{\pi-3}{4}$ d) $\frac{\pi-2}{4}$

3) If $b_{yx} = \frac{5}{18}, b_{xy} = \frac{8}{5}$, then $r =$ _____.

a) $\frac{2}{5}$ b) $\frac{1}{2}$
c) $\frac{3}{2}$ d) $\frac{2}{3}$

4) If x_n is the nth iterate, then the Newton Raphson is _____.

a) $x_n = x_{n-1} + \frac{f(x_n)}{f'(x_n)}$ b) $x_n = x_{n-1} - \frac{f(x_n)}{f'(x_n)}$
c) $x_n = x_{n-1} - \frac{f(x_{n+1})}{f'(x_{n+1})}$ d) $x_n = x_{n-1} - \frac{f(x_{n-1})}{f'(x_{n-1})}$

5) For a S. N. V. z the probability that z is less than or equal to 1.68 is ____.
(Given: For a S. N. V z area between $z = 0$ to $z = 1.68$ is 0.4535)

a) 0.5465 b) 0.4535

c) 0.5453 d) 0.9535

6) The solution of the equation $pq = p + q$ is _____.

a) $z = ax + (a + 1)y + c$

b) $z = (a + 1)x + a(a - 1)y + c$

c) $z = (a - 1)x + a(a + 1)y + c$

d) $z(a - 1) = a(a - 1)x + ay + c$

7) $z = a(x + y) + c$ is the general solution of _____.

a) $p.q = 1$ b) $p = 1 - q$

c) $p + q = 0$ d) $p = q$

8) If the differential equation $\frac{d^n y}{dx^n} + P_1 \frac{d^{n-1} y}{dx^{n-1}} + \cdots + P_n\, y = X$ is a linear differential equation with constant coefficients, then the R.H.S. is a _____.

a) constant b) function of x only

c) function of y only d) function of x and y

9) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) $\log x$

c) x d) 1

10) $L^{-1}\left(\frac{s+2}{(s+2)^2 - 5^2}\right) =$ _____.

a) $e^{2t} \sinh 5t$ b) $e^{-2t} \cosh 5t$

c) $e^{-2t} \sinh 5t$ d) $e^{-2t} \cosh 4t$

11) A continuous random variable has the following probability density function $f(x) = kx(1 - x), 0 \le x \le 1$ then $k =$ _____.

a) 2 b) 6

c) 5 d) 3

12) $\frac{1}{D^2 - 4D + 3} e^{2x}$ is equal to _____.

a) e^x b) $-e^{2x}$

c) e^{2x} d) e^{-x}

13) Error in the Trapezoidal rule is of order _____.

a) h^4 b) h^2

c) h^5 d) h^6

14) The Laplace transform of $t\cosh t$ is _____.

a) $-\frac{s^2-1}{(s+1)^2}$ b) $\frac{s^2-1}{(s^2+1)^2}$

c) $\frac{s^2+1}{(s^2-1)^2}$ d) $-\frac{s^2+1}{(s^2-1)^2}$

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Engineering Mathematics - III (BTN02401)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt the following. (Any Three) **09**

a) Solve $(D^3 + 3D^2 + 3D + 1)y = e^{-x}$

b) Solve $(D^2 - 2D + 1)y = x.e^x \sin x$

c) Solve $x(y-z)p + y(z-x)q = z(x-y)$

d) Solve $pq = x^m y^n z^{2l}$

e) Obtain half range sine series for

$$f(x) = \begin{cases} x, & 0 < x < 1 \\ 2 - x, & 1 < x < 2 \end{cases}$$

Q.3 Attempt the following. (Any Three) **09**

a) Solve $p(1+q) = qz$

b) Solve $(D^2 + 3D + 2)y = \sin e^x$

c) Solve $(D^2 + 5D + 6)y = e^{-2x} \sec^2 x(1 + 2\tan x)$

d) Obtain Fourier series expansion of $f(x) = x$ in $(-1, 1)$

e) Find the Fourier series of the function

$$f(x) = \begin{cases} x, & 0 < x < \pi \\ 2\pi - x, & \pi < x < 2\pi \end{cases}$$

Q.4 Attempt the following. (Any Two) **10**

a) Solve the following differential equation $4\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} = 3u$ given that $u(0, y) = 3e^{-y}$ by the method of separation of variables.

b) Obtain half range cosine series for

$$f(x) = \begin{cases} x, & 0 < x < \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} < x < \pi \end{cases}$$

c) Solve $(D^2 - D - 2)y = 2\log x + \frac{1}{x} + \frac{1}{x^2}$

Section – II

Q.5 Attempt the following. (Any Three) **09**

a) Find the probability that at most 4 defective bulbs will be found in a box of 200 bulbs if it is known that 2 percent of the bulbs are defective.

b) Calculate Spearman's coefficient of rank of correlation from the data on height and weight of 8 students.

Height (in inches)	60	62	64	66	68	70	72	74
Weight (in lbs.)	92	83	101	110	128	119	137	146

c) Calculate $L\left\{\int_0^t u.e^{-3u}\sin 4u\ du\right\}$

d) Calculate $L\left\{\cosh t\int_0^t e^u.\cosh u\ du\right\}$

e) Find an iterative formula for $\sqrt{N}$ and hence find the values of $\sqrt{35}$

Q.6 Attempt the following. (any Three) **09**

a) Evaluate $\int_0^\infty e^{-t}\left(\frac{\sin 3t+\sin 2t}{t}\right)dt$

b) Solve for a positive root by false position method.
$xe^x=\cos x$

c) Using Newton's-Raphson method, solve for a positive root of
$x^4-x=10$

d) A hospital switch board receives an average of 4 emergency calls in a 10 minutes interval. What is the Probability that:
i) there are at least 2 emergency calls
ii) there are exactly 3 emergency call in an interval of 10 minutes

e) Calculate $L\{t.e^{-2t}\sinh 4t\}$

Q.7 Attempt the following. (Any Two) **10**

a) If the mean life time and S.D. of battery cells are 12 hrs. and 3 hrs. What % of batteries will have life
i) between 10 and 14 hrs.
ii) More than 15 hrs.
iii) Less than 6 hrs.
(Given For S.N.V. z area from $z=0$ to $z=0.67$ is 0.2486, that from $z=0$ to $z=1$ is 0.3413 that from $z=0$ to $z=2$ is 0.4772)

b) Calculate $L^{-1}\left\{\frac{s^2}{(s^2+4)(s^2+9)}\right\}$ by using Convolution Method.

c) Compute the value of $\int_{0.2}^{1.4}(\sin x-\log x+e^x)dx$ taking $h=0.2$ and using Trapezoidal rule, Simpson's rule and Weddle's rule. Compare your results by integration.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Engineering Mathematics - III (BTN02401)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. **14**

1) If x_n is the nth iterate, then the Newton Raphson is _____.

a) $x_n = x_{n-1} + \frac{f(x_n)}{f'(x_n)}$ b) $x_n = x_{n-1} - \frac{f(x_n)}{f'(x_n)}$

c) $x_n = x_{n-1} - \frac{f(x_{n+1})}{f'(x_{n+1})}$ d) $x_n = x_{n-1} - \frac{f(x_{n-1})}{f'(x_{n-1})}$

2) For a S. N. V. z the probability that z is less than or equal to 1.68 is ____.
(Given: For a S. N. V z area between $z = 0$ to $z = 1.68$ is 0.4535)

a) 0.5465 b) 0.4535

c) 0.5453 d) 0.9535

3) The solution of the equation $pq = p + q$ is _____.

a) $z = ax + (a+1)y + c$
b) $z = (a+1)x + a(a-1)y + c$
c) $z = (a-1)x + a(a+1)y + c$
d) $z(a-1) = a(a-1)x + ay + c$

4) $z = a(x+y) + c$ is the general solution of _____.

a) $p.q = 1$ b) $p = 1 - q$

c) $p + q = 0$ d) $p = q$

5) If the differential equation $\frac{d^n y}{dx^n} + P_1 \frac{d^{n-1} y}{dx^{n-1}} + \cdots + P_n\, y = X$ is a linear differential equation with constant coefficients, then the R.H.S. is a _____.

a) constant
b) function of x only
c) function of y only
d) function of x and y

6) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x
b) $\log x$
c) x
d) 1

7) $L^{-1}\left(\frac{s+2}{(s+2)^2-5^2}\right) =$ _____.

a) $e^{2t} \sinh 5t$
b) $e^{-2t} \cosh 5t$
c) $e^{-2t} \sinh 5t$
d) $e^{-2t} \cosh 4t$

8) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \le x \le 1$ then $k =$ _____.

a) 2
b) 6
c) 5
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9) $\frac{1}{D^2-4D+3} e^{2x}$ is equal to _____.

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10) Error in the Trapezoidal rule is of order _____.

a) h^4
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11) The Laplace transform of $t \cosh t$ is _____.

a) $-\frac{s^2-1}{(s+1)^2}$
b) $\frac{s^2-1}{(s^2+1)^2}$
c) $\frac{s^2+1}{(s^2-1)^2}$
d) $-\frac{s^2+1}{(s^2-1)^2}$

12) The conditions for expansion of a function in a Fourier series are known as _____.

a) Harmonic
b) Riemann conditions
c) Periodic
d) Dirichlet's conditions

13) If $x \sin x = 1 - \frac{1}{2}\cos x - \frac{2}{3}\cos 2x + \frac{2}{8}\cos 3x - \cdots$ in the interval $(-\pi, \pi)$ then $\frac{1}{1.3} - \frac{1}{3.5} + \frac{1}{5.7} - \frac{1}{7.9} + \cdots =$_____.

a) $\frac{\pi}{4}$
b) $\frac{\pi-1}{2}$
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d) $\frac{\pi-2}{4}$

14) If $b_{yx} = \frac{5}{18}, b_{xy} = \frac{8}{5}$, then $r =$ _____.

a) $\frac{2}{5}$ b) $\frac{1}{2}$

c) $\frac{3}{2}$ d) $\frac{2}{3}$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Engineering Mathematics - III (BTN02401)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt the following. (Any Three) **09**

a) Solve $(D^3 + 3D^2 + 3D + 1)y = e^{-x}$

b) Solve $(D^2 - 2D + 1)y = x.e^x \sin x$

c) Solve $x(y - z)p + y(z - x)q = z(x - y)$

d) Solve $pq = x^m y^n z^{2l}$

e) Obtain half range sine series for

$$f(x) = \begin{cases} x, & 0 < x < 1 \\ 2 - x, & 1 < x < 2 \end{cases}$$

Q.3 Attempt the following. (Any Three) **09**

a) Solve $p(1 + q) = qz$

b) Solve $(D^2 + 3D + 2)y = \sin e^x$

c) Solve $(D^2 + 5D + 6)y = e^{-2x} \sec^2 x(1 + 2\tan x)$

d) Obtain Fourier series expansion of $f(x) = x$ in $(-1, 1)$

e) Find the Fourier series of the function

$$f(x) = \begin{cases} x, & 0 < x < \pi \\ 2\pi - x, & \pi < x < 2\pi \end{cases}$$

Q.4 Attempt the following. (Any Two) **10**

a) Solve the following differential equation $4\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} = 3u$ given that $u(0, y) = 3e^{-y}$ by the method of separation of variables.

b) Obtain half range cosine series for

$$f(x) = \begin{cases} x, & 0 < x < \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} < x < \pi \end{cases}$$

c) Solve $(D^2 - D - 2)y = 2\log x + \frac{1}{x} + \frac{1}{x^2}$

Section – II

Q.5 Attempt the following. (Any Three) **09**

a) Find the probability that at most 4 defective bulbs will be found in a box of 200 bulbs if it is known that 2 percent of the bulbs are defective.

b) Calculate Spearman's coefficient of rank of correlation from the data on height and weight of 8 students.

Height (in inches)	60	62	64	66	68	70	72	74
Weight (in lbs.)	92	83	101	110	128	119	137	146

c) Calculate $L\left\{\int_0^t u.e^{-3u}\sin 4u\ du\right\}$

d) Calculate $L\left\{\cosh t\int_0^t e^u.\cosh u\ du\right\}$

e) Find an iterative formula for $\sqrt{N}$ and hence find the values of $\sqrt{35}$

Q.6 Attempt the following. (any Three) **09**

a) Evaluate $\int_0^\infty e^{-t}\left(\frac{\sin 3t+\sin 2t}{t}\right)dt$

b) Solve for a positive root by false position method.
$xe^x=\cos x$

c) Using Newton's-Raphson method, solve for a positive root of
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d) A hospital switch board receives an average of 4 emergency calls in a 10 minutes interval. What is the Probability that:
i) there are at least 2 emergency calls
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e) Calculate $L\{t.e^{-2t}\sinh 4t\}$

Q.7 Attempt the following. (Any Two) **10**

a) If the mean life time and S.D. of battery cells are 12 hrs. and 3 hrs. What % of batteries will have life
i) between 10 and 14 hrs.
ii) More than 15 hrs.
iii) Less than 6 hrs.
(Given For S.N.V. z area from $z=0$ to $z=0.67$ is 0.2486, that from $z=0$ to $z=1$ is 0.3413 that from $z=0$ to $z=2$ is 0.4772)

b) Calculate $L^{-1}\left\{\frac{s^2}{(s^2+4)(s^2+9)}\right\}$ by using Convolution Method.

c) Compute the value of $\int_{0.2}^{1.4}(\sin x-\log x+e^x)dx$ taking $h=0.2$ and using Trapezoidal rule, Simpson's rule and Weddle's rule. Compare your results by integration.

SLR-QH-69

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Engineering Mathematics - III (BTN02401)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Error in the Trapezoidal rule is of order _____.
a) h^4 b) h^2
c) h^5 d) h^6

2) The Laplace transform of $t\cosh t$ is _____.
a) $-\frac{s^2-1}{(s+1)^2}$ b) $\frac{s^2-1}{(s^2+1)^2}$
c) $\frac{s^2+1}{(s^2-1)^2}$ d) $-\frac{s^2+1}{(s^2-1)^2}$

3) The conditions for expansion of a function in a Fourier series are known as _____.
a) Harmonic b) Riemann conditions
c) Periodic d) Dirichlet's conditions

4) If $x\sin x = 1 - \frac{1}{2}\cos x - \frac{2}{3}\cos 2x + \frac{2}{8}\cos 3x - \cdots$ in the interval $(-\pi, \pi)$ then $\frac{1}{1.3} - \frac{1}{3.5} + \frac{1}{5.7} - \frac{1}{7.9} + \cdots =$_____.
a) $\frac{\pi}{4}$ b) $\frac{\pi-1}{2}$
c) $\frac{\pi-3}{4}$ d) $\frac{\pi-2}{4}$

5) If $b_{yx} = \frac{5}{18}, b_{xy} = \frac{8}{5}$, then $r =$ _____.
a) $\frac{2}{5}$ b) $\frac{1}{2}$
c) $\frac{3}{2}$ d) $\frac{2}{3}$

6) If x_n is the nth iterate, then the Newton Raphson is _____.

a) $x_n = x_{n-1} + \frac{f(x_n)}{f'(x_n)}$ b) $x_n = x_{n-1} - \frac{f(x_n)}{f'(x_n)}$

c) $x_n = x_{n-1} - \frac{f(x_{n+1})}{f'(x_{n+1})}$ d) $x_n = x_{n-1} - \frac{f(x_{n-1})}{f'(x_{n-1})}$

7) For a S. N. V. z the probability that z is less than or equal to 1.68 is _____.
(Given: For a S. N. V z area between $z = 0$ to $z = 1.68$ is 0.4535)

a) 0.5465 b) 0.4535

c) 0.5453 d) 0.9535

8) The solution of the equation $pq = p + q$ is _____.

a) $z = ax + (a+1)y + c$

b) $z = (a+1)x + a(a-1)y + c$

c) $z = (a-1)x + a(a+1)y + c$

d) $z(a-1) = a(a-1)x + ay + c$

9) $z = a(x+y) + c$ is the general solution of _____.

a) $p.q = 1$ b) $p = 1 - q$

c) $p + q = 0$ d) $p = q$

10) If the differential equation $\frac{d^n y}{dx^n} + P_1 \frac{d^{n-1} y}{dx^{n-1}} + \cdots + P_n\, y = X$ is a linear differential equation with constant coefficients, then the R.H.S. is a _____.

a) constant b) function of x only

c) function of y only d) function of x and y

11) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) $\log x$

c) x d) 1

12) $L^{-1}\left(\frac{s+2}{(s+2)^2 - 5^2}\right) =$ _____.

a) $e^{2t} \sinh 5t$ b) $e^{-2t} \cosh 5t$

c) $e^{-2t} \sinh 5t$ d) $e^{-2t} \cosh 4t$

13) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \le x \le 1$ then $k =$ _____.

a) 2 b) 6

c) 5 d) 3

14) $\frac{1}{D^2-4D+3}e^{2x}$ is equal to _____.

a) e^x b) $-e^{2x}$

c) e^{2x} d) e^{-x}

SLR-QH-69

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Engineering Mathematics - III (BTN02401)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Attempt the following. (Any Three) **09**

a) Solve $(D^3 + 3D^2 + 3D + 1)y = e^{-x}$

b) Solve $(D^2 - 2D + 1)y = x.e^x \sin x$

c) Solve $x(y-z)p + y(z-x)q = z(x-y)$

d) Solve $pq = x^m y^n z^{2l}$

e) Obtain half range sine series for

$$f(x) = \begin{cases} x, & 0 < x < 1 \\ 2 - x, & 1 < x < 2 \end{cases}$$

Q.3 Attempt the following. (Any Three) **09**

a) Solve $p(1+q) = qz$

b) Solve $(D^2 + 3D + 2)y = \sin e^x$

c) Solve $(D^2 + 5D + 6)y = e^{-2x} \sec^2 x(1 + 2\tan x)$

d) Obtain Fourier series expansion of $f(x) = x$ in $(-1, 1)$

e) Find the Fourier series of the function

$$f(x) = \begin{cases} x, & 0 < x < \pi \\ 2\pi - x, & \pi < x < 2\pi \end{cases}$$

Q.4 Attempt the following. (Any Two) **10**

a) Solve the following differential equation $4\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} = 3u$ given that $u(0, y) = 3e^{-y}$ by the method of separation of variables.

b) Obtain half range cosine series for

$$f(x) = \begin{cases} x, & 0 < x < \frac{\pi}{2} \\ \pi - x, & \frac{\pi}{2} < x < \pi \end{cases}$$

c) Solve $(D^2 - D - 2)y = 2\log x + \frac{1}{x} + \frac{1}{x^2}$

Section – II

Q.5 Attempt the following. (Any Three) **09**

a) Find the probability that at most 4 defective bulbs will be found in a box of 200 bulbs if it is known that 2 percent of the bulbs are defective.

b) Calculate Spearman's coefficient of rank of correlation from the data on height and weight of 8 students.

Height (in inches)	60	62	64	66	68	70	72	74
Weight (in lbs.)	92	83	101	110	128	119	137	146

c) Calculate $L\left\{\int_0^t u.e^{-3u}\sin 4u\ du\right\}$

d) Calculate $L\left\{\cosh t\int_0^t e^u.\cosh u\ du\right\}$

e) Find an iterative formula for $\sqrt{N}$ and hence find the values of $\sqrt{35}$

Q.6 Attempt the following. (any Three) **09**

a) Evaluate $\int_0^\infty e^{-t}\left(\frac{\sin 3t+\sin 2t}{t}\right)dt$

b) Solve for a positive root by false position method.
$xe^x=\cos x$

c) Using Newton's-Raphson method, solve for a positive root of
$x^4-x=10$

d) A hospital switch board receives an average of 4 emergency calls in a 10 minutes interval. What is the Probability that:
i) there are at least 2 emergency calls
ii) there are exactly 3 emergency call in an interval of 10 minutes

e) Calculate $L\{t.e^{-2t}\sinh 4t\}$

Q.7 Attempt the following. (Any Two) **10**

a) If the mean life time and S.D. of battery cells are 12 hrs. and 3 hrs. What % of batteries will have life
i) between 10 and 14 hrs.
ii) More than 15 hrs.
iii) Less than 6 hrs.
(Given For S.N.V. z area from $z=0$ to $z=0.67$ is 0.2486, that from $z=0$ to $z=1$ is 0.3413 that from $z=0$ to $z=2$ is 0.4772)

b) Calculate $L^{-1}\left\{\frac{s^2}{(s^2+4)(s^2+9)}\right\}$ by using Convolution Method.

c) Compute the value of $\int_{0.2}^{1.4}(\sin x-\log x+e^x)dx$ taking $h=0.2$ and using Trapezoidal rule, Simpson's rule and Weddle's rule. Compare your results by integration.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Database Management Systems (BTN04408)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) An E-R diagram can graphically represent the _____.
a) Physical structure b) Logical structure
c) View structure d) Virtual structure

2) An entity set that does not have sufficient attributes to form a primary key is a _____.
a) strong entity set b) weak entity set
c) simple entity set d) primary entity set

3) Non leaf nodes of B+- tree structure form a _____.
a) Multilevel clustered indices b) Sparse indices
c) Multilevel dense indices d) multilevel sparse indices

4) A collection of interrelated records is called a _____.
a) Database
b) Spreadsheet
c) Management information system
d) Text file

5) Data Manipulation Language (DML) is not to _____.
a) Create information table in the Database
b) Insertion of new information into the Database
c) Deletion of information in the Database
d) Modification of information in the Database

6) The minimal set of super key is called _____.
a) Primary key b) Secondary key
c) Candidate key d) foreign key

7) A type of query that is placed within a WHERE or HAVING clause of another query is called _____.

a) Super query
b) Sub query
c) Master query
d) Multi-query

8) In SQL, which command is used to select only one copy of each set of duplicable rows _____.

a) SELECT DISTINCT
b) SELECT UNIQUE
c) SELECT DIFFERENT
d) All of the above

9) A _____ means that one record in a particular record type is related to only one record of another record type.

a) One-to-one relationship
b) One-to-many relationship
c) Many-to-one relationship
d) Many-to-many relationship

10) In SQL, which command(s) is (are) used to enable/disable all triggers on a table?

a) ALTER TRIGGERS
b) ALTER TABLE
c) MODIFY TRIGGERS IN TABLE
d) All of the above

11) In SQL, which command is used to changes data in a table?

a) UPDATE
b) INSERT
c) BROWSE
d) APPEND

12) An indexing operation _____.

a) Sorts a file using a single key
b) Sorts file using two keys
c) Establishes an index for a file
d) Both b) and c)

13) What are ACID properties of Transactions?

a) Atomicity, Consistency, Isolation, Database
b) Atomicity, Consistency, Isolation, Durability
c) Atomicity, Consistency, Inconsistent, Durability
d) Automatically, Concurrency, Isolation, Durability

14) A relation that has no partial dependencies is in which normal form _____.

a) 1NF
b) 2NF
c) 3NF
d) BCNF

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Database Management Systems (BTN04408)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain Database Architecture.

b) Explain Integrity constraints with example.

c) Explain group by and having clause with example.

d) Explain the different levels of abstraction.

e) Explain view Data.

Q.3 Attempt the following. (Any Two) **12**

a) Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer.
A university registrar's office maintains data about the following entities:

i) courses, including number, title, credits, syllabus, and prerequisites;
ii) course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom;
iii) students, including student-id, name, and program;
iv) Instructors, including identification number, name, department, and title.
v) Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled.

Construct an E-R diagram for the registrar's office. Document all assumptions that you make about the mapping constraints.

b) Explain Types of SQL commands with example.

c) Explain Relational Algebra operations with example.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain types of join operations with example.

b) What is BCNF? Explain a decomposition example.

c) Explain B+ tree with an example and how insertion works.

d) Explain ACID properties in DBMS.

e) Explain difference between dense and sparse index.

Q.5 Attempt the following. (Any Two) **12**

a) Explain Two phase locking protocol.

b) Define the following terms with an example.

i) Functional Dependency
ii) 3NF
iii) Static Hashing
iv) Types of Lock

c) Explain deadlock detection and prevention.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Database Management Systems (BTN04408)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) In SQL, which command is used to select only one copy of each set of duplicable rows _____.
a) SELECT DISTINCT b) SELECT UNIQUE
c) SELECT DIFFERENT d) All of the above

2) A _____ means that one record in a particular record type is related to only one record of another record type.
a) One-to-one relationship b) One-to-many relationship
c) Many-to-one relationship d) Many-to-many relationship

3) In SQL, which command(s) is (are) used to enable/disable all triggers on a table?
a) ALTER TRIGGERS
b) ALTER TABLE
c) MODIFY TRIGGERS IN TABLE
d) All of the above

4) In SQL, which command is used to changes data in a table?
a) UPDATE b) INSERT
c) BROWSE d) APPEND

5) An indexing operation _____.
a) Sorts a file using a single key b) Sorts file using two keys
c) Establishes an index for a file d) Both b) and c)

6) What are ACID properties of Transactions?
a) Atomicity, Consistency, Isolation, Database
b) Atomicity, Consistency, Isolation, Durability
c) Atomicity, Consistency, Inconsistent, Durability
d) Automatically, Concurrency, Isolation, Durability

7) A relation that has no partial dependencies is in which normal form _____.
a) 1NF b) 2NF
c) 3NF d) BCNF

8) An E-R diagram can graphically represent the _____.
a) Physical structure b) Logical structure
c) View structure d) Virtual structure

9) An entity set that does not have sufficient attributes to form a primary key is a _____.
a) strong entity set b) weak entity set
c) simple entity set d) primary entity set

10) Non leaf nodes of B+- tree structure form a _____.
a) Multilevel clustered indices b) Sparse indices
c) Multilevel dense indices d) multilevel sparse indices

11) A collection of interrelated records is called a _____.
a) Database
b) Spreadsheet
c) Management information system
d) Text file

12) Data Manipulation Language (DML) is not to _____.
a) Create information table in the Database
b) Insertion of new information into the Database
c) Deletion of information in the Database
d) Modification of information in the Database

13) The minimal set of super key is called _____.
a) Primary key b) Secondary key
c) Candidate key d) foreign key

14) A type of query that is placed within a WHERE or HAVING clause of another query is called _____.
a) Super query b) Sub query
c) Master query d) Multi-query

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Database Management Systems (BTN04408)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain Database Architecture.

b) Explain Integrity constraints with example.

c) Explain group by and having clause with example.

d) Explain the different levels of abstraction.

e) Explain view Data.

Q.3 Attempt the following. (Any Two) **12**

a) Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer.
A university registrar's office maintains data about the following entities:

i) courses, including number, title, credits, syllabus, and prerequisites;
ii) course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom;
iii) students, including student-id, name, and program;
iv) Instructors, including identification number, name, department, and title.
v) Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled.

Construct an E-R diagram for the registrar's office. Document all assumptions that you make about the mapping constraints.

b) Explain Types of SQL commands with example.

c) Explain Relational Algebra operations with example.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain types of join operations with example.

b) What is BCNF? Explain a decomposition example.

c) Explain B+ tree with an example and how insertion works.

d) Explain ACID properties in DBMS.

e) Explain difference between dense and sparse index.

Q.5 Attempt the following. (Any Two) **12**

a) Explain Two phase locking protocol.

b) Define the following terms with an example.

i) Functional Dependency
ii) 3NF
iii) Static Hashing
iv) Types of Lock

c) Explain deadlock detection and prevention.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Database Management Systems (BTN04408)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) In SQL, which command is used to changes data in a table?
a) UPDATE b) INSERT
c) BROWSE d) APPEND

2) An indexing operation _____.
a) Sorts a file using a single key b) Sorts file using two keys
c) Establishes an index for a file d) Both b) and c)

3) What are ACID properties of Transactions?
a) Atomicity, Consistency, Isolation, Database
b) Atomicity, Consistency, Isolation, Durability
c) Atomicity, Consistency, Inconsistent, Durability
d) Automatically, Concurrency, Isolation, Durability

4) A relation that has no partial dependencies is in which normal form _____.
a) 1NF b) 2NF
c) 3NF d) BCNF

5) An E-R diagram can graphically represent the _____.
a) Physical structure b) Logical structure
c) View structure d) Virtual structure

6) An entity set that does not have sufficient attributes to form a primary key is a _____.
a) strong entity set b) weak entity set
c) simple entity set d) primary entity set

7) Non leaf nodes of B+- tree structure form a _____.
a) Multilevel clustered indices b) Sparse indices
c) Multilevel dense indices d) multilevel sparse indices

8) A collection of interrelated records is called a _____.
   a) Database
   b) Spreadsheet
   c) Management information system
   d) Text file

9) Data Manipulation Language (DML) is not to _____.
   a) Create information table in the Database
   b) Insertion of new information into the Database
   c) Deletion of information in the Database
   d) Modification of information in the Database

10) The minimal set of super key is called _____.
   a) Primary key
   b) Secondary key
   c) Candidate key
   d) foreign key

11) A type of query that is placed within a WHERE or HAVING clause of another query is called _____.
   a) Super query
   b) Sub query
   c) Master query
   d) Multi-query

12) In SQL, which command is used to select only one copy of each set of duplicable rows _____.
   a) SELECT DISTINCT
   b) SELECT UNIQUE
   c) SELECT DIFFERENT
   d) All of the above

13) A _____ means that one record in a particular record type is related to only one record of another record type.
   a) One-to-one relationship
   b) One-to-many relationship
   c) Many-to-one relationship
   d) Many-to-many relationship

14) In SQL, which command(s) is (are) used to enable/disable all triggers on a table?
   a) ALTER TRIGGERS
   b) ALTER TABLE
   c) MODIFY TRIGGERS IN TABLE
   d) All of the above

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Database Management Systems (BTN04408)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain Database Architecture.

b) Explain Integrity constraints with example.

c) Explain group by and having clause with example.

d) Explain the different levels of abstraction.

e) Explain view Data.

Q.3 Attempt the following. (Any Two) **12**

a) Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer.
A university registrar's office maintains data about the following entities:

i) courses, including number, title, credits, syllabus, and prerequisites;
ii) course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom;
iii) students, including student-id, name, and program;
iv) Instructors, including identification number, name, department, and title.
v) Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled.

Construct an E-R diagram for the registrar's office. Document all assumptions that you make about the mapping constraints.

b) Explain Types of SQL commands with example.

c) Explain Relational Algebra operations with example.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain types of join operations with example.

b) What is BCNF? Explain a decomposition example.

c) Explain B+ tree with an example and how insertion works.

d) Explain ACID properties in DBMS.

e) Explain difference between dense and sparse index.

Q.5 Attempt the following. (Any Two) **12**

a) Explain Two phase locking protocol.

b) Define the following terms with an example.

i) Functional Dependency
ii) 3NF
iii) Static Hashing
iv) Types of Lock

c) Explain deadlock detection and prevention.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Database Management Systems (BTN04408)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) The minimal set of super key is called _____.
a) Primary key b) Secondary key
c) Candidate key d) foreign key

2) A type of query that is placed within a WHERE or HAVING clause of another query is called _____.
a) Super query b) Sub query
c) Master query d) Multi-query

3) In SQL, which command is used to select only one copy of each set of duplicable rows _____.
a) SELECT DISTINCT b) SELECT UNIQUE
c) SELECT DIFFERENT d) All of the above

4) A _____ means that one record in a particular record type is related to only one record of another record type.
a) One-to-one relationship b) One-to-many relationship
c) Many-to-one relationship d) Many-to-many relationship

5) In SQL, which command(s) is (are) used to enable/disable all triggers on a table?
a) ALTER TRIGGERS
b) ALTER TABLE
c) MODIFY TRIGGERS IN TABLE
d) All of the above

6) In SQL, which command is used to changes data in a table?
a) UPDATE b) INSERT
c) BROWSE d) APPEND

7) An indexing operation _____.
   a) Sorts a file using a single key
   b) Sorts file using two keys
   c) Establishes an index for a file
   d) Both b) and c)

8) What are ACID properties of Transactions?
   a) Atomicity, Consistency, Isolation, Database
   b) Atomicity, Consistency, Isolation, Durability
   c) Atomicity, Consistency, Inconsistent, Durability
   d) Automatically, Concurrency, Isolation, Durability

9) A relation that has no partial dependencies is in which normal form _____.
   a) 1NF
   b) 2NF
   c) 3NF
   d) BCNF

10) An E-R diagram can graphically represent the _____.
   a) Physical structure
   b) Logical structure
   c) View structure
   d) Virtual structure

11) An entity set that does not have sufficient attributes to form a primary key is a _____.
   a) strong entity set
   b) weak entity set
   c) simple entity set
   d) primary entity set

12) Non leaf nodes of B+- tree structure form a _____.
   a) Multilevel clustered indices
   b) Sparse indices
   c) Multilevel dense indices
   d) multilevel sparse indices

13) A collection of interrelated records is called a _____.
   a) Database
   b) Spreadsheet
   c) Management information system
   d) Text file

14) Data Manipulation Language (DML) is not to _____.
   a) Create information table in the Database
   b) Insertion of new information into the Database
   c) Deletion of information in the Database
   d) Modification of information in the Database

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Database Management Systems (BTN04408)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain Database Architecture.

b) Explain Integrity constraints with example.

c) Explain group by and having clause with example.

d) Explain the different levels of abstraction.

e) Explain view Data.

Q.3 Attempt the following. (Any Two) **12**

a) Draw an ER Diagram for following schema? State the assumption about cardinality and other constraints in the answer.
A university registrar's office maintains data about the following entities:

i) courses, including number, title, credits, syllabus, and prerequisites;
ii) course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom;
iii) students, including student-id, name, and program;
iv) Instructors, including identification number, name, department, and title.
v) Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled.

Construct an E-R diagram for the registrar's office. Document all assumptions that you make about the mapping constraints.

b) Explain Types of SQL commands with example.

c) Explain Relational Algebra operations with example.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain types of join operations with example.

b) What is BCNF? Explain a decomposition example.

c) Explain B+ tree with an example and how insertion works.

d) Explain ACID properties in DBMS.

e) Explain difference between dense and sparse index.

Q.5 Attempt the following. (Any Two) **12**

a) Explain Two phase locking protocol.

b) Define the following terms with an example.

i) Functional Dependency
ii) 3NF
iii) Static Hashing
iv) Types of Lock

c) Explain deadlock detection and prevention.

SLR-QH-79

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Discrete Mathematical Structure (CSEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) $\mathrm{A} \rightarrow (\mathrm{A} \vee \mathrm{q})$ is a _____.
a) Tautology b) Contradiction
c) Contingency d) None of the mentioned

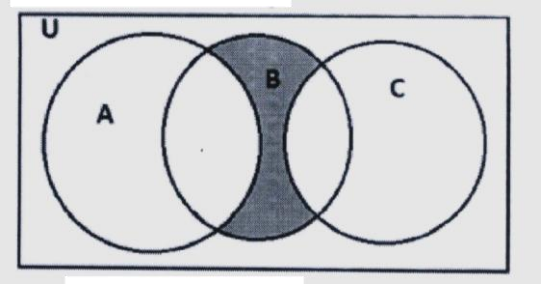
2) $\sim A \vee \sim B$ is logically equivalent to?
a) $\sim A \rightarrow \sim B$ b) $\sim A \wedge \sim B$
c) $A \rightarrow \sim B$ d) $B \vee A$

3) The contrapositive of $p \rightarrow q$ is the proposition of _____.
a) $\neg p \rightarrow \neg p$ b) $\neg q \rightarrow \neg p$
c) $q \rightarrow p$ d) $\neg q \rightarrow p$

4) PCNF is also called _____.
a) sum of product canonical form
b) product of sum canonical form
c) sum canonical form
d) product canonical form

5) What is the Cartesian product of $A = \{1,2\}$ and $B = \{a, b\}$?
a) $\{<1, a>, <1, b>, <2, a>, <b, b>\}$
b) $\{<1, 1>, <2, 2>, <a, a>, <b, b>\}$
c) $\{<1, a>, <2, a>, <1, b>, <2, b>\}$
d) $\{<1, 1>, <a, a>, <2, a>, <1, b>\}$

6) The shaded area of figure is best described by?



a) A' (Complement of A)
b) $B - (A \cap B) - (C \cap B)$
c) $A \cap C \cap B$
d) B' (Complement of B)

7) If set C is $\{1, 2, 3, 4\}$ and $C - D = \Phi$ then set D can be _____.
a) $\{1, 2, 4, 5\}$
b) $\{1, 2, 3\}$
c) $\{1, 2, 3, 4, 5\}$
d) None of the mentioned

8) The binary relation $\{(1,1), (2,1), (2,2), (2,3), (2,4), (3,1), (3,2)\}$ on the set $\{1, 2, 3\}$ is _____.
a) reflective, symmetric and transitive
b) irreflexive, symmetric and transitive
c) neither reflective, nor irreflexive but transitive
d) irreflexive and antisymmetric

9) Determine the partitions of the set $\{3, 4, 5, 6, 7\}$ from the following subsets.
a) $\{3,5\}, \{3,6,7\}, \{4,5,6\}$
b) $\{3\}, \{4,6\}, \{5\}, \{7\}$
c) $\{3,4,6\}, \{7\}$
d) $\{5,6\}, \{5,7\}$

10) For an inverse to exist it is necessary that a function should be _____.
a) injection
b) bijection
c) surjection
d) None of the mentioned

11) Hasse diagrams are drawn for _____.
a) Boolean Algebra
b) POSET
c) Lattices
d) For all

12) A group $(M, ^*)$ is said to be abelian if _____.
a) $(x + y) = (y + x)$
b) $(x^* y) = (y^* x)$
c) $(x + y) = x$
d) $(y^* x) = (x + y)$

13) A monoid is called a group if _____.
a) $(a^* a) = a = (a + c)$
b) $(a^* c) = (a + c)$
c) $(a + c) = a$
d) $(a^* c) = (c^* a) = e$

14) A cyclic group is always _____.
a) abelian group
b) monoid
c) semigroup
d) subgroup

SLR-QH-79

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Discrete Mathematical Structure (CSEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve the following. (Any Three) **12**

a) Explain in detail composition of binary relation with example.

b) Given the relation R on set $X = \{1, 2, \ldots\ldots, 7\}$
$R = \{< x, y > | (x - y)$ is divisible by $3\}$, show that R is equivalence relation.

c) Define following terms
i) Contradiction
ii) Well Formed Formula

d) What is Tautological implication? Show the following implication.
$\neg P \wedge (P \vee Q) \Rightarrow Q$

Q.3 Solve the following. (Any Two) **16**

a) What is binary relation? List and define the properties of binary relation with example.

b) What is partial ordering? Explain in detail partial ordered set representation with Hasse diagram.
Let $X = \{2, 3, 6, 12, 24, 36\}$ and relation $\leq$ be such that $x \leq y$ if x divides y. Draw Hasse diagram of $< X, \leq >$.

c) Obtain the PDNF of I and PCNF of II following statement formulas
i) $(P \wedge Q) \vee (\neg P \wedge R) \vee (Q \wedge R)$
ii) $(\neg P \rightarrow R) \wedge (Q \leftrightarrow P)$

Section – II

Q.4 Solve the following. (Any Three) **12**

a) Define semigroup and explain the homomorphism of semigroup with example.

b) Write note on the following
i) subalgebra ii) sub-lattice

c) Define and explain in detail Inverse function.

d) Define group with an example.

Q.5 Solve the following. (Any Two) **16**

a) Define Algebraic System & State its properties.

b) Define and explain in detail Composition of functions
Let $X = \{1, 2, 3\}$ and $f, g, h,$ and s be functions from X to X given by
$f = \{< 1,2 >, < 2,3 >, < 3,1 >\}, g = \{< 1,2 >, < 2,1 >, < 3,3 >\}$
$h = \{< 1,1 >, < 2,2 >, < 3,1 >\}, s = \{< 1,1 >, < 2,2 >, < 3,3 >\}$
find fog, gof, fohog, sog, gos, sos and fos

c) Explain with example function and their types.

SLR-QH-79

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Discrete Mathematical Structure (CSEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The binary relation $\{(1,1),(2,1),(2,2),(2,3),(2,4),(3,1),(3,2)\}$ on the set $\{1,2,3\}$ is _____.
a) reflective, symmetric and transitive
b) irreflexive, symmetric and transitive
c) neither reflective, nor irreflexive but transitive
d) irreflexive and antisymmetric

2) Determine the partitions of the set $\{3,4,5,6,7\}$ from the following subsets.
a) $\{3,5\},\{3,6,7\},\{4,5,6\}$ b) $\{3\},\{4,6\},\{5\},\{7\}$
c) $\{3,4,6\},\{7\}$ d) $\{5,6\},\{5,7\}$

3) For an inverse to exist it is necessary that a function should be _____.
a) injection b) bijection
c) surjection d) None of the mentioned

4) Hasse diagrams are drawn for _____.
a) Boolean Algebra b) POSET
c) Lattices d) For all

5) A group $(M,^*)$ is said to be abelian if _____.
a) $(x+y)=(y+x)$ b) $(x^*y)=(y^*x)$
c) $(x+y)=x$ d) $(y^*x)=(x+y)$

6) A monoid is called a group if _____.
a) $(a^*a)=a=(a+c)$ b) $(a^*c)=(a+c)$
c) $(a+c)=a$ d) $(a^*c)=(c^*a)=e$

7) A cyclic group is always _____.

a) abelian group
b) monoid
c) semigroup
d) subgroup

8) $\mathrm{A} \rightarrow (\mathrm{A} \vee \mathrm{q})$ is a _____.

a) Tautology
b) Contradiction
c) Contingency
d) None of the mentioned

9) $\sim A \vee \sim B$ is logically equivalent to?

a) $\sim A \rightarrow \sim B$
b) $\sim A \wedge \sim B$
c) $A \rightarrow \sim B$
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10) The contrapositive of $p \rightarrow q$ is the proposition of _____.

a) $\neg p \rightarrow \neg p$
b) $\neg q \rightarrow \neg p$
c) $q \rightarrow p$
d) $\neg q \rightarrow p$

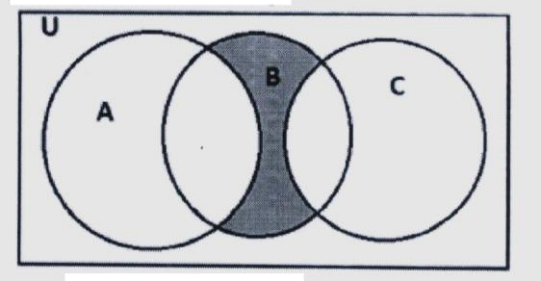
11) PCNF is also called _____.

a) sum of product canonical form
b) product of sum canonical form
c) sum canonical form
d) product canonical form

12) What is the Cartesian product of $A = \{1,2\}$ and $B = \{a, b\}$?

a) $\{< 1, a >, < 1, b >, < 2, a >, < b, b >\}$
b) $\{< 1, 1 >, < 2, 2 >, < a, a >, < b, b >\}$
c) $\{< 1, a >, < 2, a >, < 1, b >, < 2, b >\}$
d) $\{< 1, 1 >, < a, a >, < 2, a >, < 1, b >\}$

13) The shaded area of figure is best described by?



a) A' (Complement of A)
b) $B - (A \cap B) - (C \cap B)$
c) $A \cap C \cap B$
d) B' (Complement of B)

14) If set C is $\{1, 2, 3, 4\}$ and $C - D = \Phi$ then set D can be _____.

a) $\{1, 2, 4, 5\}$
b) $\{1, 2, 3\}$
c) $\{1, 2, 3, 4, 5\}$
d) None of the mentioned

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Discrete Mathematical Structure (CSEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve the following. (Any Three) **12**

a) Explain in detail composition of binary relation with example.

b) Given the relation R on set $X = \{1, 2, \ldots\ldots, 7\}$
$R = \{< x, y > | (x - y)$ is divisible by $3\}$, show that R is equivalence relation.

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i) Contradiction
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d) What is Tautological implication? Show the following implication.
$\neg P \wedge (P \vee Q) \Rightarrow Q$

Q.3 Solve the following. (Any Two) **16**

a) What is binary relation? List and define the properties of binary relation with example.

b) What is partial ordering? Explain in detail partial ordered set representation with Hasse diagram.
Let $X = \{2, 3, 6, 12, 24, 36\}$ and relation $\leq$ be such that $x \leq y$ if x divides y. Draw Hasse diagram of $< X, \leq >$.

c) Obtain the PDNF of I and PCNF of II following statement formulas
i) $(P \wedge Q) \vee (\neg P \wedge R) \vee (Q \wedge R)$
ii) $(\neg P \rightarrow R) \wedge (Q \leftrightarrow P)$

Section – II

Q.4 Solve the following. (Any Three) **12**

a) Define semigroup and explain the homomorphism of semigroup with example.

b) Write note on the following
i) subalgebra ii) sub-lattice

c) Define and explain in detail Inverse function.

d) Define group with an example.

Q.5 Solve the following. (Any Two) **16**

a) Define Algebraic System & State its properties.

b) Define and explain in detail Composition of functions
Let $X = \{1, 2, 3\}$ and $f, g, h,$ and s be functions from X to X given by
$f = \{< 1,2 >, < 2,3 >, < 3,1 >\}, g = \{< 1,2 >, < 2,1 >, < 3,3 >\}$
$h = \{< 1,1 >, < 2,2 >, < 3,1 >\}, s = \{< 1,1 >, < 2,2 >, < 3,3 >\}$
find fog, gof, fohog, sog, gos, sos and fos

c) Explain with example function and their types.

SLR-QH-79

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Discrete Mathematical Structure (CSEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Hasse diagrams are drawn for _____.
a) Boolean Algebra b) POSET
c) Lattices d) For all

2) A group $(M,^*)$ is said to be abelian if _____.
a) $(x+y)=(y+x)$ b) $(x^*y)=(y^*x)$
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3) A monoid is called a group if _____.
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4) A cyclic group is always _____.
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5) $\mathrm{A}\rightarrow(\mathrm{A}\vee\mathrm{q})$ is a _____.
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6) $\sim A\vee\sim B$ is logically equivalent to?
a) $\sim A\rightarrow\sim B$ b) $\sim A\wedge\sim B$
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7) The contrapositive of $p\rightarrow q$ is the proposition of _____.
a) $\neg p\rightarrow\neg p$ b) $\neg q\rightarrow\neg p$
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8) PCNF is also called _____.
a) sum of product canonical form
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9) What is the Cartesian product of $A = \{1,2\}$ and $B = \{a, b\}$?
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b) $\{< 1, 1 >, < 2, 2 >, < a, a >, < b, b >\}$
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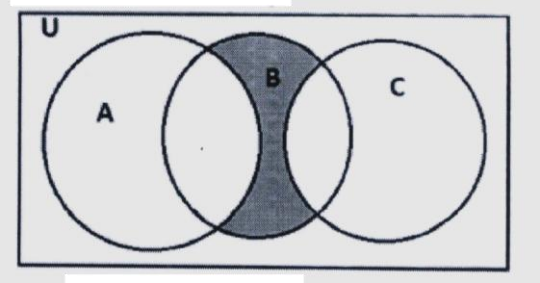

a) A' (Complement of A)
b) $B - (A \cap B) - (C \cap B)$
c) $A \cap C \cap B$
d) B' (Complement of B)

11) If set C is $\{1, 2, 3, 4\}$ and $C - D = \Phi$ then set D can be _____.
a) $\{1, 2, 4, 5\}$
b) $\{1, 2, 3\}$
c) $\{1, 2, 3, 4, 5\}$
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12) The binary relation $\{(1,1), (2,1), (2,2), (2,3), (2,4), (3,1), (3,2)\}$ on the set $\{1, 2, 3\}$ is _____.
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13) Determine the partitions of the set $\{3, 4, 5, 6, 7\}$ from the following subsets.
a) $\{3,5\}, \{3,6,7\}, \{4,5,6\}$
b) $\{3\}, \{4,6\}, \{5\}, \{7\}$
c) $\{3,4,6\}, \{7\}$
d) $\{5,6\}, \{5,7\}$

14) For an inverse to exist it is necessary that a function should be _____.
a) injection
b) bijection
c) surjection
d) None of the mentioned

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Discrete Mathematical Structure (CSEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve the following. (Any Three) **12**

a) Explain in detail composition of binary relation with example.

b) Given the relation R on set $X = \{1, 2, \ldots\ldots, 7\}$
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c) Define following terms
i) Contradiction
ii) Well Formed Formula

d) What is Tautological implication? Show the following implication.
$\neg P \wedge (P \vee Q) \Rightarrow Q$

Q.3 Solve the following. (Any Two) **16**

a) What is binary relation? List and define the properties of binary relation with example.

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c) Obtain the PDNF of I and PCNF of II following statement formulas
i) $(P \wedge Q) \vee (\neg P \wedge R) \vee (Q \wedge R)$
ii) $(\neg P \rightarrow R) \wedge (Q \leftrightarrow P)$

Section – II

Q.4 Solve the following. (Any Three) **12**

a) Define semigroup and explain the homomorphism of semigroup with example.

b) Write note on the following
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c) Define and explain in detail Inverse function.

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Q.5 Solve the following. (Any Two) **16**

a) Define Algebraic System & State its properties.

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find fog, gof, fohog, sog, gos, sos and fos

c) Explain with example function and their types.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Discrete Mathematical Structure (CSEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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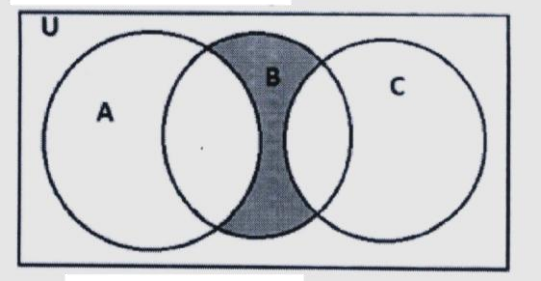
MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The shaded area of figure is best described by?



a) A' (Complement of A) b) $B - (A \cap B) - (C \cap B)$
c) $A \cap C \cap B$ d) B' (Complement of B)

2) If set C is $\{1, 2, 3, 4\}$ and $C - D = \Phi$ then set D can be _____.
a) $\{1, 2, 4, 5\}$ b) $\{1, 2, 3\}$
c) $\{1, 2, 3, 4, 5\}$ d) None of the mentioned

3) The binary relation $\{(1,1), (2,1), (2,2), (2,3), (2,4), (3,1), (3,2)\}$ on the set $\{1, 2, 3\}$ is _____.
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a) $\neg p\rightarrow\neg p$ b) $\neg q\rightarrow\neg p$
c) $q\rightarrow p$ d) $\neg q\rightarrow p$

13) PCNF is also called _____.
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b) product of sum canonical form
c) sum canonical form
d) product canonical form

14) What is the Cartesian product of $A=\{1,2\}$ and $B=\{a,b\}$?
a) $\{<1,a>,<1,b>,<2,a>,<b,b>\}$
b) $\{<1,1>,<2,2>,<a,a>,<b,b>\}$
c) $\{<1,a>,<2,a>,<1,b>,<2,b>\}$
d) $\{<1,1>,<a,a>,<2,a>,<1,b>\}$

SLR-QH-79

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Discrete Mathematical Structure (CSEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Solve the following. (Any Three) **12**

a) Explain in detail composition of binary relation with example.

b) Given the relation R on set $X = \{1, 2, \ldots\ldots, 7\}$
$R = \{< x, y > | (x - y)$ is divisible by $3\}$, show that R is equivalence relation.

c) Define following terms
i) Contradiction
ii) Well Formed Formula

d) What is Tautological implication? Show the following implication.
$\neg P \wedge (P \vee Q) \Rightarrow Q$

Q.3 Solve the following. (Any Two) **16**

a) What is binary relation? List and define the properties of binary relation with example.

b) What is partial ordering? Explain in detail partial ordered set representation with Hasse diagram.
Let $X = \{2, 3, 6, 12, 24, 36\}$ and relation $\leq$ be such that $x \leq y$ if x divides y. Draw Hasse diagram of $< X, \leq >$.

c) Obtain the PDNF of I and PCNF of II following statement formulas
i) $(P \wedge Q) \vee (\neg P \wedge R) \vee (Q \wedge R)$
ii) $(\neg P \rightarrow R) \wedge (Q \leftrightarrow P)$

Section – II

Q.4 Solve the following. (Any Three) **12**

a) Define semigroup and explain the homomorphism of semigroup with example.

b) Write note on the following
i) subalgebra ii) sub-lattice

c) Define and explain in detail Inverse function.

d) Define group with an example.

Q.5 Solve the following. (Any Two) **16**

a) Define Algebraic System & State its properties.

b) Define and explain in detail Composition of functions
Let $X = \{1, 2, 3\}$ and $f, g, h,$ and s be functions from X to X given by
$f = \{< 1,2 >, < 2,3 >, < 3,1 >\}, g = \{< 1,2 >, < 2,1 >, < 3,3 >\}$
$h = \{< 1,1 >, < 2,2 >, < 3,1 >\}, s = \{< 1,1 >, < 2,2 >, < 3,3 >\}$
find fog, gof, fohog, sog, gos, sos and fos

c) Explain with example function and their types.

SLR-QH-80

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Computer Graphics (CSEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The memory used to store pixel intensity values for the display is called, _____.
a) Frame buffer b) Display file
c) Refresh buffer d) Both a & c

2) The aspect ratio of a display device is defined as, _____.
a) Height/Width b) Width/Height
c) Number of pixels d) None of the above

3) The process of determining the suitable or appropriate pixels for representing image or graphic object is called _____.
a) Animation b) Rasterization
c) Scan-Conversion d) Quantization

4) In the generation of circle by Bresenhan's algorithm, it is simple to generate _____.
a) All octants
b) One octant first and others by successive reflection
c) One octant first and others by successive rotation
d) One octant first and others by successive translation

5) The Bezier curve is defined by a set of, _____.
a) Midpoints b) Line segments
c) Control points d) Intersection points

6) The transformation that changes the coordinate positions of an object along a circular path is called _____.
a) Translation b) Scaling
c) Rotation d) Reflection

7) Which of the following techniques is used in Midpoint Subdivision algorithm?

a) Binary search
b) Bubble sort
c) Linear search
d) Sequential search

8) In Cohen-Sutherland line clipping algorithm, each region code has, ____.

a) 2 bits
b) 6 bits
c) 4 bits
d) 8 bits

9) _____ number of bits are used for representing each subregion of the Cohen- Sutherland line clipping algorithm.

a) 1
b) 2
c) 3
d) 4

10) If scaling factors Sx = Sy, then the scaling is, _____.

a) Uniform scaling
b) Differential scaling
c) Non-uniform scaling
d) Reflection

11) In Warnock algorithm, the polygon is called as surrounding, if it completely ____ the window.

a) outside
b) contains
c) intersects
d) None of above

12) The technique of using a minimum number of intensity levels to obtain increased visual resolution is called as _____.

a) Dithering
b) Halftoning
c) Depth cueing
d) Rendering

13) _____ control points are the points which decides the local shape of a curve.

a) local
b) global
c) interpolation
d) None

14) An area on a display device to which a window is mapped is called ___.

a) Window
b) View-port
c) Monitor
d) Workstation

SLR-QH-80

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Computer Graphics (CSEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) Explain Random Scan display.

b) Explain 2D Rotation.

c) Define Rasterization and Resolution.

d) Scale the polygon with coordinates P(2,5), Q(7,10), C(10,2) by 2 units in both x and 3 units in y direction.

e) Write Homogeneous matrices for Translation, Scaling, Rotation.

Q.3 Answer the following questions. (Any One) **06**

a) Consider a line from (0,0) to (-5,-5). Use DDA line drawing algorithm to rasterize this line. (Assume suitable data wherever necessary)

b) Write a Bresenham's Circle generation algorithm.

Q.4 Explain the following: **06**

i) Multiple Transformation
ii) Rotation about an arbitrary point

SECTION – II

Q.5 Solve Any Four. **16**

a) Explain Display file compilation.

b) Explain Viewing transformation in detail.

c) Explain properties of Bezier curve.

d) Explain the concept of Fractal lines & surfaces.

e) Explain Halftoning.

Q.6 Solve Any One. **06**

a) Explain Warnock algorithm.

b) Define antialiasing? Explain different techniques of antialiasing.

Q.7 Attempt the following **06**

Explain Parametric and non-parametric curves.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Computer Graphics (CSEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In Cohen-Sutherland line clipping algorithm, each region code has, ____.
a) 2 bits b) 6 bits
c) 4 bits d) 8 bits

2) _____ number of bits are used for representing each subregion of the Cohen- Sutherland line clipping algorithm.
a) 1 b) 2
c) 3 d) 4

3) If scaling factors Sx = Sy, then the scaling is, _____.
a) Uniform scaling b) Differential scaling
c) Non-uniform scaling d) Reflection

4) In Warnock algorithm, the polygon is called as surrounding, if it completely ____ the window.
a) outside b) contains
c) intersects d) None of above

5) The technique of using a minimum number of intensity levels to obtain increased visual resolution is called as _____.
a) Dithering b) Halftoning
c) Depth cueing d) Rendering

6) _____ control points are the points which decides the local shape of a curve.
a) local b) global
c) interpolation d) None

7) An area on a display device to which a window is mapped is called ___.
a) Window b) View-port
c) Monitor d) Workstation

8) The memory used to store pixel intensity values for the display is called, _____.
a) Frame buffer b) Display file
c) Refresh buffer d) Both a & c

9) The aspect ratio of a display device is defined as, _____.
a) Height/Width b) Width/Height
c) Number of pixels d) None of the above

10) The process of determining the suitable or appropriate pixels for representing image or graphic object is called _____.
a) Animation b) Rasterization
c) Scan-Conversion d) Quantization

11) In the generation of circle by Bresenhan's algorithm, it is simple to generate _____.
a) All octants
b) One octant first and others by successive reflection
c) One octant first and others by successive rotation
d) One octant first and others by successive translation

12) The Bezier curve is defined by a set of, _____.
a) Midpoints b) Line segments
c) Control points d) Intersection points

13) The transformation that changes the coordinate positions of an object along a circular path is called _____.
a) Translation b) Scaling
c) Rotation d) Reflection

14) Which of the following techniques is used in Midpoint Subdivision algorithm?
a) Binary search b) Bubble sort
c) Linear search d) Sequential search

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Computer Graphics (CSEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) Explain Random Scan display.

b) Explain 2D Rotation.

c) Define Rasterization and Resolution.

d) Scale the polygon with coordinates P(2,5), Q(7,10), C(10,2) by 2 units in both x and 3 units in y direction.

e) Write Homogeneous matrices for Translation, Scaling, Rotation.

Q.3 Answer the following questions. (Any One) **06**

a) Consider a line from (0,0) to (-5,-5). Use DDA line drawing algorithm to rasterize this line. (Assume suitable data wherever necessary)

b) Write a Bresenham's Circle generation algorithm.

Q.4 Explain the following: **06**

i) Multiple Transformation
ii) Rotation about an arbitrary point

SECTION – II

Q.5 Solve Any Four. **16**

a) Explain Display file compilation.

b) Explain Viewing transformation in detail.

c) Explain properties of Bezier curve.

d) Explain the concept of Fractal lines & surfaces.

e) Explain Halftoning.

Q.6 Solve Any One. **06**

a) Explain Warnock algorithm.

b) Define antialiasing? Explain different techniques of antialiasing.

Q.7 Attempt the following **06**

Explain Parametric and non-parametric curves.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Computer Graphics (CSEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In Warnock algorithm, the polygon is called as surrounding, if it completely ____ the window.
a) outside b) contains
c) intersects d) None of above

2) The technique of using a minimum number of intensity levels to obtain increased visual resolution is called as _____.
a) Dithering b) Halftoning
c) Depth cueing d) Rendering

3) _____ control points are the points which decides the local shape of a curve.
a) local b) global
c) interpolation d) None

4) An area on a display device to which a window is mapped is called ___.
a) Window b) View-port
c) Monitor d) Workstation

5) The memory used to store pixel intensity values for the display is called, _____.
a) Frame buffer b) Display file
c) Refresh buffer d) Both a & c

6) The aspect ratio of a display device is defined as, _____.
a) Height/Width b) Width/Height
c) Number of pixels d) None of the above

7) The process of determining the suitable or appropriate pixels for representing image or graphic object is called _____.

a) Animation b) Rasterization
c) Scan-Conversion d) Quantization

8) In the generation of circle by Bresenhan's algorithm, it is simple to generate _____.

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b) One octant first and others by successive reflection
c) One octant first and others by successive rotation
d) One octant first and others by successive translation

9) The Bezier curve is defined by a set of, _____.

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c) Control points d) Intersection points

10) The transformation that changes the coordinate positions of an object along a circular path is called _____.

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c) Rotation d) Reflection

11) Which of the following techniques is used in Midpoint Subdivision algorithm?

a) Binary search b) Bubble sort
c) Linear search d) Sequential search

12) In Cohen-Sutherland line clipping algorithm, each region code has, ____.

a) 2 bits b) 6 bits
c) 4 bits d) 8 bits

13) _____ number of bits are used for representing each subregion of the Cohen- Sutherland line clipping algorithm.

a) 1 b) 2
c) 3 d) 4

14) If scaling factors Sx = Sy, then the scaling is, _____.

a) Uniform scaling b) Differential scaling
c) Non-uniform scaling d) Reflection

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Computer Graphics (CSEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) Explain Random Scan display.

b) Explain 2D Rotation.

c) Define Rasterization and Resolution.

d) Scale the polygon with coordinates P(2,5), Q(7,10), C(10,2) by 2 units in both x and 3 units in y direction.

e) Write Homogeneous matrices for Translation, Scaling, Rotation.

Q.3 Answer the following questions. (Any One) **06**

a) Consider a line from (0,0) to (-5,-5). Use DDA line drawing algorithm to rasterize this line. (Assume suitable data wherever necessary)

b) Write a Bresenham's Circle generation algorithm.

Q.4 Explain the following: **06**

i) Multiple Transformation
ii) Rotation about an arbitrary point

SECTION – II

Q.5 Solve Any Four. **16**

a) Explain Display file compilation.

b) Explain Viewing transformation in detail.

c) Explain properties of Bezier curve.

d) Explain the concept of Fractal lines & surfaces.

e) Explain Halftoning.

Q.6 Solve Any One. **06**

a) Explain Warnock algorithm.

b) Define antialiasing? Explain different techniques of antialiasing.

Q.7 Attempt the following **06**

Explain Parametric and non-parametric curves.

Seat No.	

Set | S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Computer Graphics (CSEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The transformation that changes the coordinate positions of an object along a circular path is called _____.
a) Translation b) Scaling
c) Rotation d) Reflection

2) Which of the following techniques is used in Midpoint Subdivision algorithm?
a) Binary search b) Bubble sort
c) Linear search d) Sequential search

3) In Cohen-Sutherland line clipping algorithm, each region code has, ____.
a) 2 bits b) 6 bits
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4) _____ number of bits are used for representing each subregion of the Cohen- Sutherland line clipping algorithm.
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c) 3 d) 4

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c) Non-uniform scaling d) Reflection

6) In Warnock algorithm, the polygon is called as surrounding, if it completely ____ the window.
a) outside b) contains
c) intersects d) None of above

7) The technique of using a minimum number of intensity levels to obtain increased visual resolution is called as _____.
a) Dithering b) Halftoning
c) Depth cueing d) Rendering

8) _____ control points are the points which decides the local shape of a curve.
a) local b) global
c) interpolation d) None

9) An area on a display device to which a window is mapped is called ___.
a) Window b) View-port
c) Monitor d) Workstation

10) The memory used to store pixel intensity values for the display is called, _____.
a) Frame buffer b) Display file
c) Refresh buffer d) Both a & c

11) The aspect ratio of a display device is defined as, _____.
a) Height/Width b) Width/Height
c) Number of pixels d) None of the above

12) The process of determining the suitable or appropriate pixels for representing image or graphic object is called _____.
a) Animation b) Rasterization
c) Scan-Conversion d) Quantization

13) In the generation of circle by Bresenhan's algorithm, it is simple to generate _____.
a) All octants
b) One octant first and others by successive reflection
c) One octant first and others by successive rotation
d) One octant first and others by successive translation

14) The Bezier curve is defined by a set of, _____.
a) Midpoints b) Line segments
c) Control points d) Intersection points

SLR-QH-80

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Computer Graphics (CSEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) Explain Random Scan display.

b) Explain 2D Rotation.

c) Define Rasterization and Resolution.

d) Scale the polygon with coordinates P(2,5), Q(7,10), C(10,2) by 2 units in both x and 3 units in y direction.

e) Write Homogeneous matrices for Translation, Scaling, Rotation.

Q.3 Answer the following questions. (Any One) **06**

a) Consider a line from (0,0) to (-5,-5). Use DDA line drawing algorithm to rasterize this line. (Assume suitable data wherever necessary)

b) Write a Bresenham's Circle generation algorithm.

Q.4 Explain the following: **06**

i) Multiple Transformation
ii) Rotation about an arbitrary point

SECTION – II

Q.5 Solve Any Four. **16**

a) Explain Display file compilation.

b) Explain Viewing transformation in detail.

c) Explain properties of Bezier curve.

d) Explain the concept of Fractal lines & surfaces.

e) Explain Halftoning.

Q.6 Solve Any One. **06**

a) Explain Warnock algorithm.

b) Define antialiasing? Explain different techniques of antialiasing.

Q.7 Attempt the following **06**

Explain Parametric and non-parametric curves.

SLR-QH-81

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Data Structure (CSEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Figures must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Complexity of linear search algorithm is _____.
a) O(n) b) O(logn)
c) O(n2) d) O(n logn)

2) Which of the following sorting algorithm is of divide and conquer type?
a) Quick b) Radix
c) Selection d) Merge

3) If several elements are competing for the same bucket in the hash table, what's called?
a) Diffusion b) Replication
c) Collision d) Duplication

4) The data structure required to check whether an expression contains balanced parenthesis is?
a) Stack b) Queue
c) Linked List d) Tree

5) Process of removing an element from stack is called _____.
a) Create b) Push
c) Pop d) Evaluation

6) In a Queue, if a user tries to remove an element from empty Queue it is called _____.
a) Underflow b) Empty collection
c) Overflow d) Garbage Collection

7) In circular linked list, insertion of node requires modification of?
   a) One pointer
   b) Two pointer
   c) Three pointer
   d) Four pointer

8) The number of edges from the node to the deepest leaf is called _____ of the tree.
   a) Height
   b) Depth
   c) Length
   d) Width

9) What is degree of a node in a tree is _____.
   a) The number of children node has
   b) The height of node
   c) The number of edges connecting to node
   d) The level of node

10) In an AVL tree, which rotation is used to restore balance when the tree become right-heavy?
   a) Left rotation
   b) Right rotation
   c) Double left rotation
   d) Double right rotation

11) Which method of traversal of a binary tree involves visiting the left subtree, then the root, and then the right subtree?
   a) Preorder
   b) Inorder
   c) Postorder
   d) To simplify storing

12) Which of the following is the most widely used external memory data structure?
   a) AVL tree
   b) B-tree
   c) Red-black tree
   d) Both AVL tree and Red-black tree

13) The number of edges incident to a vertex is called its _____.
   a) Degree
   b) Diameter
   c) Eccentricity
   d) Centrality

14) Which of the following is not a type of graph?
   a) Bipartite graph
   b) Complete graph
   c) Isomorphic graph
   d) Scalar graph

SLR-QH-81

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Data Structure (CSEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Figures must be drawn wherever necessary.

SECTION – I

Q.2 Attempt Any Two. **10**

a) What is Searching? Differentiate between Linear Search and Binary Search.

b) Define Stack. Explain its operations using array.

c) Discuss in details collision resolution by chaining method.

Q.3 Attempt Any Three questions. **18**

a) Write a menu-driven program to implement a Queue showing operations.
i) Insertion
ii) Deletion
iii) Display

b) Write an algorithm to insert node at the beginning, End & Specified location in Singly Linked List.

c) Elaborate the steps for performing Insertion sort for given elements of array.
$A = \{14, 33, 27, 10, 35, 19, 44, 42\}$

d) Define Hashing. Explain different hashing function with example.

SECTION – II

Q.4 Attempt Any Two. **10**

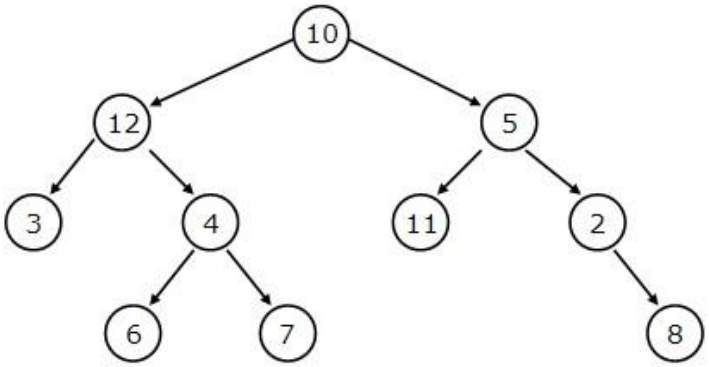
a) Explain Threaded Binary trees in details.

b) Write a note on Rotation types in AVL trees.

c) Explain how graph is represented with Adjacency Matrix and Adjacency List.

Q5 Attempt Any Three. **18**

a) Traverse the following tree by the in-order, pre-order and postorder methods.



b) Explain Dijkstra's Shortest path Algorithm with example.

c) Construct AVL tree for the following elements.
$\{9, 15, 20, 8, 7, 13, 10\}$

d) Explain B+ tree. Show the growth of the B+ tree of order 4 by inserting the following keys.
(show each step). $01, 05, 06, 02, 08, 12, 14, 15, 20, 07, 10$

SLR-QH-81

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Data Structure (CSEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Figures must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The number of edges from the node to the deepest leaf is called _____ of the tree.
a) Height b) Depth
c) Length d) Width

2) What is degree of a node in a tree is _____.
a) The number of children node has
b) The height of node
c) The number of edges connecting to node
d) The level of node

3) In an AVL tree, which rotation is used to restore balance when the tree become right-heavy?
a) Left rotation b) Right rotation
c) Double left rotation d) Double right rotation

4) Which method of traversal of a binary tree involves visiting the left subtree, then the root, and then the right subtree?
a) Preorder b) Inorder
c) Postorder d) To simplify storing

5) Which of the following is the most widely used external memory data structure?
a) AVL tree
b) B-tree
c) Red-black tree
d) Both AVL tree and Red-black tree

6) The number of edges incident to a vertex is called its _____.
a) Degree b) Diameter
c) Eccentricity d) Centrality

7) Which of the following is not a type of graph?
a) Bipartite graph b) Complete graph
c) Isomorphic graph d) Scalar graph

8) Complexity of linear search algorithm is _____.
a) O(n) b) O(logn)
c) O(n2) d) O(n logn)

9) Which of the following sorting algorithm is of divide and conquer type?
a) Quick b) Radix
c) Selection d) Merge

10) If several elements are competing for the same bucket in the hash table, what's called?
a) Diffusion b) Replication
c) Collision d) Duplication

11) The data structure required to check whether an expression contains balanced parenthesis is?
a) Stack b) Queue
c) Linked List d) Tree

12) Process of removing an element from stack is called _____.
a) Create b) Push
c) Pop d) Evaluation

13) In a Queue, if a user tries to remove an element from empty Queue it is called _____.
a) Underflow b) Empty collection
c) Overflow d) Garbage Collection

14) In circular linked list, insertion of node requires modification of?
a) One pointer b) Two pointer
c) Three pointer d) Four pointer

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Data Structure (CSEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Figures must be drawn wherever necessary.

SECTION – I

Q.2 Attempt Any Two. **10**

a) What is Searching? Differentiate between Linear Search and Binary Search.

b) Define Stack. Explain its operations using array.

c) Discuss in details collision resolution by chaining method.

Q.3 Attempt Any Three questions. **18**

a) Write a menu-driven program to implement a Queue showing operations.
i) Insertion
ii) Deletion
iii) Display

b) Write an algorithm to insert node at the beginning, End & Specified location in Singly Linked List.

c) Elaborate the steps for performing Insertion sort for given elements of array.
$A = \{14, 33, 27, 10, 35, 19, 44, 42\}$

d) Define Hashing. Explain different hashing function with example.

SECTION – II

Q.4 Attempt Any Two. **10**

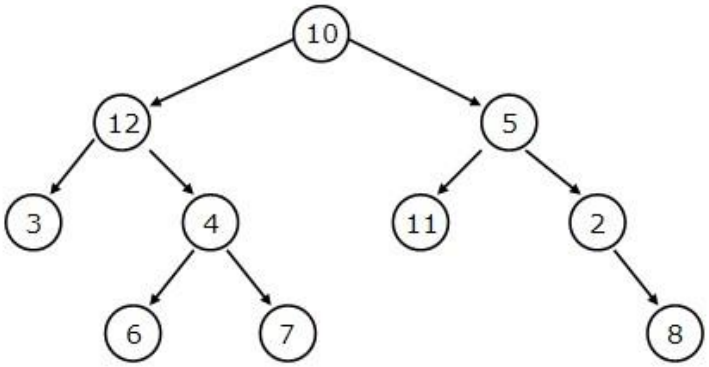
a) Explain Threaded Binary trees in details.

b) Write a note on Rotation types in AVL trees.

c) Explain how graph is represented with Adjacency Matrix and Adjacency List.

Q5 Attempt Any Three. **18**

a) Traverse the following tree by the in-order, pre-order and postorder methods.



b) Explain Dijkstra's Shortest path Algorithm with example.

c) Construct AVL tree for the following elements.
$\{9, 15, 20, 8, 7, 13, 10\}$

d) Explain B+ tree. Show the growth of the B+ tree of order 4 by inserting the following keys.
(show each step). $01, 05, 06, 02, 08, 12, 14, 15, 20, 07, 10$

SLR-QH-81

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Data Structure (CSEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.
5) Figures must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which method of traversal of a binary tree involves visiting the left subtree, then the root, and then the right subtree?
a) Preorder b) Inorder
c) Postorder d) To simplify storing

2) Which of the following is the most widely used external memory data structure?
a) AVL tree
b) B-tree
c) Red-black tree
d) Both AVL tree and Red-black tree

3) The number of edges incident to a vertex is called its _____.
a) Degree b) Diameter
c) Eccentricity d) Centrality

4) Which of the following is not a type of graph?
a) Bipartite graph b) Complete graph
c) Isomorphic graph d) Scalar graph

5) Complexity of linear search algorithm is _____.
a) O(n) b) O(logn)
c) O(n2) d) O(n logn)

6) Which of the following sorting algorithm is of divide and conquer type?
a) Quick b) Radix
c) Selection d) Merge

7) If several elements are competing for the same bucket in the hash table, what's called?
   a) Diffusion
   b) Replication
   c) Collision
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8) The data structure required to check whether an expression contains balanced parenthesis is?
   a) Stack
   b) Queue
   c) Linked List
   d) Tree

9) Process of removing an element from stack is called _____.
   a) Create
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   d) Evaluation

10) In a Queue, if a user tries to remove an element from empty Queue it is called _____.
   a) Underflow
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11) In circular linked list, insertion of node requires modification of?
   a) One pointer
   b) Two pointer
   c) Three pointer
   d) Four pointer

12) The number of edges from the node to the deepest leaf is called _____ of the tree.
   a) Height
   b) Depth
   c) Length
   d) Width

13) What is degree of a node in a tree is _____.
   a) The number of children node has
   b) The height of node
   c) The number of edges connecting to node
   d) The level of node

14) In an AVL tree, which rotation is used to restore balance when the tree become right-heavy?
   a) Left rotation
   b) Right rotation
   c) Double left rotation
   d) Double right rotation

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Data Structure (CSEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data if necessary.
4) Figures must be drawn wherever necessary.

SECTION – I

Q.2 Attempt Any Two. **10**

a) What is Searching? Differentiate between Linear Search and Binary Search.

b) Define Stack. Explain its operations using array.

c) Discuss in details collision resolution by chaining method.

Q.3 Attempt Any Three questions. **18**

a) Write a menu-driven program to implement a Queue showing operations.
i) Insertion
ii) Deletion
iii) Display

b) Write an algorithm to insert node at the beginning, End & Specified location in Singly Linked List.

c) Elaborate the steps for performing Insertion sort for given elements of array.
$A = \{14, 33, 27, 10, 35, 19, 44, 42\}$

d) Define Hashing. Explain different hashing function with example.

SECTION – II

Q.4 Attempt Any Two. **10**

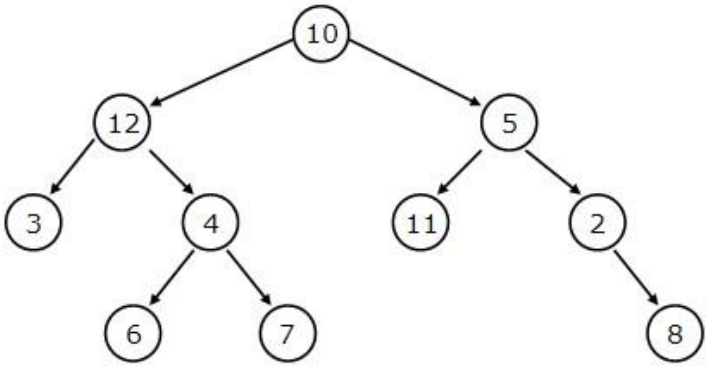
a) Explain Threaded Binary trees in details.

b) Write a note on Rotation types in AVL trees.

c) Explain how graph is represented with Adjacency Matrix and Adjacency List.

Q5 Attempt Any Three. **18**

a) Traverse the following tree by the in-order, pre-order and postorder methods.



b) Explain Dijkstra's Shortest path Algorithm with example.

c) Construct AVL tree for the following elements.
$\{9, 15, 20, 8, 7, 13, 10\}$

d) Explain B+ tree. Show the growth of the B+ tree of order 4 by inserting the following keys.
(show each step). $01, 05, 06, 02, 08, 12, 14, 15, 20, 07, 10$

SLR-QH-81

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Data Structure (CSEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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4) Assume suitable data if necessary.
5) Figures must be drawn wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In a Queue, if a user tries to remove an element from empty Queue it is called _____.
a) Underflow b) Empty collection
c) Overflow d) Garbage Collection

2) In circular linked list, insertion of node requires modification of?
a) One pointer b) Two pointer
c) Three pointer d) Four pointer

3) The number of edges from the node to the deepest leaf is called _____ of the tree.
a) Height b) Depth
c) Length d) Width

4) What is degree of a node in a tree is _____.
a) The number of children node has
b) The height of node
c) The number of edges connecting to node
d) The level of node

5) In an AVL tree, which rotation is used to restore balance when the tree become right-heavy?
a) Left rotation b) Right rotation
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6) Which method of traversal of a binary tree involves visiting the left subtree, then the root, and then the right subtree?
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7) Which of the following is the most widely used external memory data structure?
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13) The data structure required to check whether an expression contains balanced parenthesis is?
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   c) Linked List
   d) Tree

14) Process of removing an element from stack is called _____.
   a) Create
   b) Push
   c) Pop
   d) Evaluation

SLR-QH-81

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Data Structure (CSEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Figures must be drawn wherever necessary.

SECTION – I

Q.2 Attempt Any Two. **10**

a) What is Searching? Differentiate between Linear Search and Binary Search.

b) Define Stack. Explain its operations using array.

c) Discuss in details collision resolution by chaining method.

Q.3 Attempt Any Three questions. **18**

a) Write a menu-driven program to implement a Queue showing operations.
i) Insertion
ii) Deletion
iii) Display

b) Write an algorithm to insert node at the beginning, End & Specified location in Singly Linked List.

c) Elaborate the steps for performing Insertion sort for given elements of array.
$A = \{14, 33, 27, 10, 35, 19, 44, 42\}$

d) Define Hashing. Explain different hashing function with example.

SECTION – II

Q.4 Attempt Any Two. **10**

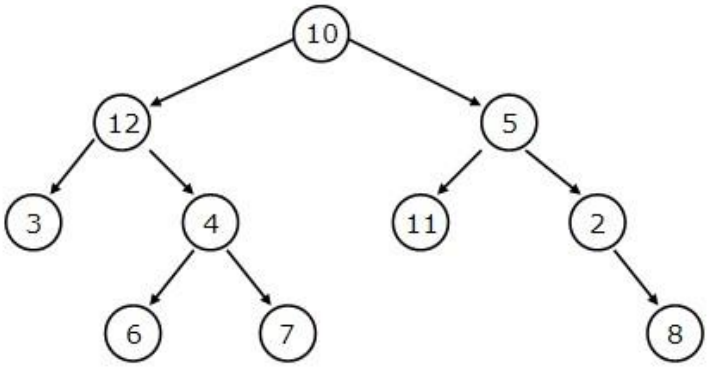
a) Explain Threaded Binary trees in details.

b) Write a note on Rotation types in AVL trees.

c) Explain how graph is represented with Adjacency Matrix and Adjacency List.

Q5 Attempt Any Three. **18**

a) Traverse the following tree by the in-order, pre-order and postorder methods.



b) Explain Dijkstra's Shortest path Algorithm with example.

c) Construct AVL tree for the following elements.
$\{9, 15, 20, 8, 7, 13, 10\}$

d) Explain B+ tree. Show the growth of the B+ tree of order 4 by inserting the following keys.
(show each step). $01, 05, 06, 02, 08, 12, 14, 15, 20, 07, 10$

SLR-QH-82

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

2) $\frac{1}{D-a} X$ is equal to _____.

a) $\int Xe^{ax}dx$ b) $e^{ax}\int X.e^{-ax}dx$

c) $\int Xe^{-ax}dx$ d) $e^{-ax}\int Xe^{-ax}dx$

3) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

4) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

5) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

6) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

7) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

8) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

9) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

10) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

11) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78

c) 0.81 d) 0.95

12) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1

c) ± 1 d) 1

13) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$

b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2

d) μ, and $\frac{\sigma^2}{n}$

14) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$

b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$

d) $\sum \frac{(O-E)^2}{E}$

SLR-QH-82

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

SLR-QH-82

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7
c) -1.2 d) -4

2) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6
c) 3 d) 5

3) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

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4) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78
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5) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1
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6) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

7) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

8) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

9) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

10) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

11) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

12) The solution of $p + q = 1$ is _____.

a) $z = ax + (1-a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1-y) + c$ d) $z = a(1-x) + b(1-y) + c$

13) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

14) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$

b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$

d) $\frac{\mu_4}{\mu_2^3}$

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set | **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78
c) 0.81 d) 0.95

2) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1
c) ± 1 d) 1

3) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

4) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$
c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

5) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

6) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

7) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

8) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

9) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

10) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

11) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

12) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

13) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

14) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $\nu = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

2) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

3) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

4) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \le x \le 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

5) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

6) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78

c) 0.81 d) 0.95

7) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1

c) ± 1 d) 1

8) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

9) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

10) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

11) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

12) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

13) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

14) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $\nu = 9$ degrees of freedom is 1.86 for one tailed test)

SLR-QH-83

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: 14

1) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com b) e-bay
c) Rentalic.com d) All of the above

2) Which type of E - Commerce is Amazon?
a) B2B b) B2C
c) G2B d) G2C

3) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model b) Business model
c) Business plan d) Revenue model

4) All of the following are major B2C business models except _____.
a) content provider b) industry consortium
c) transaction broker d) service provider

5) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

6) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling b) Connectivity
c) Communication d) Customer

7) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business
b) Business to Government
c) Consumer to Business
d) Business to Consumer

8) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo
b) regret
c) provide rating for
d) forget

9) Digital Cash has the following characteristics _____.
a) Anonymity
b) Security
c) Confidentiality
d) All of the Above

10) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

11) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack
b) Brute force attack
c) Phlashing
d) Smurf attack

12) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business
b) Business to Consumer
c) Business to Business
d) Consumer to Consumer

13) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway
b) E - E-Commerce gateway
c) Software gateway
d) E-Wallets

14) What is another name called PDoS?
a) Brute force attack
b) Non-technical attack
c) Phlashing
d) Smurf attack

SLR-QH-83

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-83

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: 14

1) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo b) regret
c) provide rating for d) forget

2) Digital Cash has the following characteristics _____.
a) Anonymity b) Security
c) Confidentiality d) All of the Above

3) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

4) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

5) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business b) Business to Consumer
c) Business to Business d) Consumer to Consumer

6) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway b) E - E-Commerce gateway
c) Software gateway d) E-Wallets

7) What is another name called PDoS?
a) Brute force attack
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d) Smurf attack

8) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com
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d) All of the above

9) Which type of E - Commerce is Amazon?
a) B2B
b) B2C
c) G2B
d) G2C

10) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model
b) Business model
c) Business plan
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11) All of the following are major B2C business models except _____.
a) content provider
b) industry consortium
c) transaction broker
d) service provider

12) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

13) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling
b) Connectivity
c) Communication
d) Customer

14) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business
b) Business to Government
c) Consumer to Business
d) Business to Consumer

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-83

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: 14

1) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

2) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business b) Business to Consumer
c) Business to Business d) Consumer to Consumer

3) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway b) E - E-Commerce gateway
c) Software gateway d) E-Wallets

4) What is another name called PDoS?
a) Brute force attack b) Non-technical attack
c) Phlashing d) Smurf attack

5) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com b) e-bay
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6) Which type of E - Commerce is Amazon?
a) B2B b) B2C
c) G2B d) G2C

7) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model
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c) Business plan
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d) Wait till the delivery of the product

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12) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
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b) regret
c) provide rating for
d) forget

13) Digital Cash has the following characteristics _____.
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b) Security
c) Confidentiality
d) All of the Above

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b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-83

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: 14

1) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling b) Connectivity
c) Communication d) Customer

2) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business b) Business to Government
c) Consumer to Business d) Business to Consumer

3) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo b) regret
c) provide rating for d) forget

4) Digital Cash has the following characteristics _____.
a) Anonymity b) Security
c) Confidentiality d) All of the Above

5) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

6) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

7) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business
b) Business to Consumer
c) Business to Business
d) Consumer to Consumer

8) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway
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9) What is another name called PDoS?
a) Brute force attack
b) Non-technical attack
c) Phlashing
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10) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com
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c) Rentalic.com
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11) Which type of E - Commerce is Amazon?
a) B2B
b) B2C
c) G2B
d) G2C

12) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model
b) Business model
c) Business plan
d) Revenue model

13) All of the following are major B2C business models except _____.
a) content provider
b) industry consortium
c) transaction broker
d) service provider

14) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

SLR-QH-83

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-84

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. 14

1) History is best defined as the study of _____.
a) Future events b) Past human activities
c) Natural phenomena d) Scientific experiments

2) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

3) Which of the following disciplines deals with political systems and governance?
a) Economics b) Political Science
c) Sociology d) Cultural Studies

4) Urbanization is best described as _____.
a) Decline of rural population b) Growth of cities and towns
c) Spread of agriculture d) Industrial decline

5) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

6) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

7) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

8) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

9) Socialization refers to _____.
a) Economic growth
b) Learning social norms
c) Political participation
d) Cultural diffusion

10) The study of language structure and its evolution is called _____.
a) Sociology
b) Linguistics
c) Psychology
d) Anthropology

11) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women’s rights
c) Political ideologies
d) Technological advancements

12) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science
b) Psychoanalysis
c) Economic theory
d) Structural linguistics

13) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology
b) Political Science
c) Economics
d) History

14) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

SLR-QH-84

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Inflation means _____.
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a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
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c) Natural phenomena
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9) The archaeology focuses on _____.
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a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

11) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

12) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

13) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

14) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

SLR-QH-84

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women's rights
c) Political ideologies
d) Technological advancements

2) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science b) Psychoanalysis
c) Economic theory d) Structural linguistics

3) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology b) Political Science
c) Economics d) History

4) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning b) Moral principles and conduct
c) Aesthetics and beauty d) Scientific discovery

5) History is best defined as the study of _____.
a) Future events b) Past human activities
c) Natural phenomena d) Scientific experiments

6) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

7) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

8) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

9) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

10) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

11) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

12) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

13) Socialization refers to _____.
a) Economic growth
b) Learning social norms
c) Political participation
d) Cultural diffusion

14) The study of language structure and its evolution is called _____.
a) Sociology
b) Linguistics
c) Psychology
d) Anthropology

SLR-QH-84

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

Seat No.	

Set | S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

2) In which ancient civilization did the term "democracy" originate?
a) Ancient Egypt b) Ancient Greece
c) Ancient Rome d) Mesopotamia

3) Inflation means _____.
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4) Socialization refers to _____.
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c) Psychology d) Anthropology

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b) Gender equality and women's rights
c) Political ideologies
d) Technological advancements

7) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science
b) Psychoanalysis
c) Economic theory
d) Structural linguistics

8) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology
b) Political Science
c) Economics
d) History

9) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

10) History is best defined as the study of _____.
a) Future events
b) Past human activities
c) Natural phenomena
d) Scientific experiments

11) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

12) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

13) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

14) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

SLR-QH-84

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

SLR-QH-85

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

2) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing b) Controlling
c) Planning d) Leading

3) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

4) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

5) Which is the first step in the planning process?
a) Developing alternatives b) Evaluating alternatives
c) Setting objectives d) Selecting the best alternative

6) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

7) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

8) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs
b) Social needs
c) Esteem needs
d) Self-actualization

9) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

10) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

11) Which of the following is not typically considered an element of quality?
a) Performance
b) Reliability
c) Advertising
d) Durability

12) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

13) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

14) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

SLR-QH-85

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-85

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: **14**

1) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs b) Social needs
c) Esteem needs d) Self-actualization

2) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

3) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

4) Which of the following is not typically considered an element of quality?
a) Performance b) Reliability
c) Advertising d) Durability

5) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

6) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

7) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

8) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

9) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

10) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

11) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

12) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

13) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

14) What is the main purpose of employee training and development?

a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

SLR-QH-85

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-85

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) Which of the following is not typically considered an element of quality?
a) Performance b) Reliability
c) Advertising d) Durability

2) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

3) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

4) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

5) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

6) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

7) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
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8) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
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9) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

10) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

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b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

12) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs
b) Social needs
c) Esteem needs
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13) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

14) Which of the following best defines “quality” in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

SLR-QH-85

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
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	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

2) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
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c) Meeting only internal business goals
d) Offering products at the lowest possible price

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c) Advertising d) Durability

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d) Ensure all products are handmade

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b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

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b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

11) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing b) Controlling
c) Planning d) Leading

12) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

13) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

14) Which is the first step in the planning process?
a) Developing alternatives b) Evaluating alternatives
c) Setting objectives d) Selecting the best alternative

SLR-QH-85

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-86

Seat No.		Set	P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$
c) $(C_1 + C_2x)e^x$ d) x^2e^x

2) The general solution of $(D^2 - 4)^2y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$
b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$
c) $y = C_1\cos 2x + C_2\sin 2x + (C_3 + C_4x)e^{2x}$
d) None of these

3) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$
c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

4) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$
c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

5) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

6) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^k d) 3^{-k-1}

7) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

8) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2

c) 3 and 4 d) 0 and 1

9) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$

c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

10) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.

a) 0 b) $\frac{1}{2}$

c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

11) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

12) For the function $f(x) \begin{matrix} = & 0, & -\pi < x < 0 \\ = & x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

13) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

14) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \quad (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\, \cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

SLR-QH-86

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.
a) 2 and 3 b) 1 and 2
c) 3 and 4 d) 0 and 1

2) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.
a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$
c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

3) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.
a) 0 b) $\frac{1}{2}$
c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

4) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.
a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$
c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

5) For the function $f(x) \begin{matrix} = & 0, & -\pi < x < 0 \\ = & x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

6) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

7) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

8) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

9) The general solution of $(D^2 - 4)^2 y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1 \cos 2x + C_2 \sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

10) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

11) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

12) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

13) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^{k} d) 3^{-k-1}

14) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \ \ (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if $\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

2) For the function $f(x) \begin{matrix} = \\ = \end{matrix} \begin{matrix} 0, & -\pi < x < 0 \\ x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

3) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

4) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

5) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

6) The general solution of $(D^2 - 4)^2y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1\cos 2x + C_2\sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

7) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

8) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

9) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

10) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^k d) 3^{-k-1}

11) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

12) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2

c) 3 and 4 d) 0 and 1

13) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$

c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

14) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.

a) 0 b) $\frac{1}{2}$

c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \ \ (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}
c) 3^{k} d) 3^{-k-1}

2) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2
c) $\sqrt{2}$ d) 3

3) A positive real root of the equation $xe^{x} - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2
c) 3 and 4 d) 0 and 1

4) Since $z\{1\} = \frac{z}{z-1}, z\{a^{k}\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$
c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

5) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^{2}$ is _____.

a) 0 b) $\frac{1}{2}$
c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

6) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

7) For the function $f(x) \begin{matrix} = \\ = \end{matrix} \begin{matrix} 0, & -\pi < x < 0 \\ x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

8) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

9) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

10) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

11) The general solution of $(D^2 - 4)^2 y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1 \cos 2x + C_2 \sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

12) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

13) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

14) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \quad (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\, \cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

SLR-QH-87

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

2) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

3) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

4) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

5) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

6) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

7) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

8) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

9) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

10) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

11) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

12) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

13) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

14) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

Seat No.	

Set | P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

2) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

3) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

4) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

5) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

6) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

7) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

8) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

9) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

10) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

11) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

12) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

13) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

14) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

2) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

3) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

4) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

5) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

6) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

7) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

8) Stress is defined as _____.
   a) A physical or emotional reaction to challenges or demands
   b) A type of disease
   c) Only physical pain
   d) A mental disorder

9) Time management means _____.
   a) Doing work very quickly
   b) Planning and organizing how to spend time effectively
   c) Wasting time
   d) Avoiding responsibilities

10) Effective non-verbal communication in presentations helps to _____.
   a) Confuse the audience
   b) Improve understanding and engagement
   c) Reduce communication
   d) Replace verbal communication

11) Which of the following helps in effective presentation?
   a) Organizing ideas clearly b) Using complex language
   c) Ignoring the audience d) All of the above

12) The main purpose of an interview is to _____.
   a) Test physical strength
   b) Assess a candidate's suitability
   c) Conduct training
   d) Provide entertainment

13) Which of the following is part of presentation etiquette?
   a) Clear speaking b) Good posture
   c) Proper visual aids d) All of the above

14) Good posture during a presentation indicates _____.
   a) Confidence b) Nervousness
   c) Disinterest d) Laziness

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-87

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. 14

1) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

2) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

3) The main purpose of an interview is to _____.
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c) Conduct training
d) Provide entertainment

4) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

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c) Disinterest d) Laziness

6) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

7) Prioritization in time management means _____.
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b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

8) Procrastination means _____.
a) Completing work early
b) Delaying tasks unnecessarily
c) Planning work
d) Finishing tasks on time

9) Taking short breaks during work helps to _____.
a) Reduce efficiency
b) Improve focus
c) Waste time
d) Increase stress

10) In the process of communication, _____ is the person who encodes the message.
a) Receiver
b) Driver
c) Cleaner
d) Sender

11) Which among the following barriers is related to fault in the channel?
a) Physical
b) Mechanical
c) Psychological
d) All of above

12) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy
b) Self-awareness
c) Emotional intelligence
d) Relationship management

13) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

14) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

SLR-QH-87

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-88

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Machine Learning (CSEHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) Which of the following is true about bagging?
I) Bagging can be parallel
II) The aim of bagging is to reduce bias not variance
III) Bagging helps in reducing overfitting
a) I and II b) II and III
c) I and III d) All of these

2) One of the more important uses of _____ in machine learning is to classify images for all sorts of reasons.
a) under-fitting b) computer vision
c) cost function d) none

3) Predicting stock market price is an example of _____.
a) Unsupervised learning b) supervised learning
c) reinforcement d) none

4) _____ function performs the rendering and uses a grayscale color map.
a) plt.show() b) show()
c) imshow() d) imread()

5) _____ is the ability to train computer to understand both human speech and written text.
a) Data mining
b) Natural Language Processing
c) Statistics
d) None of these

6) Which of following steps are required to apply machine learning technique to support business strategy _____.
   a) What is the business problem you are trying to solve
   b) When are the hidden data resources that you can take advantage
   c) How can you prepare to get your data
   d) All

7) _____ can lead to poor performance of machine learning model.
   a) under fitting
   b) overfitting
   c) Both a) & b)
   d) None of these

8) _____ occurs when your algorithm has learned too much from your data, up to the point of mapping curve shapes and rules that do not exist.
   a) under fitting
   b) overfitting
   c) cost function
   d) None of these

9) Cross validation is based on _____ method.
   a) under fitting
   b) overfitting
   c) k-fold
   d) validation

10) The process goes on repetitively until there are no more chunks. Chunks can be small (depending on core memory), and the process is called _____.
   a) mini-batch learning
   b) learning model
   c) linear regression
   d) none

11) In _____ model you build your machine learning models in two (or sometimes even more) stages.
   a) stacking
   b) averaging
   c) testing multiple
   d) hyper parameter

12) _____ is the approach to machine learning that is based on neuroscience.
   a) Connectionism
   b) neuron
   c) deep learning
   d) All of above

13) _____ Model looks into the future analysis of data.
   a) Descriptive
   b) Predictive
   c) Business
   d) None of above

14) _____ is used to overcome the problem of snooping.
   a) training
   b) testing
   c) validation
   d) None of these

SLR-QH-88

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Machine Learning (CSEHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Make suitable assumptions (if necessary and state them clearly).
3) Figures to the right indicates full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define Machine Learning Explain Lear verging the power of machine learning.

b) Explain supervised learning with example.

c) Explain application of machine learning.

d) Write differences between machine learning and data mining.

e) Explain data preparation.

Q.3 Attempt Any One. **06**

a) Write a short note on Machine Learning Cycle.

b) Explain the term choosing right error or Score Metric.

Q.4 Attempt the following. **06**

Explain Exploring cost function.

SECTION – II

Q.5 Attempt Any Four. **16**

a) Write short note on Searching for the best hyper parameters.

b) Write a short note on applying feature engineering.

c) Explain the term bias and variance.

d) What is overfitting, how to overcome the problem of overfitting.

e) Explain Averaging model

Q.6 Attempt Any One **06**

a) Write differences between LOOC and K-fold cross validation.

b) Explain the discovering the Incredible perceptron.

Q.7 Attempt the following. **06**

Explain the following term:

a) Training

b) Testing

c) Validating

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Machine Learning (CSEHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ occurs when your algorithm has learned too much from your data, up to the point of mapping curve shapes and rules that do not exist.
a) under fitting b) overfitting
c) cost function d) None of these

2) Cross validation is based on _____ method.
a) under fitting b) overfitting
c) k-fold d) validation

3) The process goes on repetitively until there are no more chunks. Chunks can be small (depending on core memory), and the process is called _____.
a) mini-batch learning b) learning model
c) linear regression d) none

4) In _____ model you build your machine learning models in two (or sometimes even more) stages.
a) stacking b) averaging
c) testing multiple d) hyper parameter

5) _____ is the approach to machine learning that is based on neuroscience.
a) Connectionism b) neuron
c) deep learning d) All of above

6) _____ Model looks into the future analysis of data.
a) Descriptive b) Predictive
c) Business d) None of above

7) _____ is used to overcome the problem of snooping.
a) training b) testing
c) validation d) None of these

8) Which of the following is true about bagging?
I) Bagging can be parallel
II) The aim of bagging is to reduce bias not variance
III) Bagging helps in reducing overfitting
a) I and II b) II and III
c) I and III d) All of these

9) One of the more important uses of _____ in machine learning is to classify images for all sorts of reasons.
a) under-fitting b) computer vision
c) cost function d) none

10) Predicting stock market price is an example of _____.
a) Unsupervised learning b) supervised learning
c) reinforcement d) none

11) _____ function performs the rendering and uses a grayscale color map.
a) plt.show() b) show()
c) imshow() d) imread()

12) _____ is the ability to train computer to understand both human speech and written text.
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c) Statistics
d) None of these

13) Which of following steps are required to apply machine learning technique to support business strategy _____.
a) What is the business problem you are trying to solve
b) When are the hidden data resources that you can take advantage
c) How can you prepare to get your data
d) All

14) _____ can lead to poor performance of machine learning model.
a) under fitting b) overfitting
c) Both a) & b) d) None of these

SLR-QH-88

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Machine Learning (CSEHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Make suitable assumptions (if necessary and state them clearly).
3) Figures to the right indicates full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define Machine Learning Explain Lear verging the power of machine learning.

b) Explain supervised learning with example.

c) Explain application of machine learning.

d) Write differences between machine learning and data mining.

e) Explain data preparation.

Q.3 Attempt Any One. **06**

a) Write a short note on Machine Learning Cycle.

b) Explain the term choosing right error or Score Metric.

Q.4 Attempt the following. **06**

Explain Exploring cost function.

SECTION – II

Q.5 Attempt Any Four. **16**

a) Write short note on Searching for the best hyper parameters.

b) Write a short note on applying feature engineering.

c) Explain the term bias and variance.

d) What is overfitting, how to overcome the problem of overfitting.

e) Explain Averaging model

Q.6 Attempt Any One **06**

a) Write differences between LOOC and K-fold cross validation.

b) Explain the discovering the Incredible perceptron.

Q.7 Attempt the following. **06**

Explain the following term:

a) Training

b) Testing

c) Validating

Seat No.	

Set | R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Machine Learning (CSEHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In _____ model you build your machine learning models in two (or sometimes even more) stages.
a) stacking b) averaging
c) testing multiple d) hyper parameter

2) _____ is the approach to machine learning that is based on neuroscience.
a) Connectionism b) neuron
c) deep learning d) All of above

3) _____ Model looks into the future analysis of data.
a) Descriptive b) Predictive
c) Business d) None of above

4) _____ is used to overcome the problem of snooping.
a) training b) testing
c) validation d) None of these

5) Which of the following is true about bagging?
I) Bagging can be parallel
II) The aim of bagging is to reduce bias not variance
III) Bagging helps in reducing overfitting
a) I and II b) II and III
c) I and III d) All of these

6) One of the more important uses of _____ in machine learning is to classify images for all sorts of reasons.
a) under-fitting b) computer vision
c) cost function d) none

7) Predicting stock market price is an example of _____.
a) Unsupervised learning b) supervised learning
c) reinforcement d) none

8) _____ function performs the rendering and uses a grayscale color map.
a) plt.show() b) show()
c) imshow() d) imread()

9) _____ is the ability to train computer to understand both human speech and written text.
a) Data mining
b) Natural Language Processing
c) Statistics
d) None of these

10) Which of following steps are required to apply machine learning technique to support business strategy _____.
a) What is the business problem you are trying to solve
b) When are the hidden data resources that you can take advantage
c) How can you prepare to get your data
d) All

11) _____ can lead to poor performance of machine learning model.
a) under fitting b) overfitting
c) Both a) & b) d) None of these

12) _____ occurs when your algorithm has learned too much from your data, up to the point of mapping curve shapes and rules that do not exist.
a) under fitting b) overfitting
c) cost function d) None of these

13) Cross validation is based on _____ method.
a) under fitting b) overfitting
c) k-fold d) validation

14) The process goes on repetitively until there are no more chunks. Chunks can be small (depending on core memory), and the process is called _____.
a) mini-batch learning b) learning model
c) linear regression d) none

SLR-QH-88

Seat No.		Set	R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Machine Learning (CSEHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Make suitable assumptions (if necessary and state them clearly).
3) Figures to the right indicates full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define Machine Learning Explain Lear verging the power of machine learning.

b) Explain supervised learning with example.

c) Explain application of machine learning.

d) Write differences between machine learning and data mining.

e) Explain data preparation.

Q.3 Attempt Any One. **06**

a) Write a short note on Machine Learning Cycle.

b) Explain the term choosing right error or Score Metric.

Q.4 Attempt the following. **06**

Explain Exploring cost function.

SECTION – II

Q.5 Attempt Any Four. **16**

a) Write short note on Searching for the best hyper parameters.

b) Write a short note on applying feature engineering.

c) Explain the term bias and variance.

d) What is overfitting, how to overcome the problem of overfitting.

e) Explain Averaging model

Q.6 Attempt Any One **06**

a) Write differences between LOOC and K-fold cross validation.

b) Explain the discovering the Incredible perceptron.

Q.7 Attempt the following. **06**

Explain the following term:

a) Training

b) Testing

c) Validating

SLR-QH-88

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Machine Learning (CSEHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions (if necessary and state them clearly).

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of following steps are required to apply machine learning technique to support business strategy _____.
a) What is the business problem you are trying to solve
b) When are the hidden data resources that you can take advantage
c) How can you prepare to get your data
d) All

2) _____ can lead to poor performance of machine learning model.
a) under fitting b) overfitting
c) Both a) & b) d) None of these

3) _____ occurs when your algorithm has learned too much from your data, up to the point of mapping curve shapes and rules that do not exist.
a) under fitting b) overfitting
c) cost function d) None of these

4) Cross validation is based on _____ method.
a) under fitting b) overfitting
c) k-fold d) validation

5) The process goes on repetitively until there are no more chunks. Chunks can be small (depending on core memory), and the process is called _____.
a) mini-batch learning b) learning model
c) linear regression d) none

6) In _____ model you build your machine learning models in two (or sometimes even more) stages.
a) stacking b) averaging
c) testing multiple d) hyper parameter

7) _____ is the approach to machine learning that is based on neuroscience.
a) Connectionism b) neuron
c) deep learning d) All of above

8) _____ Model looks into the future analysis of data.
a) Descriptive b) Predictive
c) Business d) None of above

9) _____ is used to overcome the problem of snooping.
a) training b) testing
c) validation d) None of these

10) Which of the following is true about bagging?
I) Bagging can be parallel
II) The aim of bagging is to reduce bias not variance
III) Bagging helps in reducing overfitting
a) I and II b) II and III
c) I and III d) All of these

11) One of the more important uses of _____ in machine learning is to classify images for all sorts of reasons.
a) under-fitting b) computer vision
c) cost function d) none

12) Predicting stock market price is an example of _____.
a) Unsupervised learning b) supervised learning
c) reinforcement d) none

13) _____ function performs the rendering and uses a grayscale color map.
a) plt.show() b) show()
c) imshow() d) imread()

14) _____ is the ability to train computer to understand both human speech and written text.
a) Data mining
b) Natural Language Processing
c) Statistics
d) None of these

SLR-QH-88

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Machine Learning (CSEHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Make suitable assumptions (if necessary and state them clearly).
3) Figures to the right indicates full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define Machine Learning Explain Lear verging the power of machine learning.

b) Explain supervised learning with example.

c) Explain application of machine learning.

d) Write differences between machine learning and data mining.

e) Explain data preparation.

Q.3 Attempt Any One. **06**

a) Write a short note on Machine Learning Cycle.

b) Explain the term choosing right error or Score Metric.

Q.4 Attempt the following. **06**

Explain Exploring cost function.

SECTION – II

Q.5 Attempt Any Four. **16**

a) Write short note on Searching for the best hyper parameters.

b) Write a short note on applying feature engineering.

c) Explain the term bias and variance.

d) What is overfitting, how to overcome the problem of overfitting.

e) Explain Averaging model

Q.6 Attempt Any One **06**

a) Write differences between LOOC and K-fold cross validation.

b) Explain the discovering the Incredible perceptron.

Q.7 Attempt the following. **06**

Explain the following term:

a) Training

b) Testing

c) Validating

SLR-QH-89

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Cryptography (CSEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is considered a passive attack?
a) Denial-of-Service b) Message modification
c) Eavesdropping d) Masquerading

2) In the Network Security Model, what is the role of the "trusted third party"?
a) To forward messages
b) To eavesdrop on communication
c) To distribute and manage keys
d) To generate random numbers

3) Given the monoalphabetic key A→D, B→E, C→F..., what is the cipher for "SOLAPUR"?
a) VRODSXU b) VRORDSX
c) VRORDXU d) VRQRESU

4) What kind of cipher is Playfair Cipher?
a) Monoalphabetic
b) Transposition
c) Polyalphabetic
d) Digraph substitution cipher

5) What is the encrypted form of "MEET" using Vigenère cipher with key "KEY"?
a) WIXR b) QIQW
c) WIEX d) WIEV

6) What is the input to the AddRoundKey function?
a) Only the key b) Only the state
c) State and Round Key d) Plaintext

7) Which principle helps in achieving diffusion in block ciphers?
a) S-boxes b) P-boxes
c) Key schedule d) XOR operation

8) Which feature of public-key systems supports non-repudiation?
a) Encryption using the recipient's public key
b) Signing using the sender's private key
c) Hashing the message
d) Encrypting with a shared secret

9) Why is it difficult to break RSA encryption?
a) Because it uses substitution
b) Because factorizing large primes is computationally hard
c) Because it uses symmetric encryption
d) Because it uses hashing

10) Why is public-key cryptography not typically used to encrypt large files directly?
a) It doesn't support encryption
b) It's too fast
c) It's computationally expensive
d) It doesn't provide authentication

11) Why is a hash function useful in digital signatures?
a) It hides the private key
b) It compresses the message
c) It ensures integrity of the message being signed
d) It encrypts the message

12) 'Which of the following is a common application of hash functions?
a) Compressing multimedia files
b) Message encryption
c) Password verification
d) Data fragmentation

13) What is the primary function of Kerberos?
a) Data compression
b) Time synchronization
c) Secure user authentication using symmetric key
d) Digital signatures

14) Which component is essential in verifying identity using asymmetric encryption?
a) Trusted third party b) Certificate Authority (CA)
c) Secure socket layer d) Firewall

SLR-QH-89

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Cryptography (CSEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three of the following. **12**

a) List and explain challenges of computer security.

b) Differentiate between monoalphabetic cipher and a polyalphabetic cipher.

c) Explain with example transposition techniques.

d) Briefly define the term permutation and substitution.

e) Explain Key Expansion algorithm of AES.

Q.3 Attempt Any Two of the following. **16**

a) Explain in detail active attack and passive attack.

b) Explain Matrix construction and rules of encryption text in playfair cipher. Construct the playfair matrix with key "cryptography". Encrypt the following message
"I only regret that I have but one life to give for my country"

c) Illustrate the working of single round of DES with diagram.

SECTION – II

Q.4 Attempt Any Three of the following. **12**

a) What are three broad categories of applications of public-key cryptosystems?

b) List the design objective of HMAC.

c) Explain user authentication model.

d) List and explain five properties of digital signature.

e) Explain identity management architecture.

Q.5 Solve Any Two of the following. **16**

a) Explain working of Kerberos version 4 and summarise Message exchange.

b) Using mathematical notations and equations summarize RSA Algorithm.

c) Alice and Bob use the Diffie-Hellman key exchange technique with a common prime

i) q = 157 and a primitive root a = 5

ii) If Alice has a private key XA = 15, find her public key YA

iii) If Bob has a private key XB = 27, find his public key YB

iv) What is the shared secret key between Alice and Bob?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Cryptography (CSEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which feature of public-key systems supports non-repudiation?
a) Encryption using the recipient's public key
b) Signing using the sender's private key
c) Hashing the message
d) Encrypting with a shared secret

2) Why is it difficult to break RSA encryption?
a) Because it uses substitution
b) Because factorizing large primes is computationally hard
c) Because it uses symmetric encryption
d) Because it uses hashing

3) Why is public-key cryptography not typically used to encrypt large files directly?
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6) What is the primary function of Kerberos?
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   b) Time synchronization
   c) Secure user authentication using symmetric key
   d) Digital signatures

7) Which component is essential in verifying identity using asymmetric encryption?
   a) Trusted third party
   b) Certificate Authority (CA)
   c) Secure socket layer
   d) Firewall

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   a) Denial-of-Service
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   b) VRORDSX
   c) VRORDXU
   d) VRQRESU

11) What kind of cipher is Playfair Cipher?
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   b) Transposition
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   a) WIXR
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   d) WIEV

13) What is the input to the AddRoundKey function?
   a) Only the key
   b) Only the state
   c) State and Round Key
   d) Plaintext

14) Which principle helps in achieving diffusion in block ciphers?
   a) S-boxes
   b) P-boxes
   c) Key schedule
   d) XOR operation

SLR-QH-89

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Cryptography (CSEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three of the following. **12**

a) List and explain challenges of computer security.

b) Differentiate between monoalphabetic cipher and a polyalphabetic cipher.

c) Explain with example transposition techniques.

d) Briefly define the term permutation and substitution.

e) Explain Key Expansion algorithm of AES.

Q.3 Attempt Any Two of the following. **16**

a) Explain in detail active attack and passive attack.

b) Explain Matrix construction and rules of encryption text in playfair cipher. Construct the playfair matrix with key "cryptography". Encrypt the following message
"I only regret that I have but one life to give for my country"

c) Illustrate the working of single round of DES with diagram.

SECTION – II

Q.4 Attempt Any Three of the following. **12**

a) What are three broad categories of applications of public-key cryptosystems?

b) List the design objective of HMAC.

c) Explain user authentication model.

d) List and explain five properties of digital signature.

e) Explain identity management architecture.

Q.5 Solve Any Two of the following. **16**

a) Explain working of Kerberos version 4 and summarise Message exchange.

b) Using mathematical notations and equations summarize RSA Algorithm.

c) Alice and Bob use the Diffie-Hellman key exchange technique with a common prime

i) q = 157 and a primitive root a = 5

ii) If Alice has a private key XA = 15, find her public key YA

iii) If Bob has a private key XB = 27, find his public key YB

iv) What is the shared secret key between Alice and Bob?

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Cryptography (CSEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Why is a hash function useful in digital signatures?
a) It hides the private key
b) It compresses the message
c) It ensures integrity of the message being signed
d) It encrypts the message

2) 'Which of the following is a common application of hash functions?
a) Compressing multimedia files
b) Message encryption
c) Password verification
d) Data fragmentation

3) What is the primary function of Kerberos?
a) Data compression
b) Time synchronization
c) Secure user authentication using symmetric key
d) Digital signatures

4) Which component is essential in verifying identity using asymmetric encryption?
a) Trusted third party b) Certificate Authority (CA)
c) Secure socket layer d) Firewall

5) Which of the following is considered a passive attack?
a) Denial-of-Service b) Message modification
c) Eavesdropping d) Masquerading

6) In the Network Security Model, what is the role of the "trusted third party"?
- a) To forward messages
- b) To eavesdrop on communication
- c) To distribute and manage keys
- d) To generate random numbers

7) Given the monoalphabetic key A→D, B→E, C→F..., what is the cipher for "SOLAPUR"?
- a) VRODSXU
- b) VRORDSX
- c) VRORDXU
- d) VRQRESU

8) What kind of cipher is Playfair Cipher?
- a) Monoalphabetic
- b) Transposition
- c) Polyalphabetic
- d) Digraph substitution cipher

9) What is the encrypted form of "MEET" using Vigenère cipher with key "KEY"?
- a) WIXR
- b) QIQW
- c) WIEX
- d) WIEV

10) What is the input to the AddRoundKey function?
- a) Only the key
- b) Only the state
- c) State and Round Key
- d) Plaintext

11) Which principle helps in achieving diffusion in block ciphers?
- a) S-boxes
- b) P-boxes
- c) Key schedule
- d) XOR operation

12) Which feature of public-key systems supports non-repudiation?
- a) Encryption using the recipient's public key
- b) Signing using the sender's private key
- c) Hashing the message
- d) Encrypting with a shared secret

13) Why is it difficult to break RSA encryption?
- a) Because it uses substitution
- b) Because factorizing large primes is computationally hard
- c) Because it uses symmetric encryption
- d) Because it uses hashing

14) Why is public-key cryptography not typically used to encrypt large files directly?

a) It doesn't support encryption
b) It's too fast
c) It's computationally expensive
d) It doesn't provide authentication

SLR-QH-89

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Cryptography (CSEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three of the following. **12**

a) List and explain challenges of computer security.

b) Differentiate between monoalphabetic cipher and a polyalphabetic cipher.

c) Explain with example transposition techniques.

d) Briefly define the term permutation and substitution.

e) Explain Key Expansion algorithm of AES.

Q.3 Attempt Any Two of the following. **16**

a) Explain in detail active attack and passive attack.

b) Explain Matrix construction and rules of encryption text in playfair cipher. Construct the playfair matrix with key "cryptography". Encrypt the following message
"I only regret that I have but one life to give for my country"

c) Illustrate the working of single round of DES with diagram.

SECTION – II

Q.4 Attempt Any Three of the following. **12**

a) What are three broad categories of applications of public-key cryptosystems?

b) List the design objective of HMAC.

c) Explain user authentication model.

d) List and explain five properties of digital signature.

e) Explain identity management architecture.

Q.5 Solve Any Two of the following. **16**

a) Explain working of Kerberos version 4 and summarise Message exchange.

b) Using mathematical notations and equations summarize RSA Algorithm.

c) Alice and Bob use the Diffie-Hellman key exchange technique with a common prime

i) q = 157 and a primitive root a = 5

ii) If Alice has a private key XA = 15, find her public key YA

iii) If Bob has a private key XB = 27, find his public key YB

iv) What is the shared secret key between Alice and Bob?

Seat No.	

Set | S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Cryptography (CSEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the input to the AddRoundKey function?
a) Only the key b) Only the state
c) State and Round Key d) Plaintext

2) Which principle helps in achieving diffusion in block ciphers?
a) S-boxes b) P-boxes
c) Key schedule d) XOR operation

3) Which feature of public-key systems supports non-repudiation?
a) Encryption using the recipient's public key
b) Signing using the sender's private key
c) Hashing the message
d) Encrypting with a shared secret

4) Why is it difficult to break RSA encryption?
a) Because it uses substitution
b) Because factorizing large primes is computationally hard
c) Because it uses symmetric encryption
d) Because it uses hashing

5) Why is public-key cryptography not typically used to encrypt large files directly?
a) It doesn't support encryption
b) It's too fast
c) It's computationally expensive
d) It doesn't provide authentication

6) Why is a hash function useful in digital signatures?
a) It hides the private key
b) It compresses the message
c) It ensures integrity of the message being signed
d) It encrypts the message

7) 'Which of the following is a common application of hash functions?
   a) Compressing multimedia files
   b) Message encryption
   c) Password verification
   d) Data fragmentation

8) What is the primary function of Kerberos?
   a) Data compression
   b) Time synchronization
   c) Secure user authentication using symmetric key
   d) Digital signatures

9) Which component is essential in verifying identity using asymmetric encryption?
   a) Trusted third party
   b) Certificate Authority (CA)
   c) Secure socket layer
   d) Firewall

10) Which of the following is considered a passive attack?
   a) Denial-of-Service
   b) Message modification
   c) Eavesdropping
   d) Masquerading

11) In the Network Security Model, what is the role of the "trusted third party"?
   a) To forward messages
   b) To eavesdrop on communication
   c) To distribute and manage keys
   d) To generate random numbers

12) Given the monoalphabetic key A→D, B→E, C→F..., what is the cipher for "SOLAPUR"?
   a) VRODSXU
   b) VRORDSX
   c) VRORDXU
   d) VRQRESU

13) What kind of cipher is Playfair Cipher?
   a) Monoalphabetic
   b) Transposition
   c) Polyalphabetic
   d) Digraph substitution cipher

14) What is the encrypted form of "MEET" using Vigenère cipher with key "KEY"?
   a) WIXR
   b) QIQW
   c) WIEX
   d) WIEV

SLR-QH-89

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Cryptography (CSEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three of the following. **12**

a) List and explain challenges of computer security.

b) Differentiate between monoalphabetic cipher and a polyalphabetic cipher.

c) Explain with example transposition techniques.

d) Briefly define the term permutation and substitution.

e) Explain Key Expansion algorithm of AES.

Q.3 Attempt Any Two of the following. **16**

a) Explain in detail active attack and passive attack.

b) Explain Matrix construction and rules of encryption text in playfair cipher. Construct the playfair matrix with key "cryptography". Encrypt the following message
"I only regret that I have but one life to give for my country"

c) Illustrate the working of single round of DES with diagram.

SECTION – II

Q.4 Attempt Any Three of the following. **12**

a) What are three broad categories of applications of public-key cryptosystems?

b) List the design objective of HMAC.

c) Explain user authentication model.

d) List and explain five properties of digital signature.

e) Explain identity management architecture.

Q.5 Solve Any Two of the following. **16**

a) Explain working of Kerberos version 4 and summarise Message exchange.

b) Using mathematical notations and equations summarize RSA Algorithm.

c) Alice and Bob use the Diffie-Hellman key exchange technique with a common prime

i) q = 157 and a primitive root a = 5

ii) If Alice has a private key XA = 15, find her public key YA

iii) If Bob has a private key XB = 27, find his public key YB

iv) What is the shared secret key between Alice and Bob?

SLR-QH-91

Seat No.		Set	P

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Value education enables us _____.
a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

2) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

3) _____ is the basic unit of any human society.
a) Group b) Individual
c) Nature d) Society

4) Natural acceptance & _____ are the two processes of knowing.
a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

5) Present Education system gives more focus to skills.
a) True b) False
c) May be d) None of the above

6) Value of an entity is _____.
a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

7) _____ are as Basic Human Aspirations.
a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

8) Any course content on value education needs to be _____.
a) Universal b) Rational
c) Natural d) All of above

9) When we live with correct understanding of values, we feel _____.
a) Deprived b) Frustrated
c) Happy d) Unhappy

10) Following are the basic guidelines for value education except _____.
a) Universal b) Personal
c) Rational d) Natural

11) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

12) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

13) Right Understanding and Physical Facilities leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

14) ____ are the content of self-exploration.
a) Program b) Desire
c) Both a and b d) None of the above

15) To be in state of liking is _____.
a) Happy b) Unhappy
c) Both a and b d) None of the above

16) _____ helps the human being to transform from Animal consciousness to human consciousness.
a) Physical Facility b) Right understanding
c) Relationship d) All of above

17) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.

a) Value b) Skill
c) Technology d) All of above

18) _____ means physical facilities more than to satisfy my needs.

a) Health b) Prosperity
c) Happiness d) None of above

19) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

a) naturally acceptable b) pushed
c) common d) None of above

20) Physical facilities are necessary and complete for _____.

a) Animal b) Human being
c) Nature d) All of the above

21) Beside physical facilities human being want _____.

a) Name b) Fame
c) Relationship d) None of the above

22) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.

a) Swatantra b) Partantra
c) Prosperous d) None of the above

23) To be in state of _____ is unhappiness.

a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

24) Which of following leads to variety of problems at different levels of our living?

a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

25) Working only for physical facilities in living is called _____.

a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

26) Self and _____ are different in nature, materiality, needs and activities.

a) Trust b) Body
c) Belief d) None of the above

27) Sukh and _____ both are needed and can't replace each other.

a) Self b) Body
c) Suvidha d) Belief

28) In value education Sanyama means _____.
a) Self-regulation b) Health
c) Happiness d) Prosperity

29) Sadupyog of the Body mean _____ of the Body.
a) Self-regulation b) Care
c) Happiness d) Right utilization

30) Knowing means having the _____.
a) Assumption b) Right understanding
c) Right feeling d) None of the above

31) Each human being is co-existence of the _____ and the _____.
a) self, self b) body, body
c) self, body d) None of the above

32) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.
a) Swasthya b) Sanyam
c) Prosperity d) None of the above

33) The system of the body works in a _____ way.
a) Happy b) Self organized
c) Random d) Independent

34) The self is _____ in nature while body is _____ in nature.
a) Unconscious, Physico-chemical
b) Conscious, Physico-chemical
c) Physico-chemical, Conscious
d) Physico-chemical, Unconscious

35) The activity of desire, thought and expecting together is called as _____.
a) Body b) Health
c) Imagination d) Future

36) Harmony should be maintained in _____.
a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

37) Sah-astitva means _____.
a) Co-existence b) Co-operation
c) Co-ordination d) Corporate identity

38) The process of education and right living leads to _____ in the individual.

a) Right understanding b) Health
c) Prosperity d) None of the above

39) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness b) Confusion
c) Confidence d) Fear

40) _____ is the foundational value in relationship.

a) Respect b) Love
c) Trust d) Glory

41) To be assured of others at all time is the feeling of _____.

a) Respect b) Love
c) Trust d) Glory

42) _____ is the feeling for someone who has made efforts for excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

43) _____ is the feeling of acceptance for those who have made efforts for my excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

44) The feeling of relatedness to all human beings is called _____.

a) Love b) Affection
c) Gratitude d) Respect

45) All the units of nature can be classified into _____ orders.

a) Two b) Three
c) Four d) Six

46) Which of the following does not form an order in nature?

a) Bio b) Animal
c) Consciousness d) Human

47) Which of the following statement is not true?

a) There is interconnectedness in nature
b) There is recyclability and self-regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

48) Harmony in the family is the building block for harmony in the _____.

a) society b) individual
c) friend d) relative

49) _____ in the family means that the family is able to identify its needs.

a) wealth
b) prosperity
c) harmony
d) happiness

50) _____ means right evaluation.

a) Respect
b) Love
c) Trust
d) Glory

SLR-QH-91

Seat No.		Set	Q

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Beside physical facilities human being want _____.
a) Name b) Fame
c) Relationship d) None of the above

2) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.
a) Swatantra b) Partantra
c) Prosperous d) None of the above

3) To be in state of _____ is unhappiness.
a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

4) Which of following leads to variety of problems at different levels of our living?
a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

5) Working only for physical facilities in living is called _____.
a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

6) Self and _____ are different in nature, materiality, needs and activities.
a) Trust b) Body
c) Belief d) None of the above

7) Sukh and _____ both are needed and can't replace each other.
a) Self b) Body
c) Suvidha d) Belief

8) In value education Sanyama means _____.
a) Self-regulation b) Health
c) Happiness d) Prosperity

9) Sadupyog of the Body mean _____ of the Body.
a) Self-regulation b) Care
c) Happiness d) Right utilization

10) Knowing means having the _____.
a) Assumption b) Right understanding
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11) Each human being is co-existence of the _____ and the _____.
a) self, self b) body, body
c) self, body d) None of the above

12) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.
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13) The system of the body works in a _____ way.
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b) Conscious, Physico-chemical
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a) Body b) Health
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16) Harmony should be maintained in _____.
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d) All the above

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18) The process of education and right living leads to _____ in the individual.

a) Right understanding b) Health
c) Prosperity d) None of the above

19) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness b) Confusion
c) Confidence d) Fear

20) _____ is the foundational value in relationship.

a) Respect b) Love
c) Trust d) Glory

21) To be assured of others at all time is the feeling of _____.

a) Respect b) Love
c) Trust d) Glory

22) _____ is the feeling for someone who has made efforts for excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

23) _____ is the feeling of acceptance for those who have made efforts for my excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

24) The feeling of relatedness to all human beings is called _____.

a) Love b) Affection
c) Gratitude d) Respect

25) All the units of nature can be classified into _____ orders.

a) Two b) Three
c) Four d) Six

26) Which of the following does not form an order in nature?

a) Bio b) Animal
c) Consciousness d) Human

27) Which of the following statement is not true?

a) There is interconnectedness in nature
b) There is recyclability and self-regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

28) Harmony in the family is the building block for harmony in the _____.

a) society b) individual
c) friend d) relative

29) _____ in the family means that the family is able to identify its needs.

a) wealth b) prosperity
c) harmony d) happiness

30) _____ means right evaluation.

a) Respect b) Love
c) Trust d) Glory

31) Value education enables us _____.

a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

32) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

33) _____ is the basic unit of any human society.

a) Group b) Individual
c) Nature d) Society

34) Natural acceptance & _____ are the two processes of knowing.

a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

35) Present Education system gives more focus to skills.

a) True b) False
c) May be d) None of the above

36) Value of an entity is _____.

a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

37) _____ are as Basic Human Aspirations.

a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

38) Any course content on value education needs to be _____.

a) Universal b) Rational
c) Natural d) All of above

39) When we live with correct understanding of values, we feel _____.
a) Deprived b) Frustrated
c) Happy d) Unhappy

40) Following are the basic guidelines for value education except _____.
a) Universal b) Personal
c) Rational d) Natural

41) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

42) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
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43) Right Understanding and Physical Facilities leads to _____.
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44) ____ are the content of self-exploration.
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c) Both a and b d) None of the above

45) To be in state of liking is _____.
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49) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

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50) Physical facilities are necessary and complete for _____.

a) Animal
b) Human being
c) Nature
d) All of the above

SLR-QH-91

Seat No.		Set	R

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) To be assured of others at all time is the feeling of _____.
a) Respect b) Love
c) Trust d) Glory

2) _____ is the feeling for someone who has made efforts for excellence.
a) Reverence b) Glory
c) Gratitude d) Guidance

3) _____ is the feeling of acceptance for those who have made efforts for my excellence.
a) Reverence b) Glory
c) Gratitude d) Guidance

4) The feeling of relatedness to all human beings is called _____.
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5) All the units of nature can be classified into _____ orders.
a) Two b) Three
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6) Which of the following does not form an order in nature?
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8) Harmony in the family is the building block for harmony in the _____.
a) society b) individual
c) friend d) relative

9) _____ in the family means that the family is able to identify its needs.
a) wealth b) prosperity
c) harmony d) happiness

10) _____ means right evaluation.
a) Respect b) Love
c) Trust d) Glory

11) Value education enables us _____.
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d) Both a and b

17) _____ are as Basic Human Aspirations.
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d) Continuous Happiness & Prosperity

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c) Natural d) All of above

19) When we live with correct understanding of values, we feel _____.
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20) Following are the basic guidelines for value education except _____.
a) Universal b) Personal
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21) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

22) Right Understanding and relationships lead to _____.
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c) Both a and b d) None of the above

25) To be in state of liking is _____.
a) Happy b) Unhappy
c) Both a and b d) None of the above

26) _____ helps the human being to transform from Animal consciousness to human consciousness.
a) Physical Facility b) Right understanding
c) Relationship d) All of above

27) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.
a) Value b) Skill
c) Technology d) All of above

28) _____ means physical facilities more than to satisfy my needs.
a) Health b) Prosperity
c) Happiness d) None of above

29) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.
a) naturally acceptable b) pushed
c) common d) None of above

30) Physical facilities are necessary and complete for _____.
a) Animal b) Human being
c) Nature d) All of the above

31) Beside physical facilities human being want _____.
a) Name b) Fame
c) Relationship d) None of the above

32) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.
a) Swatantra b) Partantra
c) Prosperous d) None of the above

33) To be in state of _____ is unhappiness.
a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

34) Which of following leads to variety of problems at different levels of our living?
a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

35) Working only for physical facilities in living is called _____.
a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

36) Self and _____ are different in nature, materiality, needs and activities.
a) Trust b) Body
c) Belief d) None of the above

37) Sukh and _____ both are needed and can't replace each other.
a) Self b) Body
c) Suvidha d) Belief

38) In value education Sanyama means _____.
a) Self-regulation b) Health
c) Happiness d) Prosperity

39) Sadupyog of the Body mean _____ of the Body.
a) Self-regulation b) Care
c) Happiness d) Right utilization

40) Knowing means having the _____.
a) Assumption b) Right understanding
c) Right feeling d) None of the above

41) Each human being is co-existence of the _____ and the _____.
a) self, self b) body, body
c) self, body d) None of the above

42) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.
a) Swasthya b) Sanyam
c) Prosperity d) None of the above

43) The system of the body works in a _____ way.
a) Happy b) Self organized
c) Random d) Independent

44) The self is _____ in nature while body is _____ in nature.
a) Unconscious, Physico-chemical
b) Conscious, Physico-chemical
c) Physico-chemical, Conscious
d) Physico-chemical, Unconscious

45) The activity of desire, thought and expecting together is called as _____.
a) Body b) Health
c) Imagination d) Future

46) Harmony should be maintained in _____.
a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

47) Sah-astitva means _____.
a) Co-existence b) Co-operation
c) Co-ordination d) Corporate identity

48) The process of education and right living leads to _____ in the individual.
a) Right understanding b) Health
c) Prosperity d) None of the above

49) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness
b) Confusion
c) Confidence
d) Fear

50) _____ is the foundational value in relationship.

a) Respect
b) Love
c) Trust
d) Glory

SLR-QH-91

Seat No.		Set	S

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

2) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

3) Right Understanding and Physical Facilities leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

4) ____ are the content of self-exploration.
a) Program b) Desire
c) Both a and b d) None of the above

5) To be in state of liking is _____.
a) Happy b) Unhappy
c) Both a and b d) None of the above

6) _____ helps the human being to transform from Animal consciousness to human consciousness.
a) Physical Facility b) Right understanding
c) Relationship d) All of above

7) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.

a) Value b) Skill
c) Technology d) All of above

8) _____ means physical facilities more than to satisfy my needs.

a) Health b) Prosperity
c) Happiness d) None of above

9) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

a) naturally acceptable b) pushed
c) common d) None of above

10) Physical facilities are necessary and complete for _____.

a) Animal b) Human being
c) Nature d) All of the above

11) Beside physical facilities human being want _____.

a) Name b) Fame
c) Relationship d) None of the above

12) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.

a) Swatantra b) Partantra
c) Prosperous d) None of the above

13) To be in state of _____ is unhappiness.

a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

14) Which of following leads to variety of problems at different levels of our living?

a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

15) Working only for physical facilities in living is called _____.

a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

16) Self and _____ are different in nature, materiality, needs and activities.

a) Trust b) Body
c) Belief d) None of the above

17) Sukh and _____ both are needed and can't replace each other.

a) Self b) Body
c) Suvidha d) Belief

18) In value education Sanyama means _____.

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c) Happiness d) Prosperity

19) Sadupyog of the Body mean _____ of the Body.

a) Self-regulation b) Care
c) Happiness d) Right utilization

20) Knowing means having the _____.

a) Assumption b) Right understanding
c) Right feeling d) None of the above

21) Each human being is co-existence of the _____ and the _____.

a) self, self b) body, body
c) self, body d) None of the above

22) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.

a) Swasthya b) Sanyam
c) Prosperity d) None of the above

23) The system of the body works in a _____ way.

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24) The self is _____ in nature while body is _____ in nature.

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a) Body b) Health
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26) Harmony should be maintained in _____.

a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

27) Sah-astitva means _____.

a) Co-existence b) Co-operation
c) Co-ordination d) Corporate identity

28) The process of education and right living leads to _____ in the individual.

a) Right understanding b) Health
c) Prosperity d) None of the above

29) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness b) Confusion
c) Confidence d) Fear

30) _____ is the foundational value in relationship.

a) Respect b) Love
c) Trust d) Glory

31) To be assured of others at all time is the feeling of _____.

a) Respect b) Love
c) Trust d) Glory

32) _____ is the feeling for someone who has made efforts for excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

33) _____ is the feeling of acceptance for those who have made efforts for my excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

34) The feeling of relatedness to all human beings is called _____.

a) Love b) Affection
c) Gratitude d) Respect

35) All the units of nature can be classified into _____ orders.

a) Two b) Three
c) Four d) Six

36) Which of the following does not form an order in nature?

a) Bio b) Animal
c) Consciousness d) Human

37) Which of the following statement is not true?

a) There is interconnectedness in nature
b) There is recyclability and self-regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

38) Harmony in the family is the building block for harmony in the _____.

a) society b) individual
c) friend d) relative

39) _____ in the family means that the family is able to identify its needs.

a) wealth b) prosperity
c) harmony d) happiness

40) _____ means right evaluation.

a) Respect b) Love
c) Trust d) Glory

41) Value education enables us _____.

a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

42) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

43) _____ is the basic unit of any human society.

a) Group b) Individual
c) Nature d) Society

44) Natural acceptance & _____ are the two processes of knowing.

a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

45) Present Education system gives more focus to skills.

a) True b) False
c) May be d) None of the above

46) Value of an entity is _____.

a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

47) _____ are as Basic Human Aspirations.

a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

48) Any course content on value education needs to be _____.

a) Universal b) Rational
c) Natural d) All of above

49) When we live with correct understanding of values, we feel _____.

a) Deprived b) Frustrated

c) Happy d) Unhappy

50) Following are the basic guidelines for value education except _____.

a) Universal b) Personal

c) Rational d) Natural

SLR-QH-92

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I)
(CBCS) Examination: March/April – 2026
Applied Mathematics – I (BTN03301)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Use of non-programable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) The complementary function of the equation $[(D+1)^2(D+4)]y = 2t$ is _____.

a) $c_1e^{-t} + c_2e^{-4t} + c_3e^{t}$ b) $c_1\cos t + c_2\sin t + c_3e^{-4t}$

c) $(c_1 + c_2t)e^{t} + c_3e^{-4t}$ d) $(c_1 + c_2t)e^{-t} + c_3e^{-4t}$

2) The general solution of $(D^4 + 2D^2 + 1)y = 0$ is _____.

a) $c_1\cos x + c_2\sin x + c_3\cos x + c_4\sin x$

b) $(c_1 + c_2x)e^{x}$

c) $(c_1 + c_2x)\cos x + (c_3 + c_4x)\sin x$

d) $(c_1 + c_2x + c_3x^2 + c_4x^3)e^{-x}$

3) The value of the integral $\int_0^{\infty} e^{-2t}\cos 3t\, dt$ is _____.

a) $1/13$ b) $2/13$

c) 13^2 d) 13

4) $L^{-1}\left\{\frac{1}{s^2-3^2}\right\} =$ _____.

a) $\frac{1}{3}\sin 3t$ b) $\frac{1}{3}\cos 3t$

c) $\frac{1}{3}\cosh 3t$ d) $\frac{1}{3}\sinh 3t$

5) If $Z\{f(k)\} = F(z)$, then $Z\{a^k f(k)\} =$ _____.

a) $F\left(\frac{z}{a}\right)$ b) $F\left(\frac{a}{z}\right)$

c) $\frac{1}{a}F\left(\frac{z}{a}\right)$ d) $\frac{1}{a}F\left(\frac{a}{z}\right)$

6) $Z^{-1}\left\{\frac{z}{z+a}\right\}, |Z| > a$ (with $k \geq 0$) is _____.

a) a^k b) $(-a)^k$

c) a^{k+1} d) a^{-k-1}

7) If $L\{f(t)\} = \phi(s)$, then $L\{f(at)\} =$ _____.

a) $\phi\left(\frac{s}{a}\right)$ b) $\frac{1}{s}\phi\left(\frac{s}{a}\right)$

c) $\frac{1}{a}\phi\left(\frac{s}{a}\right)$ d) $\phi'\left(\frac{s}{a}\right)$

8) Which of the following is not a Dirichlet's condition?

a) $f(x)$ is periodic b) $f(x)$ is single valued

c) $f(x)$ is even function d) $f(x)$ is infinite

9) If $f(x) = x^2$ is expanded as a cosine series in $(0, \pi)$ then the constant term is _____.

a) $\frac{\pi^2}{3}$ b) $\frac{\pi^3}{3}$

c) $\frac{2\pi^2}{3}$ d) $\frac{3\pi^2}{2}$

10) Correlation analysis help us to _____ our activities.

a) Control b) Plan

c) Predict d) All of above

11) A discrete probability distribution function of a discrete random variable is given by,

x:	0	1	2	3	4
$P(x)$:	k	$3k$	$5k$	$4k$	$2k$

then $k =$ _____.

a) $1/3$ b) $1/15$

c) $1/5$ d) 1

12) If $b_{yx} = {}^{5}/_{18}, b_{xy} = {}^{8}/_{5}$, then $r =$ _____.

a) $2/5$ b) $2/3$

c) $1/2$ d) $3/2$

13) Idle time of queuing system is _____.

a) $1 - \frac{\lambda}{\mu}$ b) $\frac{\lambda}{\mu}$

c) $\frac{\mu}{\lambda}$ d) $1 - \frac{\mu}{\lambda}$

14) In a $M/M/1/\infty$ system the probability that there will be no customer in the system is _____.

a) ρ b) ρ^2

c) $1 - \rho$ d) $1 - \rho^2$

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I)
(CBCS) Examination: March/April – 2026
Applied Mathematics – I (BTN03301)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Solve Any Three of the following. **09**

a) Solve $(D^3 - D^2 = -6D)y = x^2 + 1$

b) Evaluate $\int_0^\infty e^{-t}\left(\frac{1-\cos t}{t}\right)dt$

c) Find $Z\left\{\left(\frac{1}{3}\right)^{|k|}\right\}$

d) Find the inverse Laplace transform of $\frac{s+29}{(s+4)(s^2+9)}$

e) Find Inverse Z-transform of $\frac{1}{(z-5)^3}, |z| > 5$

Q.3 Solve Any Three of the following. **09**

a) Solve $(D^2 - 2D + 1)y = x^2e^{3x}$

b) Find $Z\{k^2a^{k-1}\}, k \geq 0$

c) Solve $(D^4 + 8D^2 + 16)y = \sin^2 x$

d) Find $L\{t.\sqrt{1-\sin t}\}$

e) Find $L^{-1}\left\{\log\left(1+\frac{a^2}{s^2}\right)\right\}$

Q.4 Solve Any Two of the following. **10**

a) Solve $(D^2 + 3D + 2)y = \sin(e^x)$

b) Using Laplace transform method solve
$y''(t) - y'(t) - 2y(t) = 20\sin 2t$, with $y(0) = 1$ and $y'(0) = 2$

c) Calculate inverse Z-Transform of $F(z) = \frac{z^2}{\left(z-\frac{1}{4}\right)\left(z-\frac{1}{5}\right)}$, if ROC is $|z| < \frac{1}{5}$

Section – II

Q.5 Solve Any Three of the following. **09**

a) Obtain Fourier series expansion of $f(x) = \frac{x(\pi^2 - x^2)}{12}$ in $(-\pi, \pi)$

b) Obtain half range cosine series of $f(x) = e^{-x}$ in $0 < x < \pi$

c) Assuming that half of the population in a city is vegetarian so that the chance of an individual being vegetarian is 1/2 and assuming that 100 investigators take a sample of 10 individuals to see whether they are vegetarian, how many investigators would you expect to report that three people or less were vegetarian.

d) Calculate: (i) k (ii) $p(x > 5)$ (iii) $p(0 \leq x \leq 5)$
if a random variable x has the following probability distribution.

x	1	2	3	4	5	6	7
$p(x)$	k	$2k$	$3k$	k^2	$k^2 + k$	$2k^2$	$4k^2$

e) With usual notation find the average waiting time per customer in the queue and in the system for $M/M/1/\infty$ model,
if $\lambda = 9$ and $\mu = 15$ per hour.

Q.6 Solve Any Three of the following. **09**

a) In a sample of 1000 students, the mean and standard deviation of marks obtained by the students in a certain test are 14 and 2.5. Assuming the distribution to be normal find the number of students getting marks

i) between 12 and 15
ii) above 18
iii) below 8

(Given: - For a S. N. V. z area between $z = 0$ and $z = 0.4$ is 0.1554, that between $z = 0$ and $z = 0.8$ is 0.2881, that between $z = 0$ and $z = 1.6$ is 0.4452, that between $z = 0$ and $z = 2.4$ is 0.4918.)

b) A supermarket has two girls serving at the two counters. The customers arrive in Poisson fashion at the rate of 12 per hour. The service time for each customer is exponential with mean 6 minutes. Find:

i) the probability that an arriving customer has to wait
ii) the average number of customers in the system

c) Obtain the Fourier expansion of, $f(x) = 2x - x^2$ in $(0,3)$.

d) Calculate the correlation co-efficient between x and y, if Nine students obtained the following percentage of marks in the college examination (x) and in the University examination (y).

x	51	53	73	46	50	60	47	36	60
y	49	72	74	44	58	66	50	30	55

e) The following mistakes per page were observed in a book.

No. of mistakes	0	1	2	3	4	Total
No. of pages	211	90	19	5	0	325

Fit a Poisson distribution.

Q.7 Solve Any Two of the following. **10**

a) A super market has two girls at the sales counter. If the service time for each customer is exponentially distributed with mean of 4 minutes and if the arrival time is Poisson with mean rate 10 per hour, find

i) the probability that a customer has to wait

ii) expected idle time for each gill

b) Obtain Fourier series of, $f(x) = \left(\frac{\pi - x}{2}\right)^2$, in $(0, 2\pi)$ and hence deduce that

$$\frac{\pi^2}{6} = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots$$

c) Calculate the equations of two lines of regression and calculate expected height of son when the height of father is 154 cms. Heights of fathers and sons are given below.

Ht. of Father (x)	150	152	155	157	160	161	164	166
Ht. of Son (y)	154	156	158	159	160	162	161	164

SLR-QH-92

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I)
(CBCS) Examination: March/April – 2026
Applied Mathematics – I (BTN03301)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Use of non-programable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Which of the following is not a Dirichlet's condition?
a) $f(x)$ is periodic b) $f(x)$ is single valued
c) $f(x)$ is even function d) $f(x)$ is infinite

2) If $f(x) = x^2$ is expanded as a cosine series in $(0, \pi)$ then the constant term is _____.
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x:	0	1	2	3	4
$P(x)$:	k	$3k$	$5k$	$4k$	$2k$

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6) Idle time of queuing system is _____.

a) $1-\frac{\lambda}{\mu}$ b) $\frac{\lambda}{\mu}$

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7) In a $M/M/1/\infty$ system the probability that there will be no customer in the system is _____.

a) ρ b) ρ^2

c) $1-\rho$ d) $1-\rho^2$

8) The complementary function of the equation $[(D+1)^2(D+4)]y = 2t$ is _____.

a) $c_1e^{-t}+c_2e^{-4t}+c_3e^{t}$ b) $c_1\cos t + c_2\sin t + c_3e^{-4t}$

c) $(c_1+c_2t)e^{t}+c_3e^{-4t}$ d) $(c_1+c_2t)e^{-t}+c_3e^{-4t}$

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c) $\frac{1}{a}F\left(\frac{z}{a}\right)$ d) $\frac{1}{a}F\left(\frac{a}{z}\right)$

13) $Z^{-1}\left\{\frac{z}{z+a}\right\}, |Z| > a$ (with $k \geq 0$) is _____.

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c) a^{k+1} d) a^{-k-1}

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a) $\phi\left(\frac{s}{a}\right)$

b) $\frac{1}{s}\phi\left(\frac{s}{a}\right)$

c) $\frac{1}{a}\phi\left(\frac{s}{a}\right)$

d) $\phi'\left(\frac{s}{a}\right)$

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I)
(CBCS) Examination: March/April – 2026
Applied Mathematics – I (BTN03301)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Use of non-programmable calculator is allowed.

Section – I

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a) Solve $(D^3 - D^2 = -6D)y = x^2 + 1$

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c) Find $Z\left\{\left(\frac{1}{3}\right)^{|k|}\right\}$

d) Find the inverse Laplace transform of $\frac{s+29}{(s+4)(s^2+9)}$

e) Find Inverse Z-transform of $\frac{1}{(z-5)^3}, |z| > 5$

Q.3 Solve Any Three of the following. **09**

a) Solve $(D^2 - 2D + 1)y = x^2e^{3x}$

b) Find $Z\{k^2a^{k-1}\}, k \geq 0$

c) Solve $(D^4 + 8D^2 + 16)y = \sin^2 x$

d) Find $L\{t.\sqrt{1-\sin t}\}$

e) Find $L^{-1}\left\{\log\left(1+\frac{a^2}{s^2}\right)\right\}$

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a) Solve $(D^2 + 3D + 2)y = \sin(e^x)$

b) Using Laplace transform method solve
$y''(t) - y'(t) - 2y(t) = 20\sin 2t$, with $y(0) = 1$ and $y'(0) = 2$

c) Calculate inverse Z-Transform of $F(z) = \frac{z^2}{\left(z-\frac{1}{4}\right)\left(z-\frac{1}{5}\right)}$, if ROC is $|z| < \frac{1}{5}$

Section – II

Q.5 Solve Any Three of the following. **09**

a) Obtain Fourier series expansion of $f(x) = \frac{x(\pi^2 - x^2)}{12}$ in $(-\pi, \pi)$

b) Obtain half range cosine series of $f(x) = e^{-x}$ in $0 < x < \pi$

c) Assuming that half of the population in a city is vegetarian so that the chance of an individual being vegetarian is 1/2 and assuming that 100 investigators take a sample of 10 individuals to see whether they are vegetarian, how many investigators would you expect to report that three people or less were vegetarian.

d) Calculate: (i) k (ii) $p(x > 5)$ (iii) $p(0 \leq x \leq 5)$
if a random variable x has the following probability distribution.

x	1	2	3	4	5	6	7
$p(x)$	k	$2k$	$3k$	k^2	$k^2 + k$	$2k^2$	$4k^2$

e) With usual notation find the average waiting time per customer in the queue and in the system for $M/M/1/\infty$ model,
if $\lambda = 9$ and $\mu = 15$ per hour.

Q.6 Solve Any Three of the following. **09**

a) In a sample of 1000 students, the mean and standard deviation of marks obtained by the students in a certain test are 14 and 2.5. Assuming the distribution to be normal find the number of students getting marks

i) between 12 and 15
ii) above 18
iii) below 8

(Given: - For a S. N. V. z area between $z = 0$ and $z = 0.4$ is 0.1554, that between $z = 0$ and $z = 0.8$ is 0.2881, that between $z = 0$ and $z = 1.6$ is 0.4452, that between $z = 0$ and $z = 2.4$ is 0.4918.)

b) A supermarket has two girls serving at the two counters. The customers arrive in Poisson fashion at the rate of 12 per hour. The service time for each customer is exponential with mean 6 minutes. Find:

i) the probability that an arriving customer has to wait
ii) the average number of customers in the system

c) Obtain the Fourier expansion of, $f(x) = 2x - x^2$ in $(0,3)$.

d) Calculate the correlation co-efficient between x and y, if Nine students obtained the following percentage of marks in the college examination (x) and in the University examination (y).

x	51	53	73	46	50	60	47	36	60
y	49	72	74	44	58	66	50	30	55

e) The following mistakes per page were observed in a book.

No. of mistakes	0	1	2	3	4	Total
No. of pages	211	90	19	5	0	325

Fit a Poisson distribution.

Q.7 Solve Any Two of the following. **10**

a) A super market has two girls at the sales counter. If the service time for each customer is exponentially distributed with mean of 4 minutes and if the arrival time is Poisson with mean rate 10 per hour, find

i) the probability that a customer has to wait

ii) expected idle time for each gill

b) Obtain Fourier series of, $f(x) = \left(\frac{\pi - x}{2}\right)^2$, in $(0, 2\pi)$ and hence deduce that

$$\frac{\pi^2}{6} = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots$$

c) Calculate the equations of two lines of regression and calculate expected height of son when the height of father is 154 cms. Heights of fathers and sons are given below.

Ht. of Father (x)	150	152	155	157	160	161	164	166
Ht. of Son (y)	154	156	158	159	160	162	161	164

SLR-QH-92

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I)
(CBCS) Examination: March/April – 2026
Applied Mathematics – I (BTN03301)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Use of non-programable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) A discrete probability distribution function of a discrete random variable is given by,

x:	0	1	2	3	4
$P(x)$:	k	$3k$	$5k$	$4k$	$2k$

then $k =$ _____.

a) $1/3$ b) $1/15$
c) $1/5$ d) 1

2) If $b_{yx} = {}^{5}/_{18}, b_{xy} = {}^{8}/_{5}$, then $r =$ _____.

a) $2/5$ b) $2/3$
c) $1/2$ d) $3/2$

3) Idle time of queuing system is _____.

a) $1 - \frac{\lambda}{\mu}$ b) $\frac{\lambda}{\mu}$
c) $\frac{\mu}{\lambda}$ d) $1 - \frac{\mu}{\lambda}$

4) In a $M/M/1/\infty$ system the probability that there will be no customer in the system is _____.

a) ρ b) ρ^2
c) $1 - \rho$ d) $1 - \rho^2$

5) The complementary function of the equation $[(D+1)^2(D+4)]y = 2t$ is _____.

a) $c_1e^{-t} + c_2e^{-4t} + c_3e^{t}$ b) $c_1 \cos t + c_2 \sin t + c_3e^{-4t}$
c) $(c_1 + c_2t)e^{t} + c_3e^{-4t}$ d) $(c_1 + c_2t)e^{-t} + c_3e^{-4t}$

6) The general solution of $(D^4 + 2D^2 + 1)y = 0$ is _____.

a) $c_1 \cos x + c_2 \sin x + c_3 \cos x + c_4 \sin x$

b) $(c_1 + c_2 x)e^x$

c) $(c_1 + c_2 x)\cos x + (c_3 + c_4 x)\sin x$

d) $(c_1 + c_2 x + c_3 x^2 + c_4 x^3)e^{-x}$

7) The value of the integral $\int_0^\infty e^{-2t} \cos 3t \, dt$ is _____.

a) $1/13$ b) $2/13$

c) 13^2 d) 13

8) $L^{-1}\left\{\frac{1}{s^2-3^2}\right\} =$ _____.

a) $\frac{1}{3}\sin 3t$ b) $\frac{1}{3}\cos 3t$

c) $\frac{1}{3}\cosh 3t$ d) $\frac{1}{3}\sinh 3t$

9) If $Z\{f(k)\} = F(z)$, then $Z\{a^k f(k)\} =$ _____.

a) $F\left(\frac{z}{a}\right)$ b) $F\left(\frac{a}{z}\right)$

c) $\frac{1}{a}F\left(\frac{z}{a}\right)$ d) $\frac{1}{a}F\left(\frac{a}{z}\right)$

10) $Z^{-1}\left\{\frac{z}{z+a}\right\}, |Z| > a$ (with $k \geq 0$) is _____.

a) a^k b) $(-a)^k$

c) a^{k+1} d) a^{-k-1}

11) If $L\{f(t)\} = \phi(s)$, then $L\{f(at)\} =$ _____.

a) $\phi\left(\frac{s}{a}\right)$ b) $\frac{1}{s}\phi\left(\frac{s}{a}\right)$

c) $\frac{1}{a}\phi\left(\frac{s}{a}\right)$ d) $\phi'\left(\frac{s}{a}\right)$

12) Which of the following is not a Dirichlet's condition?

a) $f(x)$ is periodic b) $f(x)$ is single valued

c) $f(x)$ is even function d) $f(x)$ is infinite

13) If $f(x) = x^2$ is expanded as a cosine series in $(0, \pi)$ then the constant term is _____.

a) $\frac{\pi^2}{3}$ b) $\frac{\pi^3}{3}$

c) $\frac{2\pi^2}{3}$ d) $\frac{3\pi^2}{2}$

14) Correlation analysis help us to _____ our activities.

a) Control b) Plan

c) Predict d) All of above

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I)
(CBCS) Examination: March/April – 2026
Applied Mathematics – I (BTN03301)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Solve Any Three of the following. **09**

a) Solve $(D^3 - D^2 = -6D)y = x^2 + 1$

b) Evaluate $\int_0^\infty e^{-t}\left(\frac{1-\cos t}{t}\right)dt$

c) Find $Z\left\{\left(\frac{1}{3}\right)^{|k|}\right\}$

d) Find the inverse Laplace transform of $\frac{s+29}{(s+4)(s^2+9)}$

e) Find Inverse Z-transform of $\frac{1}{(z-5)^3}, |z| > 5$

Q.3 Solve Any Three of the following. **09**

a) Solve $(D^2 - 2D + 1)y = x^2e^{3x}$

b) Find $Z\{k^2a^{k-1}\}, k \geq 0$

c) Solve $(D^4 + 8D^2 + 16)y = \sin^2 x$

d) Find $L\{t.\sqrt{1-\sin t}\}$

e) Find $L^{-1}\left\{\log\left(1+\frac{a^2}{s^2}\right)\right\}$

Q.4 Solve Any Two of the following. **10**

a) Solve $(D^2 + 3D + 2)y = \sin(e^x)$

b) Using Laplace transform method solve
$y''(t) - y'(t) - 2y(t) = 20\sin 2t$, with $y(0) = 1$ and $y'(0) = 2$

c) Calculate inverse Z-Transform of $F(z) = \frac{z^2}{\left(z-\frac{1}{4}\right)\left(z-\frac{1}{5}\right)}$, if ROC is $|z| < \frac{1}{5}$

Section – II

Q.5 Solve Any Three of the following. **09**

a) Obtain Fourier series expansion of $f(x) = \frac{x(\pi^2 - x^2)}{12}$ in $(-\pi, \pi)$

b) Obtain half range cosine series of $f(x) = e^{-x}$ in $0 < x < \pi$

c) Assuming that half of the population in a city is vegetarian so that the chance of an individual being vegetarian is 1/2 and assuming that 100 investigators take a sample of 10 individuals to see whether they are vegetarian, how many investigators would you expect to report that three people or less were vegetarian.

d) Calculate: (i) k (ii) $p(x > 5)$ (iii) $p(0 \leq x \leq 5)$
if a random variable x has the following probability distribution.

x	1	2	3	4	5	6	7
$p(x)$	k	$2k$	$3k$	k^2	$k^2 + k$	$2k^2$	$4k^2$

e) With usual notation find the average waiting time per customer in the queue and in the system for $M/M/1/\infty$ model,
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Q.6 Solve Any Three of the following. **09**

a) In a sample of 1000 students, the mean and standard deviation of marks obtained by the students in a certain test are 14 and 2.5. Assuming the distribution to be normal find the number of students getting marks

i) between 12 and 15
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(Given: - For a S. N. V. z area between $z = 0$ and $z = 0.4$ is 0.1554, that between $z = 0$ and $z = 0.8$ is 0.2881, that between $z = 0$ and $z = 1.6$ is 0.4452, that between $z = 0$ and $z = 2.4$ is 0.4918.)

b) A supermarket has two girls serving at the two counters. The customers arrive in Poisson fashion at the rate of 12 per hour. The service time for each customer is exponential with mean 6 minutes. Find:

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x	51	53	73	46	50	60	47	36	60
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e) The following mistakes per page were observed in a book.

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Fit a Poisson distribution.

Q.7 Solve Any Two of the following. **10**

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c) Calculate the equations of two lines of regression and calculate expected height of son when the height of father is 154 cms. Heights of fathers and sons are given below.

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SLR-QH-92

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I)
(CBCS) Examination: March/April – 2026
Applied Mathematics – I (BTN03301)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Use of non-programable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. **14**

1) $Z^{-1}\left\{\frac{z}{z+a}\right\}, |Z| > a$ (with $k \geq 0$) is _____.

a) a^k b) $(-a)^k$
c) a^{k+1} d) a^{-k-1}

2) If $L\{f(t)\} = \phi(s)$, then $L\{f(at)\} =$ _____.

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a) $f(x)$ is periodic b) $f(x)$ is single valued
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5) Correlation analysis help us to _____ our activities.

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6) A discrete probability distribution function of a discrete random variable is given by,

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a) $1 - \frac{\lambda}{\mu}$ b) $\frac{\lambda}{\mu}$

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SLR-QH-92

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Applied Mathematics – I (BTN03301)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Use of non-programmable calculator is allowed.

Section – I

Q.2 Solve Any Three of the following. **09**

a) Solve $(D^3 - D^2 = -6D)y = x^2 + 1$

b) Evaluate $\int_0^\infty e^{-t}\left(\frac{1-\cos t}{t}\right)dt$

c) Find $Z\left\{\left(\frac{1}{3}\right)^{|k|}\right\}$

d) Find the inverse Laplace transform of $\frac{s+29}{(s+4)(s^2+9)}$

e) Find Inverse Z-transform of $\frac{1}{(z-5)^3}, |z| > 5$

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a) Solve $(D^2 - 2D + 1)y = x^2e^{3x}$

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Q.4 Solve Any Two of the following. **10**

a) Solve $(D^2 + 3D + 2)y = \sin(e^x)$

b) Using Laplace transform method solve
$y''(t) - y'(t) - 2y(t) = 20\sin 2t$, with $y(0) = 1$ and $y'(0) = 2$

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Section – II

Q.5 Solve Any Three of the following. **09**

a) Obtain Fourier series expansion of $f(x) = \frac{x(\pi^2 - x^2)}{12}$ in $(-\pi, \pi)$

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d) Calculate: (i) k (ii) $p(x > 5)$ (iii) $p(0 \leq x \leq 5)$
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x	1	2	3	4	5	6	7
$p(x)$	k	$2k$	$3k$	k^2	$k^2 + k$	$2k^2$	$4k^2$

e) With usual notation find the average waiting time per customer in the queue and in the system for $M/M/1/\infty$ model,
if $\lambda = 9$ and $\mu = 15$ per hour.

Q.6 Solve Any Three of the following. **09**

a) In a sample of 1000 students, the mean and standard deviation of marks obtained by the students in a certain test are 14 and 2.5. Assuming the distribution to be normal find the number of students getting marks

i) between 12 and 15
ii) above 18
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(Given: - For a S. N. V. z area between $z = 0$ and $z = 0.4$ is 0.1554, that between $z = 0$ and $z = 0.8$ is 0.2881, that between $z = 0$ and $z = 1.6$ is 0.4452, that between $z = 0$ and $z = 2.4$ is 0.4918.)

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i) the probability that an arriving customer has to wait
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e) The following mistakes per page were observed in a book.

No. of mistakes	0	1	2	3	4	Total
No. of pages	211	90	19	5	0	325

Fit a Poisson distribution.

Q.7 Solve Any Two of the following. **10**

a) A super market has two girls at the sales counter. If the service time for each customer is exponentially distributed with mean of 4 minutes and if the arrival time is Poisson with mean rate 10 per hour, find

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$$\frac{\pi^2}{6} = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots$$

c) Calculate the equations of two lines of regression and calculate expected height of son when the height of father is 154 cms. Heights of fathers and sons are given below.

Ht. of Father (x)	150	152	155	157	160	161	164	166
Ht. of Son (y)	154	156	158	159	160	162	161	164

SLR-QH-94

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Organization and Architecture (CSEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) What is the time period of the first generation of computers?
a) 1940-1956 b) 1956-1963
c) 1964-1971 d) 1971-Present

2) What does "upward compatibility" mean in computer systems?
a) New software works on old hardware
b) Old software works on new hardware
c) New hardware works on any software
d) Hardware upgrades are not needed

3) A load/store architecture is a characteristic of which type of ISA?
a) CISC b) VLIW
c) RISC d) Micro programmed ISA

4) Which addressing mode involves two memory accesses to obtain the operand?
a) Immediate b) Direct
c) Indirect d) Register

5) Fully associative mapping allows a block from main memory to be stored _____.
a) Only in a specific cache line b) In any cache line
c) In only even-numbered lines d) Only in set 0

6) A traditional uniprocessor system falls under which Flynn category?
a) SIMD b) MIMD
c) SISD d) MISD

7) The number of stages in a pipeline determines _____.
a) Clock speed
b) Memory access time
c) Instruction latency
d) Degree of parallelism

8) Which technique is commonly used to resolve data hazards?
a) Prefetching
b) Forwarding (bypassing)
c) Hazard detection unit
d) Pipeline flushing

9) What is the primary purpose of a DMA controller?
a) Speed up CPU clock
b) Handle memory paging
c) Transfer data between I/O device and memory directly
d) Manage cache operations

10) Temporal and spatial locality are exploited in which level of the memory hierarchy?
a) Main memory
b) Secondary storage
c) Cache memory
d) Virtual memory

11) Which of the following parallel programming languages is designed to simplify data parallelism in high-performance computing?
a) C++
b) Java
c) Fortran
d) CUDA

12) I/O module is often responsible for _____ and for subsequently reporting errors to the processor.
a) Control and timing
b) Processor communication
c) Device communication
d) Error Detection

13) Which type of data hazard occurs when an instruction tries to read a register that is being written by a previous instruction in the pipeline?
a) Write After Write (WAW)
b) Read After Write (RAW)
c) Write After Read (WAR)
d) No hazard

14) A key characteristic of Logical Programming is that it is _____.
a) State-driven
b) Based on solving problems by specifying a set of facts and rules
c) Focused on functions and operations
d) Dependent on mutable state

SLR-QH-94

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Organization and Architecture (CSEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain Generation of Computer.

b) Define Bus and explain system Bus.

c) Explain Optimizing Compilers for Parallelism.

d) Write a short note on pseudo-Operations.

e) Explain in detail message passing model.

Q.3 Attempt Any Two. **12**

a) Write a short note on.
i) Shared Variable model
ii) Data parallel model

b) $x = a \times b + c \times d$ solve this equation by zero, one, one two, three address Instruction processor.

c) Explain memory Hierarchy with different levels of memory.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Difference between Linear and Non-linear pipeline.

b) Explain basic compiler techniques for exposing ILP.

c) Differentiate between Memory Mapped I/O and I/O Mapped I/O.

d) Explain the Symmetric shared memory architecture with suitable diagram.

e) Short note on ILP Dynamic scheduling issues.

Q.5 Attempt Any Two. **12**

a) Explain in detail exploiting ILP using multiple issues & static scheduling.

b) What is pipelining? Explain different types of hazards that occur in pipeline.

c) Write a note on-

i) Direct memory access

ii) Interrupt Driven IO

SLR-QH-94

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Organization and Architecture (CSEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which technique is commonly used to resolve data hazards?
a) Prefetching b) Forwarding (bypassing)
c) Hazard detection unit d) Pipeline flushing

2) What is the primary purpose of a DMA controller?
a) Speed up CPU clock
b) Handle memory paging
c) Transfer data between I/O device and memory directly
d) Manage cache operations

3) Temporal and spatial locality are exploited in which level of the memory hierarchy?
a) Main memory b) Secondary storage
c) Cache memory d) Virtual memory

4) Which of the following parallel programming languages is designed to simplify data parallelism in high-performance computing?
a) C++ b) Java
c) Fortran d) CUDA

5) I/O module is often responsible for _____ and for subsequently reporting errors to the processor.
a) Control and timing b) Processor communication
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6) Which type of data hazard occurs when an instruction tries to read a register that is being written by a previous instruction in the pipeline?
a) Write After Write (WAW) b) Read After Write (RAW)
c) Write After Read (WAR) d) No hazard

7) A key characteristic of Logical Programming is that it is _____.
a) State-driven
b) Based on solving problems by specifying a set of facts and rules
c) Focused on functions and operations
d) Dependent on mutable state

8) What is the time period of the first generation of computers?
a) 1940-1956
b) 1956-1963
c) 1964-1971
d) 1971-Present

9) What does "upward compatibility" mean in computer systems?
a) New software works on old hardware
b) Old software works on new hardware
c) New hardware works on any software
d) Hardware upgrades are not needed

10) A load/store architecture is a characteristic of which type of ISA?
a) CISC
b) VLIW
c) RISC
d) Micro programmed ISA

11) Which addressing mode involves two memory accesses to obtain the operand?
a) Immediate
b) Direct
c) Indirect
d) Register

12) Fully associative mapping allows a block from main memory to be stored _____.
a) Only in a specific cache line
b) In any cache line
c) In only even-numbered lines
d) Only in set 0

13) A traditional uniprocessor system falls under which Flynn category?
a) SIMD
b) MIMD
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a) Clock speed
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SLR-QH-94

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Organization and Architecture (CSEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory
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SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain Generation of Computer.

b) Define Bus and explain system Bus.

c) Explain Optimizing Compilers for Parallelism.

d) Write a short note on pseudo-Operations.

e) Explain in detail message passing model.

Q.3 Attempt Any Two. **12**

a) Write a short note on.
i) Shared Variable model
ii) Data parallel model

b) $x = a \times b + c \times d$ solve this equation by zero, one, one two, three address Instruction processor.

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SECTION – II

Q.4 Attempt Any Four. **16**

a) Difference between Linear and Non-linear pipeline.

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c) Differentiate between Memory Mapped I/O and I/O Mapped I/O.

d) Explain the Symmetric shared memory architecture with suitable diagram.

e) Short note on ILP Dynamic scheduling issues.

Q.5 Attempt Any Two. **12**

a) Explain in detail exploiting ILP using multiple issues & static scheduling.

b) What is pipelining? Explain different types of hazards that occur in pipeline.

c) Write a note on-

i) Direct memory access

ii) Interrupt Driven IO

SLR-QH-94

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Organization and Architecture (CSEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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c) Cache memory
d) Virtual memory

SLR-QH-94

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Organization and Architecture (CSEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory
2) Figures to the right indicate full marks.
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SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain Generation of Computer.

b) Define Bus and explain system Bus.

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d) Write a short note on pseudo-Operations.

e) Explain in detail message passing model.

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a) Write a short note on.
i) Shared Variable model
ii) Data parallel model

b) $x = a \times b + c \times d$ solve this equation by zero, one, one two, three address Instruction processor.

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SECTION – II

Q.4 Attempt Any Four. **16**

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c) Differentiate between Memory Mapped I/O and I/O Mapped I/O.

d) Explain the Symmetric shared memory architecture with suitable diagram.

e) Short note on ILP Dynamic scheduling issues.

Q.5 Attempt Any Two. **12**

a) Explain in detail exploiting ILP using multiple issues & static scheduling.

b) What is pipelining? Explain different types of hazards that occur in pipeline.

c) Write a note on-

i) Direct memory access

ii) Interrupt Driven IO

SLR-QH-94

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Organization and Architecture (CSEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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c) SISD d) MISD

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b) In any cache line
c) In only even-numbered lines
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SLR-QH-94

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Organization and Architecture (CSEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain Generation of Computer.

b) Define Bus and explain system Bus.

c) Explain Optimizing Compilers for Parallelism.

d) Write a short note on pseudo-Operations.

e) Explain in detail message passing model.

Q.3 Attempt Any Two. **12**

a) Write a short note on.
i) Shared Variable model
ii) Data parallel model

b) $x = a \times b + c \times d$ solve this equation by zero, one, one two, three address Instruction processor.

c) Explain memory Hierarchy with different levels of memory.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Difference between Linear and Non-linear pipeline.

b) Explain basic compiler techniques for exposing ILP.

c) Differentiate between Memory Mapped I/O and I/O Mapped I/O.

d) Explain the Symmetric shared memory architecture with suitable diagram.

e) Short note on ILP Dynamic scheduling issues.

Q.5 Attempt Any Two. **12**

a) Explain in detail exploiting ILP using multiple issues & static scheduling.

b) What is pipelining? Explain different types of hazards that occur in pipeline.

c) Write a note on-

i) Direct memory access

ii) Interrupt Driven IO

SLR-QH-95

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Theory of Computation (CSEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct Answer. 14

1) Which of the following regular expressions over $\{0,1\}$ denotes set of all strings not containing '100' as a substring?
a) $0^*(1+0)^*$ b) 0^*1010^*
c) 0^*101 d) $0^*(10+0)^*$

2) String containing at most two a's _____.
a) b^*ab^*a b) $b^*(a+\wedge)+b^*(a+\wedge)$
c) $b^*+b^*ab^*+b^*ab^*ab^*$ d) All of these

3) Explain regular expression $-\ a^*b^*$ in English.
a) All String in which do not here ba as Substring
b) All String in which any number of a's are followed by number of b's
c) Both a & b
d) None

4) What is the regular expression for the language set of string with at least one 1, one 2, and one 3?
a) $1+2+3$ b) $11^*22^*33^*$
c) $1^*2^*3^*$ d) Both a and b

5) Two finite state machines are said to be equivalent if they _____.
a) Have the same number of edges
b) Have the same number of states
c) Recognize the same set of tokens
d) Have the same number of states and edges

6) The CFG G and its production $S \rightarrow aS \mid bS \mid a \mid b$ generate _____.
a) $(a+b)^*+a+b$ b) $(a+b)(a+b)^*$
c) $(a+b)^*(aa+b)$ d) All of the above

7) The Language $L = \{0^n 1^n 2^k 3^k$ where $n, k > 0\}$ is a _____.
   a) context sensitive language
   b) context free language
   c) regular language
   d) recursive enumerable language

8) Which of the following statement is/are true or false?
   a) PDA = FA + 0 stack
   b) PDA = FA + 1 stack
   c) DPDA is a subset of NPDA
   d) NPDA and DPDA is equivalent in Power

9) PDA is more powerful than _____.
   a) Turing machine
   b) Linear bounded automata
   c) Finite automata
   d) All of the above

10) Pumping lemma is generally used for proving _____.
   a) Given grammar is regular
   b) Given grammar is not regular
   c) Given RE are equivalent
   d) None of these

11) In CFL pumping lemma, the length of vxy is _____.
   a) $\leq$ p
   b) $\geq$ p
   c) = p
   d) $>$ p

12) The instantaneous description (ID) of a TM represents _____.
   a) Current state, tape content, and head position
   b) Only current state and head position
   c) Only tape content and current state
   d) None of these

13) A TM that halts on all inputs is _____.
   a) Decider
   b) Recognizer
   c) Acceptor
   d) Generator

14) Turing machine has _____.
   a) Finite and read only tape
   b) Finite and read write tape
   c) Infinite and read only tape
   d) Infinite and read write tape

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Theory of Computation (CSEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are Compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Write the regular expression for following regular languages over $\sum = \{a, b\}$
- i) Set of all string does not end with 'a'
- ii) Set of all strings start and end with ab.
- iii) Set of all strings does not contain substring aaa
- iv) Set of all strings consist of at least two a

b) List and explain, application of regular expressions.

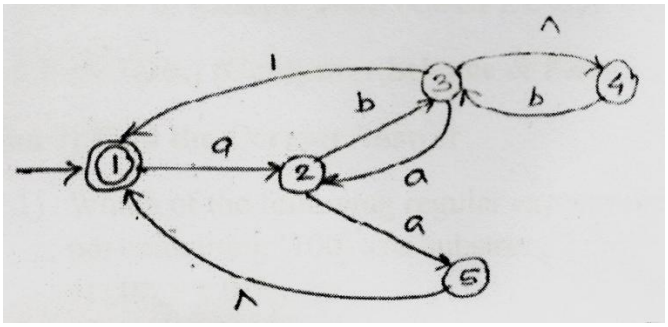
c) Define δ^* for NFA and NFA $-\wedge$

d) Differentiate between Malay and Moor Machine

e) Write a CFG for language $L = \{a^i b^j c^k | i = j \text{ or } j = k\}$

Q.3 Attempt Any Two of the following. **12**

a) Convert following NFA $-\wedge$ to NFA and DFA



b) Convert following grammar into CNF Notation

$S \rightarrow XXYZ$

$X \rightarrow aXb \mid \wedge$

$Y \rightarrow aY \mid a$

$Z \rightarrow aZa \mid bZb \mid \wedge$

c) Attempt the following:

i) Define the DFA and Design the DFA for $(0+1)^*010(0+1)^*$

ii) Define the CFG. Find the CFG for Regular expression $(\text{abb}+\text{b})^*\text{ab}^*\text{baa}$

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) Explain the types of acceptance of PDA.

b) Explain Instantaneous Description of PDA.

c) State and explain pumping lemma for CFL.

d) Show that $\text{L} = \{\text{WW} \mid \text{W}\ (0+1)^*\}$ is not a CFL.

e) Explain the following TM:

i) Mutitape TM

ii) Offline TM

Q.5 Attempt Any Two of the following. **12**

a) Design the TM that Compute the function $f(x,y)$, which is defined as follows:

$$f(x,y) = \begin{cases} x-y & \text{if } x \geq y \\ 0 & \text{if } x \leq 0 \end{cases}$$

OR

Design the TM for language of palindrome and show the simulation of string aba.

b) Construct a PDA for the language $L = \{a^{n+m}b^m c^n \mid n,m \geq 0\}$ and represent it using a transition table and state diagram. Further, trace the moves of the PDA for the string $aaabbc$ with initial stack symbol z_0, i.e., show the step-by-step execution starting from $\delta(q_0, aaabbc, z_0)$

c) Solve the following

i) Design the TM for set of all String ends with aba over $\sum = (\text{a},\text{b})$ i. e. $(\text{a}+\text{b})^*\text{aba}$

ii) Design the PDA for $L = \{a^i b^j \mid i = j \text{ for } i,j \geq 1\}$

SLR-QH-95

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Theory of Computation (CSEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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Duration: 30 Minutes Marks: 14

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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Theory of Computation (CSEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are Compulsory.
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SECTION – I

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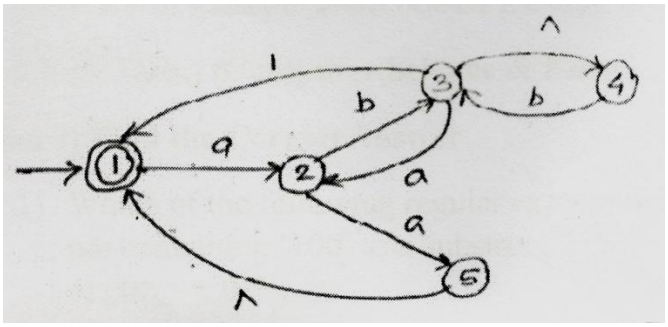

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ii) Define the CFG. Find the CFG for Regular expression $(\text{abb}+\text{b})^*\text{ab}^*\text{baa}$

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) Explain the types of acceptance of PDA.

b) Explain Instantaneous Description of PDA.

c) State and explain pumping lemma for CFL.

d) Show that $\text{L} = \{\text{WW} \mid \text{W}\ (0+1)^*\}$ is not a CFL.

e) Explain the following TM:

i) Mutitape TM

ii) Offline TM

Q.5 Attempt Any Two of the following. **12**

a) Design the TM that Compute the function $f(x,y)$, which is defined as follows:

$$f(x,y) = \begin{cases} x-y & \text{if } x \geq y \\ 0 & \text{if } x \leq 0 \end{cases}$$

OR

Design the TM for language of palindrome and show the simulation of string aba.

b) Construct a PDA for the language $L = \{a^{n+m}b^m c^n \mid n,m \geq 0\}$ and represent it using a transition table and state diagram. Further, trace the moves of the PDA for the string $aaabbc$ with initial stack symbol z_0, i.e., show the step-by-step execution starting from $\delta(q_0, aaabbc, z_0)$

c) Solve the following

i) Design the TM for set of all String ends with aba over $\sum = (\text{a},\text{b})$ i. e. $(\text{a}+\text{b})^*\text{aba}$

ii) Design the PDA for $L = \{a^i b^j \mid i = j \text{ for } i,j \geq 1\}$

SLR-QH-95

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Theory of Computation (CSEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct Answer. **14**

1) In CFL pumping lemma, the length of vxy is _____.
a) $\leq p$ b) $\geq p$
c) $= p$ d) $> p$

2) The instantaneous description (ID) of a TM represents _____.
a) Current state, tape content, and head position
b) Only current state and head position
c) Only tape content and current state
d) None of these

3) A TM that halts on all inputs is _____.
a) Decider b) Recognizer
c) Acceptor d) Generator

4) Turing machine has _____.
a) Finite and read only tape b) Finite and read write tape
c) Infinite and read only tape d) Infinite and read write tape

5) Which of the following regular expressions over $\{0,1\}$ denotes set of all strings not containing '100' as a substring?
a) $0^*(1+0)^*$ b) 0^*1010^*
c) 0^*101 d) $0^*(10+0)^*$

6) String containing at most two a's _____.
a) b^*ab^*a b) $b^*(a+\wedge)+b^*(a+\wedge)$
c) $b^*+b^*ab^*+b^*ab^*ab^*$ d) All of these

7) Explain regular expression $- a^*b^*$ in English.
   a) All String in which do not here ba as Substring
   b) All String in which any number of a's are followed by number of b's
   c) Both a & b
   d) None

8) What is the regular expression for the language set of string with at least one 1, one 2, and one 3?
   a) $1 + 2 + 3$
   b) $11^*22^*33^*$
   c) $1^*2^*3^*$
   d) Both a and b

9) Two finite state machines are said to be equivalent if they _____.
   a) Have the same number of edges
   b) Have the same number of states
   c) Recognize the same set of tokens
   d) Have the same number of states and edges

10) The CFG G and its production $S \rightarrow aS \mid bS \mid a \mid b$ generate _____.
   a) $(a + b)^* + a + b$
   b) $(a + b)(a + b)^*$
   c) $(a + b)^*(aa + b)$
   d) All of the above

11) The Language $L = \{0^n1^n2^k3^k$ where $n, k > 0\}$ is a _____.
   a) context sensitive language
   b) context free language
   c) regular language
   d) recursive enumerable language

12) Which of the following statement is/are true or false?
   a) PDA = FA + 0 stack
   b) PDA = FA + 1 stack
   c) DPDA is a subset of NPDA
   d) NPDA and DPDA is equivalent in Power

13) PDA is more powerful than _____.
   a) Turing machine
   b) Linear bounded automata
   c) Finite automata
   d) All of the above

14) Pumping lemma is generally used for proving _____.
   a) Given grammar is regular
   b) Given grammar is not regular
   c) Given RE are equivalent
   d) None of these

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Theory of Computation (CSEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are Compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Write the regular expression for following regular languages over $\sum = \{a, b\}$
- i) Set of all string does not end with 'a'
- ii) Set of all strings start and end with ab.
- iii) Set of all strings does not contain substring aaa
- iv) Set of all strings consist of at least two a

b) List and explain, application of regular expressions.

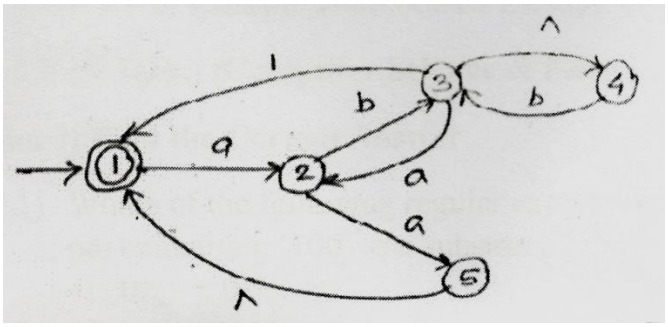
c) Define δ^* for NFA and NFA $-\wedge$

d) Differentiate between Malay and Moor Machine

e) Write a CFG for language $L = \{a^i b^j c^k | i = j \text{ or } j = k\}$

Q.3 Attempt Any Two of the following. **12**

a) Convert following NFA $-\wedge$ to NFA and DFA



b) Convert following grammar into CNF Notation

$S \rightarrow XXYZ$

$X \rightarrow aXb \mid \wedge$

$Y \rightarrow aY \mid a$

$Z \rightarrow aZa \mid bZb \mid \wedge$

c) Attempt the following:

i) Define the DFA and Design the DFA for $(0+1)^*010(0+1)^*$

ii) Define the CFG. Find the CFG for Regular expression $(\text{abb}+\text{b})^*\text{ab}^*\text{baa}$

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) Explain the types of acceptance of PDA.

b) Explain Instantaneous Description of PDA.

c) State and explain pumping lemma for CFL.

d) Show that $\text{L} = \{\text{WW} \mid \text{W}\ (0+1)^*\}$ is not a CFL.

e) Explain the following TM:

i) Mutitape TM

ii) Offline TM

Q.5 Attempt Any Two of the following. **12**

a) Design the TM that Compute the function $f(x,y)$, which is defined as follows:

$$f(x,y) = \begin{cases} x-y & \text{if } x \geq y \\ 0 & \text{if } x \leq 0 \end{cases}$$

OR

Design the TM for language of palindrome and show the simulation of string aba.

b) Construct a PDA for the language $L = \{a^{n+m}b^m c^n \mid n,m \geq 0\}$ and represent it using a transition table and state diagram. Further, trace the moves of the PDA for the string $aaabbc$ with initial stack symbol z_0, i.e., show the step-by-step execution starting from $\delta(q_0, aaabbc, z_0)$

c) Solve the following

i) Design the TM for set of all String ends with aba over $\sum = (\text{a},\text{b})$ i. e. $(\text{a}+\text{b})^*\text{aba}$

ii) Design the PDA for $L = \{a^i b^j \mid i = j \text{ for } i,j \geq 1\}$

SLR-QH-95

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Theory of Computation (CSEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct Answer. **14**

1) The CFG G and its production $S \rightarrow aS \mid bS \mid a \mid b$ generate _____.
a) $(a+b)^* + a + b$ b) $(a+b)(a+b)^*$
c) $(a+b)^*(aa+b)$ d) All of the above

2) The Language $L = \{0^n 1^n 2^k 3^k$ where $n, k > 0\}$ is a _____.
a) context sensitive language
b) context free language
c) regular language
d) recursive enumerable language

3) Which of the following statement is/are true or false?
a) PDA = FA + 0 stack
b) PDA = FA + 1 stack
c) DPDA is a subset of NPDA
d) NPDA and DPDA is equivalent in Power

4) PDA is more powerful than _____.
a) Turing machine b) Linear bounded automata
c) Finite automata d) All of the above

5) Pumping lemma is generally used for proving _____.
a) Given grammar is regular b) Given grammar is not regular
c) Given RE are equivalent d) None of these

6) In CFL pumping lemma, the length of vxy is _____.
a) $\leq p$ b) $\geq p$
c) $= p$ d) $> p$

7) The instantaneous description (ID) of a TM represents _____.
   a) Current state, tape content, and head position
   b) Only current state and head position
   c) Only tape content and current state
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8) A TM that halts on all inputs is _____.
   a) Decider
   b) Recognizer
   c) Acceptor
   d) Generator

9) Turing machine has _____.
   a) Finite and read only tape
   b) Finite and read write tape
   c) Infinite and read only tape
   d) Infinite and read write tape

10) Which of the following regular expressions over $\{0,1\}$ denotes set of all strings not containing '100' as a substring?
   a) $0^*(1+0)^*$
   b) 0^*1010^*
   c) 0^*101
   d) $0^*(10+0)^*$

11) String containing at most two a's _____.
   a) b^*ab^*a
   b) $b^*(a+\wedge)+b^*(a+\wedge)$
   c) $b^*+b^*ab^*+b^*ab^*ab^*$
   d) All of these

12) Explain regular expression $-\ a^*b^*$ in English.
   a) All String in which do not here ba as Substring
   b) All String in which any number of a's are followed by number of b's
   c) Both a & b
   d) None

13) What is the regular expression for the language set of string with at least one 1, one 2, and one 3?
   a) $1+2+3$
   b) $11^*22^*33^*$
   c) $1^*2^*3^*$
   d) Both a and b

14) Two finite state machines are said to be equivalent if they _____.
   a) Have the same number of edges
   b) Have the same number of states
   c) Recognize the same set of tokens
   d) Have the same number of states and edges

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Theory of Computation (CSEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are Compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Write the regular expression for following regular languages over $\sum = \{a, b\}$
- i) Set of all string does not end with 'a'
- ii) Set of all strings start and end with ab.
- iii) Set of all strings does not contain substring aaa
- iv) Set of all strings consist of at least two a

b) List and explain, application of regular expressions.

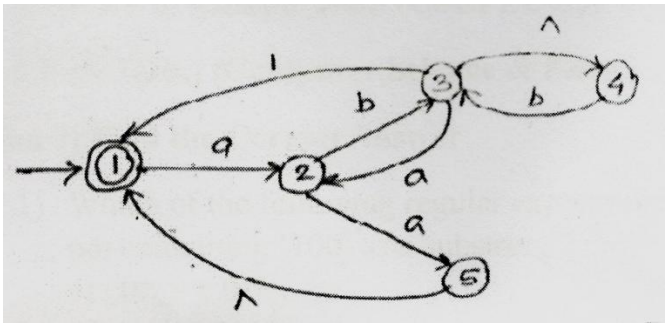
c) Define δ^* for NFA and NFA $-\wedge$

d) Differentiate between Malay and Moor Machine

e) Write a CFG for language $L = \{a^i b^j c^k | i = j \text{ or } j = k\}$

Q.3 Attempt Any Two of the following. **12**

a) Convert following NFA $-\wedge$ to NFA and DFA



b) Convert following grammar into CNF Notation

$S \rightarrow XXYZ$

$X \rightarrow aXb \mid \wedge$

$Y \rightarrow aY \mid a$

$Z \rightarrow aZa \mid bZb \mid \wedge$

c) Attempt the following:

i) Define the DFA and Design the DFA for $(0+1)^*010(0+1)^*$

ii) Define the CFG. Find the CFG for Regular expression $(\text{abb}+\text{b})^*\text{ab}^*\text{baa}$

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) Explain the types of acceptance of PDA.

b) Explain Instantaneous Description of PDA.

c) State and explain pumping lemma for CFL.

d) Show that $\text{L} = \{\text{WW} \mid \text{W}\ (0+1)^*\}$ is not a CFL.

e) Explain the following TM:

i) Mutitape TM

ii) Offline TM

Q.5 Attempt Any Two of the following. **12**

a) Design the TM that Compute the function $f(x,y)$, which is defined as follows:

$$f(x,y) = \begin{cases} x-y & \text{if } x \geq y \\ 0 & \text{if } x \leq 0 \end{cases}$$

OR

Design the TM for language of palindrome and show the simulation of string aba.

b) Construct a PDA for the language $L = \{a^{n+m}b^m c^n \mid n,m \geq 0\}$ and represent it using a transition table and state diagram. Further, trace the moves of the PDA for the string $aaabbc$ with initial stack symbol z_0, i.e., show the step-by-step execution starting from $\delta(q_0, aaabbc, z_0)$

c) Solve the following

i) Design the TM for set of all String ends with aba over $\sum = (\text{a},\text{b})$ i. e. $(\text{a}+\text{b})^*\text{aba}$

ii) Design the PDA for $L = \{a^i b^j \mid i = j \text{ for } i,j \geq 1\}$

SLR-QH-96

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Networks (CSEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) For outgoing traffic NAT box converts private IP address to company's public IP address.
a) TRUE b) Can't say
c) FALSE d) None of the above

2) In TCP, one end can stop sending data while still receiving data. This is called a _____.
a) Half-close b) One way termination
c) Half-open d) None of the above

3) Port addresses are _____ bits in length.
a) 32 Bits b) 64 Bits
c) 48 Bits d) 16 Bits

4) _____ converts a 16 bit integer from host byte order to network byte order.
a) htonl b) ntohl
c) htons d) ntohs

5) Which layers are absent in TCP/IP protocol suite?
a) Transport b) Session
c) Presentation d) Both b) and c)

6) Which of the following is an Application layer service?
a) NVT
b) File transfer, access and management
c) Mail service
d) All of these

7) First address in classless addressing can found as _____.
First address = (any address) _____ (network mask).
a) OR b) AND
c) NOT d) NOR

8) In TCP _____ timer is used during termination.
a) Keep alive b) TIME-WAIT
c) RTT d) Persistence

9) DHCP server issues a passive open command on it's UDP port number _____ and waits for a client.
a) 65 b) 66
c) 67 d) 68

10) FTP uses two well-known TCP ports: port 20 is used for the _____ connection.
a) Control b) Data
c) Error d) All above

11) Which of the following statement is incorrect?
Statement 1 : UDP is connectionless, unreliable transport protocol
Statement 2: UDP provide flow control.
Statement 3: UDP provide encapsulation and decapsulation service
a) Statement 1 and 2 b) Statement 1 and 3
c) Statement 2 and 3 d) Statement 2

12) After sending DHCPDISCOVER message to server, the client goes to the _____.
a) Requesting State b) Bound State
c) Renewal State d) Selecting State

13) In _____ sequence of character is without structure.
a) Flat Name Space b) Zone Name Space
c) Hierarchical Name Space d) None of the above

14) The _____ is used to map an address to a name.
a) Domain b) Reverse client
c) Inverse domain d) All of these

SLR-QH-96

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Networks (CSEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Three) **12**

a) Write a short note on the TCP timers.

b) Explain in detail NAT.

c) Explain different services of SCTP.

d) An address in a block is given as 180.8.17.9/16. Find the number of addresses in the block, the firstaddress, and the last address

Q.3 Attempt the following. (Any Two) **16**

a) Elaborate the connection oriented concurrent server in detail.

b) Explain TCP connection establishment Three way handshaking in detail.

c) Draw diagram for OSI reference model and explain functions of each layer.

SECTION – II

Q.4 Attempt the following. (Any Three) **12**

a) What is SSH? Explain format of SSH Packet.

b) Explain Generic and Country Domains of DNS.

c) Explain FTP with neat diagram.

d) Explain SMTP with diagram.

Q.5 Attempt the following. (Any Two) **16**

a) Explain address allocation in DHCP. Draw & Explain DHCP client state transition diagram.

b) What is Remote Login? Explain the concept of NVT.

c) Explain the E-mail architecture with its four scenarios.

SLR-QH-96

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Networks (CSEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In TCP _____ timer is used during termination.
a) Keep alive b) TIME-WAIT
c) RTT d) Persistence

2) DHCP server issues a passive open command on it's UDP port number _____ and waits for a client.
a) 65 b) 66
c) 67 d) 68

3) FTP uses two well-known TCP ports: port 20 is used for the _____ connection.
a) Control b) Data
c) Error d) All above

4) Which of the following statement is incorrect?
Statement 1 : UDP is connectionless, unreliable transport protocol
Statement 2: UDP provide flow control.
Statement 3: UDP provide encapsulation and decapsulation service
a) Statement 1 and 2 b) Statement 1 and 3
c) Statement 2 and 3 d) Statement 2

5) After sending DHCPDISCOVER message to server, the client goes to the _____.
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8) For outgoing traffic NAT box converts private IP address to company's public IP address.
a) TRUE
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9) In TCP, one end can stop sending data while still receiving data. This is called a _____.
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c) Half-open
d) None of the above

10) Port addresses are _____ bits in length.
a) 32 Bits
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11) _____ converts a 16 bit integer from host byte order to network byte order.
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b) ntohl
c) htons
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12) Which layers are absent in TCP/IP protocol suite?
a) Transport
b) Session
c) Presentation
d) Both b) and c)

13) Which of the following is an Application layer service?
a) NVT
b) File transfer, access and management
c) Mail service
d) All of these

14) First address in classless addressing can found as _____.
First address = (any address) _____ (network mask).
a) OR
b) AND
c) NOT
d) NOR

SLR-QH-96

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Networks (CSEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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SECTION – I

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SECTION – II

Q.4 Attempt the following. (Any Three) **12**

a) What is SSH? Explain format of SSH Packet.

b) Explain Generic and Country Domains of DNS.

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Q.5 Attempt the following. (Any Two) **16**

a) Explain address allocation in DHCP. Draw & Explain DHCP client state transition diagram.

b) What is Remote Login? Explain the concept of NVT.

c) Explain the E-mail architecture with its four scenarios.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Networks (CSEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following statement is incorrect?
Statement 1 : UDP is connectionless, unreliable transport protocol
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SLR-QH-96

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Networks (CSEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Three) **12**

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b) Explain in detail NAT.

c) Explain different services of SCTP.

d) An address in a block is given as 180.8.17.9/16. Find the number of addresses in the block, the firstaddress, and the last address

Q.3 Attempt the following. (Any Two) **16**

a) Elaborate the connection oriented concurrent server in detail.

b) Explain TCP connection establishment Three way handshaking in detail.

c) Draw diagram for OSI reference model and explain functions of each layer.

SECTION – II

Q.4 Attempt the following. (Any Three) **12**

a) What is SSH? Explain format of SSH Packet.

b) Explain Generic and Country Domains of DNS.

c) Explain FTP with neat diagram.

d) Explain SMTP with diagram.

Q.5 Attempt the following. (Any Two) **16**

a) Explain address allocation in DHCP. Draw & Explain DHCP client state transition diagram.

b) What is Remote Login? Explain the concept of NVT.

c) Explain the E-mail architecture with its four scenarios.

SLR-QH-96

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Networks (CSEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which of the following is an Application layer service?
a) NVT
b) File transfer, access and management
c) Mail service
d) All of these

2) First address in classless addressing can found as _____.
First address = (any address) _____ (network mask).
a) OR b) AND
c) NOT d) NOR

3) In TCP _____ timer is used during termination.
a) Keep alive b) TIME-WAIT
c) RTT d) Persistence

4) DHCP server issues a passive open command on it's UDP port number _____ and waits for a client.
a) 65 b) 66
c) 67 d) 68

5) FTP uses two well-known TCP ports: port 20 is used for the _____ connection.
a) Control b) Data
c) Error d) All above

6) Which of the following statement is incorrect?
Statement 1 : UDP is connectionless, unreliable transport protocol
Statement 2: UDP provide flow control.
Statement 3: UDP provide encapsulation and decapsulation service
a) Statement 1 and 2 b) Statement 1 and 3
c) Statement 2 and 3 d) Statement 2

7) After sending DHCPDISCOVER message to server, the client goes to the _____.
a) Requesting State b) Bound State
c) Renewal State d) Selecting State

8) In _____ sequence of character is without structure.
a) Flat Name Space b) Zone Name Space
c) Hierarchical Name Space d) None of the above

9) The _____ is used to map an address to a name.
a) Domain b) Reverse client
c) Inverse domain d) All of these

10) For outgoing traffic NAT box converts private IP address to company's public IP address.
a) TRUE b) Can't say
c) FALSE d) None of the above

11) In TCP, one end can stop sending data while still receiving data. This is called a _____.
a) Half-close b) One way termination
c) Half-open d) None of the above

12) Port addresses are _____ bits in length.
a) 32 Bits b) 64 Bits
c) 48 Bits d) 16 Bits

13) _____ converts a 16 bit integer from host byte order to network byte order.
a) htonl b) ntohl
c) htons d) ntohs

14) Which layers are absent in TCP/IP protocol suite?
a) Transport b) Session
c) Presentation d) Both b) and c)

SLR-QH-96

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computer Networks (CSEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Three) **12**

a) Write a short note on the TCP timers.

b) Explain in detail NAT.

c) Explain different services of SCTP.

d) An address in a block is given as 180.8.17.9/16. Find the number of addresses in the block, the firstaddress, and the last address

Q.3 Attempt the following. (Any Two) **16**

a) Elaborate the connection oriented concurrent server in detail.

b) Explain TCP connection establishment Three way handshaking in detail.

c) Draw diagram for OSI reference model and explain functions of each layer.

SECTION – II

Q.4 Attempt the following. (Any Three) **12**

a) What is SSH? Explain format of SSH Packet.

b) Explain Generic and Country Domains of DNS.

c) Explain FTP with neat diagram.

d) Explain SMTP with diagram.

Q.5 Attempt the following. (Any Two) **16**

a) Explain address allocation in DHCP. Draw & Explain DHCP client state transition diagram.

b) What is Remote Login? Explain the concept of NVT.

c) Explain the E-mail architecture with its four scenarios.

SLR-QH-97

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Innovation provides _____.
a) Stability b) Competitive advantage
c) Similarity d) Confusion

2) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

3) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

4) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

5) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

6) Six Thinking Hats tool was developed by _____.
a) Peter Drucker b) Steve Jobs
c) Edward de Bono d) Clayton Christensen

7) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

8) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
c) Disruptive d) Delaying

9) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

10) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

11) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

12) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

13) Legal consideration in entrepreneurship includes _____.
a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

14) Entrepreneurial process starts with _____.
a) HR hiring b) Opportunity identification
c) Revenue calculation d) Market monopoly

SLR-QH-97

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-97

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
c) Disruptive d) Delaying

2) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

3) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

4) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

5) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

6) Legal consideration in entrepreneurship includes _____.
a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

7) Entrepreneurial process starts with _____.
a) HR hiring
b) Opportunity identification
c) Revenue calculation
d) Market monopoly

8) Innovation provides _____.
a) Stability
b) Competitive advantage
c) Similarity
d) Confusion

9) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

10) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

11) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

12) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

13) Six Thinking Hats tool was developed by _____.
a) Peter Drucker
b) Steve Jobs
c) Edward de Bono
d) Clayton Christensen

14) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

SLR-QH-97

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

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Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

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b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-97

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

2) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

3) Legal consideration in entrepreneurship includes _____.
a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

4) Entrepreneurial process starts with _____.
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c) Disruptive d) Delaying

13) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

14) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

SLR-QH-97

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

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d) What are the seven sources of innovative opportunities? **06**

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SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

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d) What are ethical and legal considerations for entrepreneurs? **06**

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SLR-QH-97

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Six Thinking Hats tool was developed by _____.
a) Peter Drucker b) Steve Jobs
c) Edward de Bono d) Clayton Christensen

2) NUF test stands for _____.
a) Necessary, Useful, Feasible
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6) Failure in innovation can occur due to _____.
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7) Crafting a business model involves _____.
   a) Ignoring customers
   b) Defining value, segments, and revenue streams
   c) Random investments
   d) Borrowing

8) Legal consideration in entrepreneurship includes _____.
   a) Product packaging
   b) Compliance and regulations
   c) Floor layout
   d) Office color

9) Entrepreneurial process starts with _____.
   a) HR hiring
   b) Opportunity identification
   c) Revenue calculation
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SLR-QH-97

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-99

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

2) What is a key characteristic of solar energy?
a) Utilizes sunlight for power generation
b) Requires fossil fuels for operation
c) Has no environmental benefits
d) ls non-renewable

3) Which renewable energy is best suited for coastal areas?
a) Biomass energy b) Geothermal energy
c) Wave and tidal energy d) Oil shale energy

4) What is solar radiation?
a) Radiation from the Earth b) Radiation from the Moon
c) Radiation from the Sun d) None of the above

5) What is solar radiation measured in?
a) Kilograms
b) Liters
c) Watts per square meter (W/m^2)
d) Newtons

6) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

7) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

8) What happens when electricity demand is higher than generation?
   a) Energy storage can provide additional power
   b) Renewable energy sources produce more electricity
   c) Power plants automatically increase supply
   d) Transmission lines store energy

9) Which of the following sectors benefits the most from energy storage?
   a) Agriculture
   b) Construction
   c) Transport
   d) Power generation

10) What does the efficiency of an energy storage device indicate?
   a) The time taken to store energy
   b) The total cost of the device
   c) The percentage of stored energy that can be retrieved
   d) The size of the storage system

11) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
   a) Penstock
   b) Reservoir
   c) Fore bay
   d) Spillways

12) Tidal energy is caused primarily by the _____.
   a) Moon's gravity
   b) Sun's gravity
   c) Earth's rotation
   d) Ocean currents

13) Green hydrogen is produced by _____.
   a) Coal gasification
   b) Methane reforming
   c) Water electrolysis using renewable energy
   d) Nuclear fission

14) Which is the cleanest method of hydrogen production?
   a) Electrolysis using solar/wind energy
   b) Coal gasification
   c) Nuclear thermal splitting
   d) Steam methane reforming

SLR-QH-99

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) What happens when electricity demand is higher than generation?
a) Energy storage can provide additional power
b) Renewable energy sources produce more electricity
c) Power plants automatically increase supply
d) Transmission lines store energy

2) Which of the following sectors benefits the most from energy storage?
a) Agriculture b) Construction
c) Transport d) Power generation

3) What does the efficiency of an energy storage device indicate?
a) The time taken to store energy
b) The total cost of the device
c) The percentage of stored energy that can be retrieved
d) The size of the storage system

4) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock b) Reservoir
c) Fore bay d) Spillways

5) Tidal energy is caused primarily by the _____.
a) Moon's gravity b) Sun's gravity
c) Earth's rotation d) Ocean currents

6) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

7) Which is the cleanest method of hydrogen production?
   a) Electrolysis using solar/wind energy
   b) Coal gasification
   c) Nuclear thermal splitting
   d) Steam methane reforming

8) Which of the following is a key goal of sustainable development?
   a) Increase in fossil fuel consumption
   b) Balanced use of resources
   c) Maximum economic growth only
   d) Eliminating renewable energy use

9) What is a key characteristic of solar energy?
   a) Utilizes sunlight for power generation
   b) Requires fossil fuels for operation
   c) Has no environmental benefits
   d) ls non-renewable

10) Which renewable energy is best suited for coastal areas?
   a) Biomass energy
   b) Geothermal energy
   c) Wave and tidal energy
   d) Oil shale energy

11) What is solar radiation?
   a) Radiation from the Earth
   b) Radiation from the Moon
   c) Radiation from the Sun
   d) None of the above

12) What is solar radiation measured in?
   a) Kilograms
   b) Liters
   c) Watts per square meter (W/m^2)
   d) Newtons

13) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

14) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

SLR-QH-99

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock b) Reservoir
c) Fore bay d) Spillways

2) Tidal energy is caused primarily by the _____.
a) Moon's gravity b) Sun's gravity
c) Earth's rotation d) Ocean currents

3) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

4) Which is the cleanest method of hydrogen production?
a) Electrolysis using solar/wind energy
b) Coal gasification
c) Nuclear thermal splitting
d) Steam methane reforming

5) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

6) What is a key characteristic of solar energy?
   a) Utilizes sunlight for power generation
   b) Requires fossil fuels for operation
   c) Has no environmental benefits
   d) ls non-renewable

7) Which renewable energy is best suited for coastal areas?
   a) Biomass energy
   b) Geothermal energy
   c) Wave and tidal energy
   d) Oil shale energy

8) What is solar radiation?
   a) Radiation from the Earth
   b) Radiation from the Moon
   c) Radiation from the Sun
   d) None of the above

9) What is solar radiation measured in?
   a) Kilograms
   b) Liters
   c) Watts per square meter (W/m^2)
   d) Newtons

10) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

11) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

12) What happens when electricity demand is higher than generation?
   a) Energy storage can provide additional power
   b) Renewable energy sources produce more electricity
   c) Power plants automatically increase supply
   d) Transmission lines store energy

13) Which of the following sectors benefits the most from energy storage?
   a) Agriculture
   b) Construction
   c) Transport
   d) Power generation

14) What does the efficiency of an energy storage device indicate?
   a) The time taken to store energy
   b) The total cost of the device
   c) The percentage of stored energy that can be retrieved
   d) The size of the storage system

SLR-QH-99

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

SLR-QH-99

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) What is the primary difference between pyrolysis and gasification?
a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
b) Pyrolysis produces syngas, while gasification produces bio-oil
c) Gasification is a biochemical process, while pyrolysis is thermo chemical
d) Pyrolysis requires higher temperatures than gasification

2) Which of the following is a disadvantage of biomass energy?
a) Reduces waste
b) Can lead to deforestation
c) Low carbon footprint
d) Independent of weather conditions

3) What happens when electricity demand is higher than generation?
a) Energy storage can provide additional power
b) Renewable energy sources produce more electricity
c) Power plants automatically increase supply
d) Transmission lines store energy

4) Which of the following sectors benefits the most from energy storage?
a) Agriculture b) Construction
c) Transport d) Power generation

5) What does the efficiency of an energy storage device indicate?
a) The time taken to store energy
b) The total cost of the device
c) The percentage of stored energy that can be retrieved
d) The size of the storage system

6) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock
b) Reservoir
c) Fore bay
d) Spillways

7) Tidal energy is caused primarily by the _____.
a) Moon's gravity
b) Sun's gravity
c) Earth's rotation
d) Ocean currents

8) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

9) Which is the cleanest method of hydrogen production?
a) Electrolysis using solar/wind energy
b) Coal gasification
c) Nuclear thermal splitting
d) Steam methane reforming

10) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

11) What is a key characteristic of solar energy?
a) Utilizes sunlight for power generation
b) Requires fossil fuels for operation
c) Has no environmental benefits
d) ls non-renewable

12) Which renewable energy is best suited for coastal areas?
a) Biomass energy
b) Geothermal energy
c) Wave and tidal energy
d) Oil shale energy

13) What is solar radiation?
a) Radiation from the Earth
b) Radiation from the Moon
c) Radiation from the Sun
d) None of the above

14) What is solar radiation measured in?
a) Kilograms
b) Liters
c) Watts per square meter (W/m^2)
d) Newtons

SLR-QH-99

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

SLR-QH-100

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

2) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

3) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

4) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

5) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

6) In a DSO, the input signals are _____.
   a) directly applied to oscilloscope
   b) multiplexed, converted to digital form and stored and applied to oscilloscope
   c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
   d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

7) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
   a) n wattmeters
   b) (n + 1) wattmeters
   c) (n - 2) wattmeters
   d) (n - 1) wattmeters

8) Which transducer does not require any external power supply for working?
   a) Strain gauge transducer
   b) Piezoelectric Crystals
   c) Hydraulic transducer
   d) Pneumatic transducer

9) Piezoelectric accelerometer converts _____ energy to _____ energy.
   a) mechanical, sound
   b) mechanical, electrical
   c) sound, electrical
   d) None of these

10) Which factor affects the least while selection of sensor?
   a) Size
   b) Accuracy
   c) Colour
   d) Durability

11) Which sensor should be used for calculating pressure?
   a) DHT11
   b) LM335Z/NOPB
   c) HC-SR04
   d) MPX10DP

12) Which of the following represents range of frequency measured by ADC?
   a) Bandwidth
   b) Threshold frequency
   c) Peak frequency
   d) None of the mentioned

13) Thermistor is a _____.
   a) sensor
   b) ADC
   c) transducer
   d) micro controller

14) Which of the following type output is provided by ADC?
   a) Serial type
   b) Parallel type
   c) Both serial and parallel type
   d) None of the mentioned

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) Which transducer does not require any external power supply for working?
a) Strain gauge transducer b) Piezoelectric Crystals
c) Hydraulic transducer d) Pneumatic transducer

2) Piezoelectric accelerometer converts _____ energy to _____ energy.
a) mechanical, sound b) mechanical, electrical
c) sound, electrical d) None of these

3) Which factor affects the least while selection of sensor?
a) Size b) Accuracy
c) Colour d) Durability

4) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

5) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
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6) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

7) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

8) Which of the following is not a type of systematic error?
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c) Observational Errors d) Gross error

9) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
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10) A moving iron instrument can be used for _____.
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c) Both D.C. and A.C. d) None

11) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
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c) Wheatstone bridge d) Kelvin's double bridge

12) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

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a) directly applied to oscilloscope
b) multiplexed, converted to digital form and stored and applied to oscilloscope
c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

14) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
a) n wattmeters b) (n + 1) wattmeters
c) (n - 2) wattmeters d) (n - 1) wattmeters

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

2) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

3) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

4) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

5) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

6) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

7) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

8) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.

a) Substitution
b) Loss of charge
c) Wheatstone bridge
d) Kelvin's double bridge

9) Instrument transformers are _____.

a) Potential transformers
b) Current transformers
c) Both (a) and (b)
d) Power transformers

10) In a DSO, the input signals are _____.

a) directly applied to oscilloscope
b) multiplexed, converted to digital form and stored and applied to oscilloscope
c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

11) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.

a) n wattmeters
b) (n + 1) wattmeters
c) (n - 2) wattmeters
d) (n - 1) wattmeters

12) Which transducer does not require any external power supply for working?

a) Strain gauge transducer
b) Piezoelectric Crystals
c) Hydraulic transducer
d) Pneumatic transducer

13) Piezoelectric accelerometer converts _____ energy to _____ energy.

a) mechanical, sound
b) mechanical, electrical
c) sound, electrical
d) None of these

14) Which factor affects the least while selection of sensor?

a) Size
b) Accuracy
c) Colour
d) Durability

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

SLR-QH-100

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) In a DSO, the input signals are _____.
a) directly applied to oscilloscope
b) multiplexed, converted to digital form and stored and applied to oscilloscope
c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

2) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
a) n wattmeters b) (n + 1) wattmeters
c) (n - 2) wattmeters d) (n - 1) wattmeters

3) Which transducer does not require any external power supply for working?
a) Strain gauge transducer b) Piezoelectric Crystals
c) Hydraulic transducer d) Pneumatic transducer

4) Piezoelectric accelerometer converts _____ energy to _____ energy.
a) mechanical, sound b) mechanical, electrical
c) sound, electrical d) None of these

5) Which factor affects the least while selection of sensor?
a) Size b) Accuracy
c) Colour d) Durability

6) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

7) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

8) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

9) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

10) Which of the following is not a type of systematic error?
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c) Observational Errors d) Gross error

11) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

12) A moving iron instrument can be used for _____.
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c) Both D.C. and A.C. d) None

13) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

14) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

SLR-QH-101

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

2) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
c) Simplex Method d) Integer Programming

3) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

4) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (-1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

5) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
c) Faster Solution d) Slower Solution

6) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

7) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

8) At the Break-Even Point _____.
a) Profit > Loss
b) Profit < Loss
c) Profit = Loss
d) None of these

9) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource
b) Reconciliation
c) Reconsideration
d) Review

10) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum
b) Average
c) Safety
d) Standard

11) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

12) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

13) In a project network, the critical path _____.
a) may be the shortest path
b) is the longest path
c) may be the longest path
d) is the shortest path

14) The inventory carrying costs are also called as _____.
a) Procurement costs
b) Set-up costs
c) Storage costs
d) None of the above

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
	to	tm	tp
$1-2$	1	1	7
$1-3$	1	4	7
$1-4$	2	2	8
$2-5$	1	1	1
$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) At the Break-Even Point _____.
a) Profit > Loss b) Profit < Loss
c) Profit = Loss d) None of these

2) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

3) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

4) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

5) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

6) In a project network, the critical path _____.
a) may be the shortest path b) is the longest path
c) may be the longest path d) is the shortest path

7) The inventory carrying costs are also called as _____.
a) Procurement costs b) Set-up costs
c) Storage costs d) None of the above

8) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

9) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
c) Simplex Method d) Integer Programming

10) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

11) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (−1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

12) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
c) Faster Solution d) Slower Solution

13) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

14) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
	to	tm	tp
$1-2$	1	1	7
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$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
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Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

2) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
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3) In a project network, the critical path _____.
a) may be the shortest path b) is the longest path
c) may be the longest path d) is the shortest path

4) The inventory carrying costs are also called as _____.
a) Procurement costs b) Set-up costs
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5) When total supply = total demand, the transportation problem is called _____.
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13) The PERT in project management means Program Evaluation and _____ Technique.
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14) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
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c) Safety d) Standard

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

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Q.3 Solve both. **14**

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S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

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a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

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Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

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$1-3$	1	4	7
$1-4$	2	2	8
$2-5$	1	1	1
$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

2) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

3) At the Break-Even Point _____.
a) Profit > Loss b) Profit < Loss
c) Profit = Loss d) None of these

4) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

5) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

6) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

7) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

8) In a project network, the critical path _____.
a) may be the shortest path
b) is the longest path
c) may be the longest path
d) is the shortest path

9) The inventory carrying costs are also called as _____.
a) Procurement costs
b) Set-up costs
c) Storage costs
d) None of the above

10) When total supply = total demand, the transportation problem is called _____.
a) Balanced
b) Equated
c) Simple
d) Zero

11) Which technique is used to solve Assignment Model?
a) Hungarian Method
b) Graphical Method
c) Simplex Method
d) Integer Programming

12) Allocated cells in the IBFS are also called as _____.
a) Stone Cells
b) Water Cells
c) Air Cells
d) None of these

13) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (-1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

14) Advantage of VAM of transportation is _____.
a) Near to optimal Solution
b) Least Cost
c) Faster Solution
d) Slower Solution

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
	to	tm	tp
$1-2$	1	1	7
$1-3$	1	4	7
$1-4$	2	2	8
$2-5$	1	1	1
$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

2) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

3) The Gauss-Seidel method is used for solving _____.
a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

4) Which of the following is a disadvantage of the Gauss-Jacobi method?
a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

5) The use of Romberg's method is _____.
a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

6) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

7) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

8) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

9) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

10) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

11) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

12) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

13) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

14) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

2) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

3) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

4) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

5) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

6) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

7) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

8) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

9) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

10) The Gauss-Seidel method is used for solving _____.
a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

11) Which of the following is a disadvantage of the Gauss-Jacobi method?
a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

12) The use of Romberg's method is _____.
a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

13) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

14) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

2) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

3) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

4) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

5) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

6) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.

a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

7) The Gauss-Seidel method is used for solving _____.

a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

8) Which of the following is a disadvantage of the Gauss-Jacobi method?

a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

9) The use of Romberg's method is _____.

a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

10) The order of convergence of Newton-Raphson method is _____.

a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

11) Power Method is used to find _____.

a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

12) To find the numerically largest Eigen value using iterative method we use the equation _____.

a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

13) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.

a) 0.905 b) 1.905
c) 2.905 d) None

14) Runge-Kutta method is self-starting method _____.

a) True b) False
c) We can't say d) None

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

2) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

3) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

4) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

5) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

6) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

7) In the power method, the vector is normalized in each iteration mainly to _____.
   a) increase the determinant
   b) prevent values from becoming too large
   c) eliminate eigen values
   d) make the matrix symmetric

8) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
   a) multiple of 2
   b) multiple of 3
   c) multiple of 4
   d) odd only

9) Picard's method is mainly used to solve _____.
   a) linear programming problems
   b) differential equations
   c) eigen value problems
   d) interpolation problems

10) A transcendental equation is an equation that involves _____.
   a) Only algebraic terms
   b) Only transcendental functions
   c) Both algebraic and transcendental functions
   d) Linear terms only

11) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
   a) $(1, 2)$
   b) $(0, 1)$
   c) $(2, 3)$
   d) $(3, 4)$

12) The Gauss-Seidel method is used for solving _____.
   a) Nonlinear equations
   b) Systems of linear equations
   c) Ordinary differential equations
   d) Partial differential equations

13) Which of the following is a disadvantage of the Gauss-Jacobi method?
   a) It converges faster than most direct methods
   b) It requires a large number of iterations for a good approximation
   c) It cannot be used for systems with more than two equations
   d) It works only for symmetric systems

14) The use of Romberg's method is _____.
   a) To solve simultaneous linear equation
   b) To find root of linear equation
   c) To evaluate definite integration
   d) To find the Eigen values

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

SLR-QH-103

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.
a) Decoding b) Encoding
c) Feedback d) Channeling

2) A message sent without words using facial expressions or gestures is called _____.
a) Written communication b) Verbal communication
c) Non-verbal communication d) Grapevine communication

3) Which channel characteristic most reduces chances of immediate feedback?
a) Face-to-face conversation b) Telephone call
c) Email d) Video conference

4) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.
a) Noise b) Semantic barrier
c) Perceptual barrier d) Channel barrier

5) Body language, eye contact and posture are examples of ____.
a) Verbal codes b) Non-verbal codes
c) Written codes d) Graphic communication

6) Upward communication flows from _____.
a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

7) An advantage of face-to-face communication over written communication is _____.
a) Permanent record
b) Easier legal reference
c) Immediate feedback
d) More formal tone

8) Which element is essential for an effective welcome speech?
a) Detailed technical data
b) Acknowledgement of guests
c) Long biographical note
d) Complex statistics

9) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
b) Summarize research findings
c) Express gratitude to contributors and audience
d) Present the event budget

10) Which is a best practice when delivering a professional presentation?
a) Reading every slide verbatim
b) Using too many small fonts
c) Maintaining eye contact and varying tone
d) Using no structure or flow

11) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
a) Enquiry letter
b) Complaint letter
c) Order letter
d) Quotation letter

12) A purchase order is principally used to _____.
a) Complain about defects
b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

13) Which part of a business letter contains the main message or details the writer wants to communicate?
a) Heading
b) Salutation
c) Body
d) Signature block

14) Which report type is typically written to describe a workplace accident and recommend corrective actions?
a) Progress report
b) Accident report
c) Sales report
d) Quotation report

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Which element is essential for an effective welcome speech?
a) Detailed technical data b) Acknowledgement of guests
c) Long biographical note d) Complex statistics

2) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
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9) A message sent without words using facial expressions or gestures is called _____.

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b) Verbal communication
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10) Which channel characteristic most reduces chances of immediate feedback?

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13) Upward communication flows from _____.

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SLR-QH-103

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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SLR-QH-103

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-QH-103

Seat No.	

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S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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SLR-QH-103

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-QH-103

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

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Q.3 Solve following. (Any Two) **14**

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b) Describe body language and its importance in communication.

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SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

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Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Sem - II) (New) (CBCS) Examination: March/April - 2026
Reinforcement Learning (CSEHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) A function that measures how good a state or action is, in terms of expected future rewards, is referred to as _____.
a) Policy b) Value Function
c) Agent d) Environment

2) The signal received from the environment to indicate the immediate outcome of an action is known as _____.
a) Reward b) Policy
c) State d) Exploration

3) In reinforcement learning, the component that interacts with the environment by taking actions is called _____.
a) Reward b) Policy
c) Agent d) Value Function

4) In a k-armed bandit problem, the number k represents _____.
a) Number of states b) Number of possible actions
c) Number of agents d) Number of rewards

5) The objective of the k-armed bandit problem is to: _____.
a) Minimize regret
b) Maximize total expected reward over time
c) Minimize variance of rewards
d) Always exploit the best-known action

6) The exploration-exploitation dilemma refers to _____.
   a) Choosing between immediate and delayed rewards
   b) Choosing between exploring new actions and exploiting known good ones
   c) Choosing between deterministic and stochastic rewards
   d) Choosing between different agents

7) The discount factor $\gamma (0 \leq \gamma \leq 1)$ determines _____.
   a) The probability of exploration
   b) The relative importance of future rewards
   c) The learning rate of updates
   d) The optimality of value functions

8) The optimal value function gives _____.
   a) The maximum expected return achievable from each state
   b) The reward of the first action
   c) The average of all possible actions
   d) The probability of ending an episode

9) Optimality in reinforcement learning implies _____.
   a) Following a deterministic policy only
   b) Achieving the highest possible expected return
   c) Choosing actions randomly until convergence
   d) Minimizing the number of episodes

10) Policy iteration consists of _____.
   a) Only repeating policy evaluation until convergence
   b) Randomized value updates
   c) Using Monte Carlo simulations
   d) Alternating between policy evaluation and policy improvement

11) SARSA is an example of _____.
   a) Off-policy control
   b) On-policy TD control
   c) Model-based method
   d) Value iteration

12) Q-learning updates are based on _____.
   a) Action taken under the current policy
   b) Maximum action-value of the next state
   c) Only observed rewards
   d) Averaging all past returns

13) In reinforcement learning, a model is used for _____.
   a) Storing policies only
   b) Computing learning rates
   c) Predicting next states and rewards
   d) Updating action-values directly

14) The Dyna architecture integrates _____.

a) Planning, acting, and learning
b) Exploration and exploitation only
c) Policy, iteration and value iteration
d) On-policy and off-policy control

Seat No.	

Set | P

S.Y. (B.Tech.) (Computer Science & Engineering) (Sem - II) (New) (CBCS) Examination: March/April - 2026
Reinforcement Learning (CSEHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Reinforcement Learning and give one real-world example.

b) Explain the K-armed bandit problem with an example.

c) Define rewards in RL and their role in achieving goals.

d) Describe unified notation for RL tasks.

e) Distinguish Reinforcement Learning from supervised and unsupervised learning.

Q.3 Attempt Any One. **06**

a) Differentiate state-value and action-value functions.

b) Describe how the 10-armed test-bed simulates the exploration-exploitation problem.

Q.4 Illustrate the interaction between agent, environment, actions, and rewards in RL. **06**

Section – II

Q.5 Attempt Any Four. **16**

a) Explain the main idea behind Dynamic Programming.

b) How is value iteration different from policy iteration?

c) What happens when the model in RL is incorrect?

d) Explain the working mechanism of Go and AlphaGo.

e) Write short note on Dyna-Q framework.

Q.6 Answer Any One. **06**

a) Explain the main advantage of prioritized sweeping over standard planning.

b) Explain the difference between Monte Carlo and Dynamic Programming approaches.

Q.7 Explain the difference between SARSA and Q-learning. **06**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Sem - II) (New) (CBCS) Examination: March/April - 2026
Reinforcement Learning (CSEHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The optimal value function gives _____.
a) The maximum expected return achievable from each state
b) The reward of the first action
c) The average of all possible actions
d) The probability of ending an episode

2) Optimality in reinforcement learning implies _____.
a) Following a deterministic policy only
b) Achieving the highest possible expected return
c) Choosing actions randomly until convergence
d) Minimizing the number of episodes

3) Policy iteration consists of _____.
a) Only repeating policy evaluation until convergence
b) Randomized value updates
c) Using Monte Carlo simulations
d) Alternating between policy evaluation and policy improvement

4) SARSA is an example of _____.
a) Off-policy control b) On-policy TD control
c) Model-based method d) Value iteration

5) Q-learning updates are based on _____.
a) Action taken under the current policy
b) Maximum action-value of the next state
c) Only observed rewards
d) Averaging all past returns

6) In reinforcement learning, a model is used for _____.
   a) Storing policies only
   b) Computing learning rates
   c) Predicting next states and rewards
   d) Updating action-values directly

7) The Dyna architecture integrates _____.
   a) Planning, acting, and learning
   b) Exploration and exploitation only
   c) Policy, iteration and value iteration
   d) On-policy and off-policy control

8) A function that measures how good a state or action is, in terms of expected future rewards, is referred to as _____.
   a) Policy
   b) Value Function
   c) Agent
   d) Environment

9) The signal received from the environment to indicate the immediate outcome of an action is known as _____.
   a) Reward
   b) Policy
   c) State
   d) Exploration

10) In reinforcement learning, the component that interacts with the environment by taking actions is called _____.
   a) Reward
   b) Policy
   c) Agent
   d) Value Function

11) In a k-armed bandit problem, the number k represents _____.
   a) Number of states
   b) Number of possible actions
   c) Number of agents
   d) Number of rewards

12) The objective of the k-armed bandit problem is to: _____.
   a) Minimize regret
   b) Maximize total expected reward over time
   c) Minimize variance of rewards
   d) Always exploit the best-known action

13) The exploration-exploitation dilemma refers to _____.
   a) Choosing between immediate and delayed rewards
   b) Choosing between exploring new actions and exploiting known good ones
   c) Choosing between deterministic and stochastic rewards
   d) Choosing between different agents

14) The discount factor $\gamma (0 \leq \gamma \leq 1)$ determines _____.
   a) The probability of exploration
   b) The relative importance of future rewards
   c) The learning rate of updates
   d) The optimality of value functions

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Sem - II) (New) (CBCS) Examination: March/April - 2026
Reinforcement Learning (CSEHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Reinforcement Learning and give one real-world example.

b) Explain the K-armed bandit problem with an example.

c) Define rewards in RL and their role in achieving goals.

d) Describe unified notation for RL tasks.

e) Distinguish Reinforcement Learning from supervised and unsupervised learning.

Q.3 Attempt Any One. **06**

a) Differentiate state-value and action-value functions.

b) Describe how the 10-armed test-bed simulates the exploration-exploitation problem.

Q.4 Illustrate the interaction between agent, environment, actions, and rewards in RL. **06**

Section – II

Q.5 Attempt Any Four. **16**

a) Explain the main idea behind Dynamic Programming.

b) How is value iteration different from policy iteration?

c) What happens when the model in RL is incorrect?

d) Explain the working mechanism of Go and AlphaGo.

e) Write short note on Dyna-Q framework.

Q.6 Answer Any One. **06**

a) Explain the main advantage of prioritized sweeping over standard planning.

b) Explain the difference between Monte Carlo and Dynamic Programming approaches.

Q.7 Explain the difference between SARSA and Q-learning. **06**

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Sem - II) (New) (CBCS) Examination: March/April - 2026
Reinforcement Learning (CSEHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) SARSA is an example of _____.
a) Off-policy control b) On-policy TD control
c) Model-based method d) Value iteration

2) Q-learning updates are based on _____.
a) Action taken under the current policy
b) Maximum action-value of the next state
c) Only observed rewards
d) Averaging all past returns

3) In reinforcement learning, a model is used for _____.
a) Storing policies only
b) Computing learning rates
c) Predicting next states and rewards
d) Updating action-values directly

4) The Dyna architecture integrates _____.
a) Planning, acting, and learning
b) Exploration and exploitation only
c) Policy, iteration and value iteration
d) On-policy and off-policy control

5) A function that measures how good a state or action is, in terms of expected future rewards, is referred to as _____.
a) Policy b) Value Function
c) Agent d) Environment

6) The signal received from the environment to indicate the immediate outcome of an action is known as _____.
a) Reward
b) Policy
c) State
d) Exploration

7) In reinforcement learning, the component that interacts with the environment by taking actions is called _____.
a) Reward
b) Policy
c) Agent
d) Value Function

8) In a k-armed bandit problem, the number k represents _____.
a) Number of states
b) Number of possible actions
c) Number of agents
d) Number of rewards

9) The objective of the k-armed bandit problem is to: _____.
a) Minimize regret
b) Maximize total expected reward over time
c) Minimize variance of rewards
d) Always exploit the best-known action

10) The exploration-exploitation dilemma refers to _____.
a) Choosing between immediate and delayed rewards
b) Choosing between exploring new actions and exploiting known good ones
c) Choosing between deterministic and stochastic rewards
d) Choosing between different agents

11) The discount factor $\gamma (0 \leq \gamma \leq 1)$ determines _____.
a) The probability of exploration
b) The relative importance of future rewards
c) The learning rate of updates
d) The optimality of value functions

12) The optimal value function gives _____.
a) The maximum expected return achievable from each state
b) The reward of the first action
c) The average of all possible actions
d) The probability of ending an episode

13) Optimality in reinforcement learning implies _____.
a) Following a deterministic policy only
b) Achieving the highest possible expected return
c) Choosing actions randomly until convergence
d) Minimizing the number of episodes

14) Policy iteration consists of _____.
a) Only repeating policy evaluation until convergence
b) Randomized value updates
c) Using Monte Carlo simulations
d) Alternating between policy evaluation and policy improvement

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Sem - II) (New) (CBCS) Examination: March/April - 2026
Reinforcement Learning (CSEHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Reinforcement Learning and give one real-world example.

b) Explain the K-armed bandit problem with an example.

c) Define rewards in RL and their role in achieving goals.

d) Describe unified notation for RL tasks.

e) Distinguish Reinforcement Learning from supervised and unsupervised learning.

Q.3 Attempt Any One. **06**

a) Differentiate state-value and action-value functions.

b) Describe how the 10-armed test-bed simulates the exploration-exploitation problem.

Q.4 Illustrate the interaction between agent, environment, actions, and rewards in RL. **06**

Section – II

Q.5 Attempt Any Four. **16**

a) Explain the main idea behind Dynamic Programming.

b) How is value iteration different from policy iteration?

c) What happens when the model in RL is incorrect?

d) Explain the working mechanism of Go and AlphaGo.

e) Write short note on Dyna-Q framework.

Q.6 Answer Any One. **06**

a) Explain the main advantage of prioritized sweeping over standard planning.

b) Explain the difference between Monte Carlo and Dynamic Programming approaches.

Q.7 Explain the difference between SARSA and Q-learning. **06**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Sem - II) (New) (CBCS) Examination: March/April - 2026
Reinforcement Learning (CSEHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) The exploration-exploitation dilemma refers to _____.
a) Choosing between immediate and delayed rewards
b) Choosing between exploring new actions and exploiting known good ones
c) Choosing between deterministic and stochastic rewards
d) Choosing between different agents

2) The discount factor $\gamma(0 \leq \gamma \leq 1)$ determines _____.
a) The probability of exploration
b) The relative importance of future rewards
c) The learning rate of updates
d) The optimality of value functions

3) The optimal value function gives _____.
a) The maximum expected return achievable from each state
b) The reward of the first action
c) The average of all possible actions
d) The probability of ending an episode

4) Optimality in reinforcement learning implies _____.
a) Following a deterministic policy only
b) Achieving the highest possible expected return
c) Choosing actions randomly until convergence
d) Minimizing the number of episodes

5) Policy iteration consists of _____.
a) Only repeating policy evaluation until convergence
b) Randomized value updates
c) Using Monte Carlo simulations
d) Alternating between policy evaluation and policy improvement

6) SARSA is an example of _____.
a) Off-policy control
b) On-policy TD control
c) Model-based method
d) Value iteration

7) Q-learning updates are based on _____.
a) Action taken under the current policy
b) Maximum action-value of the next state
c) Only observed rewards
d) Averaging all past returns

8) In reinforcement learning, a model is used for _____.
a) Storing policies only
b) Computing learning rates
c) Predicting next states and rewards
d) Updating action-values directly

9) The Dyna architecture integrates _____.
a) Planning, acting, and learning
b) Exploration and exploitation only
c) Policy, iteration and value iteration
d) On-policy and off-policy control

10) A function that measures how good a state or action is, in terms of expected future rewards, is referred to as _____.
a) Policy
b) Value Function
c) Agent
d) Environment

11) The signal received from the environment to indicate the immediate outcome of an action is known as _____.
a) Reward
b) Policy
c) State
d) Exploration

12) In reinforcement learning, the component that interacts with the environment by taking actions is called _____.
a) Reward
b) Policy
c) Agent
d) Value Function

13) In a k-armed bandit problem, the number k represents _____.
a) Number of states
b) Number of possible actions
c) Number of agents
d) Number of rewards

14) The objective of the k-armed bandit problem is to: _____.

a) Minimize regret
b) Maximize total expected reward over time
c) Minimize variance of rewards
d) Always exploit the best-known action

Seat No.	

Set | S

S.Y. (B.Tech.) (Computer Science & Engineering) (Sem - II) (New) (CBCS) Examination: March/April - 2026
Reinforcement Learning (CSEHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Reinforcement Learning and give one real-world example.

b) Explain the K-armed bandit problem with an example.

c) Define rewards in RL and their role in achieving goals.

d) Describe unified notation for RL tasks.

e) Distinguish Reinforcement Learning from supervised and unsupervised learning.

Q.3 Attempt Any One. **06**

a) Differentiate state-value and action-value functions.

b) Describe how the 10-armed test-bed simulates the exploration-exploitation problem.

Q.4 Illustrate the interaction between agent, environment, actions, and rewards in RL. **06**

Section – II

Q.5 Attempt Any Four. **16**

a) Explain the main idea behind Dynamic Programming.

b) How is value iteration different from policy iteration?

c) What happens when the model in RL is incorrect?

d) Explain the working mechanism of Go and AlphaGo.

e) Write short note on Dyna-Q framework.

Q.6 Answer Any One. **06**

a) Explain the main advantage of prioritized sweeping over standard planning.

b) Explain the difference between Monte Carlo and Dynamic Programming approaches.

Q.7 Explain the difference between SARSA and Q-learning. **06**

SLR-QH-105

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Network Security and Secure Coding (CSEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which of the following is a key weakness of SNMPv1?
a) Lack of encryption
b) No support for network monitoring
c) Incompatibility with IPv4
d) High resource consumption

2) Which of the following tools is commonly used for symbolic execution?
a) Valgrind b) KLEE
c) Metasploit d) Nessus

3) What is a common defense against use-after-free vulnerabilities?
a) Address sanitization b) Data encryption
c) Secure key storage d) Taint analysis

4) Which of the following is an example of an attack that involves altering the data in transmission?
a) Session hijacking b) Buffer overflow
c) ARP spoofing d) Man-in-the-middle

5) Which of the following protocols does TCP use for session management and authentication?
a) IPsec b) ARP
c) TCP handshaking d) TLS/SSL

6) What is the goal of integrity in network security?
a) Ensuring data is only accessible to authorized users
b) Ensuring data has not been tampered with
c) Verifying the identity of the sender
d) Preventing denial of service attacks

7) Which of the following protocols is used for key exchange in IPsec?
a) Diffie-Hellman b) RSA
c) Kerberos d) AES

8) Which of the following is a default community string in SNMPv1?
a) Private b) Public
c) Secret d) Admin

9) Which type of threat involves a program that replicates itself to spread to other systems?
a) Worm b) Spyware
c) Trojan d) Virus

10) Which of the following is a conventional encryption algorithm?
a) RSA b) DES
c) Diffie-Hellman d) ECC

11) Which encryption device location ensures secure end-to-end communication?
a) Link encryption b) End-to-end encryption
c) Device-to-device encryption d) Hop-by-hop encryption

12) Which of the following is an example of a public key cryptography algorithm?
a) AES b) DES
c) RSA d) HMAC

13) What does IPsec primarily aim to secure?
a) Email communications
b) Network-layer communication
c) Application-layer communication
d) Physical-layer communication

14) Who is responsible for issuing digital certificates?
a) Certificate Authority b) Kerberos
c) Key Distribution Center d) Public Key Infrastructure

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Network Security and Secure Coding (CSEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer Any Three. **12**

a) Explain how RSA encryption works in public key cryptography with the following example P=11 and Q=13 and identify the public and private key**.**

b) Explain the man-in-the-middle attack with a neat diagram.

c) Explain ARP Attacks with an example.

d) Explain the Substitution Encryption Techniques with examples.

Q.3 Answer Any Two. **16**

a) Write a difference between TCP and UDP session hijacking.

b) Describe MAC with reference to HMAC.

c) Explain Digital signature and Digital Certificate with real life examples.

Section – II

Q.4 Answer Any Three. **12**

a) Define secure coding and explain the memory safety and vulnerabilities.

b) Explain the following terms with an example.
i) AH
ii) ESP

c) Explain How S/MIME protocol works.

d) Explain the working of IDs with workflow.

Q.5 Answer Any Two. **16**

a) Write a Differentiate between SNMPv1 and SNMPv3.

b) Define Firewall, Explain the primary types of firewalls and Design principle of firewall.

c) Describe following terms with example.
i) Intruders
ii) Virus
iii) Threats
iv) IDS

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Network Security and Secure Coding (CSEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which of the following is a default community string in SNMPv1?
a) Private b) Public
c) Secret d) Admin

2) Which type of threat involves a program that replicates itself to spread to other systems?
a) Worm b) Spyware
c) Trojan d) Virus

3) Which of the following is a conventional encryption algorithm?
a) RSA b) DES
c) Diffie-Hellman d) ECC

4) Which encryption device location ensures secure end-to-end communication?
a) Link encryption b) End-to-end encryption
c) Device-to-device encryption d) Hop-by-hop encryption

5) Which of the following is an example of a public key cryptography algorithm?
a) AES b) DES
c) RSA d) HMAC

6) What does IPsec primarily aim to secure?
a) Email communications
b) Network-layer communication
c) Application-layer communication
d) Physical-layer communication

7) Who is responsible for issuing digital certificates?
a) Certificate Authority
b) Kerberos
c) Key Distribution Center
d) Public Key Infrastructure

8) Which of the following is a key weakness of SNMPv1?
a) Lack of encryption
b) No support for network monitoring
c) Incompatibility with IPv4
d) High resource consumption

9) Which of the following tools is commonly used for symbolic execution?
a) Valgrind
b) KLEE
c) Metasploit
d) Nessus

10) What is a common defense against use-after-free vulnerabilities?
a) Address sanitization
b) Data encryption
c) Secure key storage
d) Taint analysis

11) Which of the following is an example of an attack that involves altering the data in transmission?
a) Session hijacking
b) Buffer overflow
c) ARP spoofing
d) Man-in-the-middle

12) Which of the following protocols does TCP use for session management and authentication?
a) IPsec
b) ARP
c) TCP handshaking
d) TLS/SSL

13) What is the goal of integrity in network security?
a) Ensuring data is only accessible to authorized users
b) Ensuring data has not been tampered with
c) Verifying the identity of the sender
d) Preventing denial of service attacks

14) Which of the following protocols is used for key exchange in IPsec?
a) Diffie-Hellman
b) RSA
c) Kerberos
d) AES

SLR-QH-105

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Network Security and Secure Coding (CSEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Answer Any Three. **12**

a) Explain how RSA encryption works in public key cryptography with the following example P=11 and Q=13 and identify the public and private key**.**

b) Explain the man-in-the-middle attack with a neat diagram.

c) Explain ARP Attacks with an example.

d) Explain the Substitution Encryption Techniques with examples.

Q.3 Answer Any Two. **16**

a) Write a difference between TCP and UDP session hijacking.

b) Describe MAC with reference to HMAC.

c) Explain Digital signature and Digital Certificate with real life examples.

Section – II

Q.4 Answer Any Three. **12**

a) Define secure coding and explain the memory safety and vulnerabilities.

b) Explain the following terms with an example.
i) AH
ii) ESP

c) Explain How S/MIME protocol works.

d) Explain the working of IDs with workflow.

Q.5 Answer Any Two. **16**

a) Write a Differentiate between SNMPv1 and SNMPv3.

b) Define Firewall, Explain the primary types of firewalls and Design principle of firewall.

c) Describe following terms with example.
i) Intruders
ii) Virus
iii) Threats
iv) IDS

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Network Security and Secure Coding (CSEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which encryption device location ensures secure end-to-end communication?
a) Link encryption
b) End-to-end encryption
c) Device-to-device encryption
d) Hop-by-hop encryption

2) Which of the following is an example of a public key cryptography algorithm?
a) AES
b) DES
c) RSA
d) HMAC

3) What does IPsec primarily aim to secure?
a) Email communications
b) Network-layer communication
c) Application-layer communication
d) Physical-layer communication

4) Who is responsible for issuing digital certificates?
a) Certificate Authority
b) Kerberos
c) Key Distribution Center
d) Public Key Infrastructure

5) Which of the following is a key weakness of SNMPv1?
a) Lack of encryption
b) No support for network monitoring
c) Incompatibility with IPv4
d) High resource consumption

6) Which of the following tools is commonly used for symbolic execution?
a) Valgrind
b) KLEE
c) Metasploit
d) Nessus

7) What is a common defense against use-after-free vulnerabilities?
a) Address sanitization
b) Data encryption
c) Secure key storage
d) Taint analysis

8) Which of the following is an example of an attack that involves altering the data in transmission?
a) Session hijacking
b) Buffer overflow
c) ARP spoofing
d) Man-in-the-middle

9) Which of the following protocols does TCP use for session management and authentication?
a) IPsec
b) ARP
c) TCP handshaking
d) TLS/SSL

10) What is the goal of integrity in network security?
a) Ensuring data is only accessible to authorized users
b) Ensuring data has not been tampered with
c) Verifying the identity of the sender
d) Preventing denial of service attacks

11) Which of the following protocols is used for key exchange in IPsec?
a) Diffie-Hellman
b) RSA
c) Kerberos
d) AES

12) Which of the following is a default community string in SNMPv1?
a) Private
b) Public
c) Secret
d) Admin

13) Which type of threat involves a program that replicates itself to spread to other systems?
a) Worm
b) Spyware
c) Trojan
d) Virus

14) Which of the following is a conventional encryption algorithm?
a) RSA
b) DES
c) Diffie-Hellman
d) ECC

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Network Security and Secure Coding (CSEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer Any Three. **12**

a) Explain how RSA encryption works in public key cryptography with the following example P=11 and Q=13 and identify the public and private key**.**

b) Explain the man-in-the-middle attack with a neat diagram.

c) Explain ARP Attacks with an example.

d) Explain the Substitution Encryption Techniques with examples.

Q.3 Answer Any Two. **16**

a) Write a difference between TCP and UDP session hijacking.

b) Describe MAC with reference to HMAC.

c) Explain Digital signature and Digital Certificate with real life examples.

Section – II

Q.4 Answer Any Three. **12**

a) Define secure coding and explain the memory safety and vulnerabilities.

b) Explain the following terms with an example.
i) AH
ii) ESP

c) Explain How S/MIME protocol works.

d) Explain the working of IDs with workflow.

Q.5 Answer Any Two. **16**

a) Write a Differentiate between SNMPv1 and SNMPv3.

b) Define Firewall, Explain the primary types of firewalls and Design principle of firewall.

c) Describe following terms with example.
i) Intruders
ii) Virus
iii) Threats
iv) IDS

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Network Security and Secure Coding (CSEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) What is the goal of integrity in network security?
a) Ensuring data is only accessible to authorized users
b) Ensuring data has not been tampered with
c) Verifying the identity of the sender
d) Preventing denial of service attacks

2) Which of the following protocols is used for key exchange in IPsec?
a) Diffie-Hellman b) RSA
c) Kerberos d) AES

3) Which of the following is a default community string in SNMPv1?
a) Private b) Public
c) Secret d) Admin

4) Which type of threat involves a program that replicates itself to spread to other systems?
a) Worm b) Spyware
c) Trojan d) Virus

5) Which of the following is a conventional encryption algorithm?
a) RSA b) DES
c) Diffie-Hellman d) ECC

6) Which encryption device location ensures secure end-to-end communication?
a) Link encryption b) End-to-end encryption
c) Device-to-device encryption d) Hop-by-hop encryption

7) Which of the following is an example of a public key cryptography algorithm?
a) AES
b) DES
c) RSA
d) HMAC

8) What does IPsec primarily aim to secure?
a) Email communications
b) Network-layer communication
c) Application-layer communication
d) Physical-layer communication

9) Who is responsible for issuing digital certificates?
a) Certificate Authority
b) Kerberos
c) Key Distribution Center
d) Public Key Infrastructure

10) Which of the following is a key weakness of SNMPv1?
a) Lack of encryption
b) No support for network monitoring
c) Incompatibility with IPv4
d) High resource consumption

11) Which of the following tools is commonly used for symbolic execution?
a) Valgrind
b) KLEE
c) Metasploit
d) Nessus

12) What is a common defense against use-after-free vulnerabilities?
a) Address sanitization
b) Data encryption
c) Secure key storage
d) Taint analysis

13) Which of the following is an example of an attack that involves altering the data in transmission?
a) Session hijacking
b) Buffer overflow
c) ARP spoofing
d) Man-in-the-middle

14) Which of the following protocols does TCP use for session management and authentication?
a) IPsec
b) ARP
c) TCP handshaking
d) TLS/SSL

SLR-QH-105

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Network Security and Secure Coding (CSEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer Any Three. **12**

a) Explain how RSA encryption works in public key cryptography with the following example P=11 and Q=13 and identify the public and private key**.**

b) Explain the man-in-the-middle attack with a neat diagram.

c) Explain ARP Attacks with an example.

d) Explain the Substitution Encryption Techniques with examples.

Q.3 Answer Any Two. **16**

a) Write a difference between TCP and UDP session hijacking.

b) Describe MAC with reference to HMAC.

c) Explain Digital signature and Digital Certificate with real life examples.

Section – II

Q.4 Answer Any Three. **12**

a) Define secure coding and explain the memory safety and vulnerabilities.

b) Explain the following terms with an example.
i) AH
ii) ESP

c) Explain How S/MIME protocol works.

d) Explain the working of IDs with workflow.

Q.5 Answer Any Two. **16**

a) Write a Differentiate between SNMPv1 and SNMPv3.

b) Define Firewall, Explain the primary types of firewalls and Design principle of firewall.

c) Describe following terms with example.
i) Intruders
ii) Virus
iii) Threats
iv) IDS

SLR-QH-106

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) Each row of the table describes an _____ and each column describes a _____.
a) Observation, variables b) Variable, attributes
c) Variable, features d) All of the above

2) What does NumPy stand for?
a) Numerical Python b) Natural Python
c) Numeric Program d) Nonlinear Python

3) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

4) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

5) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

6) What are the benefits of Data Visualizations?
   a) Better Analysis
   b) Identifying patterns
   c) Exploring Business Insights
   d) All of the above

7) Which method can be used to convert text data to numerical values?
   a) One-hot encoding
   b) Normalization
   c) Binning
   d) Grouping

8) How to handle the missing values in the dataset?
   a) Dropping the missing rows & columns
   b) Replace with some values
   c) Compute with mean/mode/median value
   d) All of the above

9) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
   b) can reduce the accuracy of model
   c) a) & b)
   d) None of the these

10) After installing Pandas, which command is used to import it in a Python script?
   a) import pandas as pd
   b) import pandas
   c) from pandas import *
   d) import pandas as pd as np

11) Which Pandas method is used to remove rows with missing data from a DataFrame?
   a) df.dropna()
   b) df.fillna()
   c) df.isna()
   d) df.replace()

12) What is the default type of join used when using pd.merge()?
   a) Left join
   b) Inner join
   c) Right join
   d) Outer join

13) Which of the following correctly plots a histogram using Matplotlib?
   a) plt.hist(data, bins=10)
   b) plt.histogram(data, bins=10)
   c) sns.histplot(data=data, bins=10)
   d) plt.hist(data, 10)

14) Which is the correct command to install Matplotlib?
   a) pip install matplotlib
   b) pip install matplotlib.pz
   c) pip install matplotlib.*
   d) All of the above

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

SECTION – I

Q.2 Attempt Any Three **12**

a) Describe the process for making sense of data.

b) What are the Different Types of Variables?

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Explain Data preprocessing steps and write Uses of Data Preprocessing.

Q.3 Attempt Any One. **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example.

b) How to convert text to numbers and numbers to text with examples.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

1) Mode
2) Median
3) Mean
4) Range
5) Variance
6) Standard deviation

SECTION – II

Q.5 Attempt Any Three **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable examples.

d) How to handle missing values in Pandas, explain with example.

Q.6 Attempt Any One **08**

a) What are the features of Pandas? Explain in detail.

b) List types of tables. Explain it with Example. How is the Cross classification table better than the summary table?

Q.7 Compulsory Question. **08**

Write the Python code to visualize the Histogram, Bar Chart. Consider a suitable dataset.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) How to handle the missing values in the dataset?
a) Dropping the missing rows & columns
b) Replace with some values
c) Compute with mean/mode/median value
d) All of the above

2) Which of the following is true about outliers?
a) Data points that deviate a lot from normal
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c) a) & b)
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3) After installing Pandas, which command is used to import it in a Python script?
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d) Outer join

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a) Blood pressure
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c) Height of individuals
d) Time taken to complete a task

11) Which of the following is NOT a step in preparing data tables for analysis?
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b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

12) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

13) What are the benefits of Data Visualizations?
a) Better Analysis
b) Identifying patterns
c) Exploring Business Insights
d) All of the above

14) Which method can be used to convert text data to numerical values?
a) One-hot encoding
b) Normalization
c) Binning
d) Grouping

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

SECTION – I

Q.2 Attempt Any Three **12**

a) Describe the process for making sense of data.

b) What are the Different Types of Variables?

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Explain Data preprocessing steps and write Uses of Data Preprocessing.

Q.3 Attempt Any One. **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example.

b) How to convert text to numbers and numbers to text with examples.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

1) Mode
2) Median
3) Mean
4) Range
5) Variance
6) Standard deviation

SECTION – II

Q.5 Attempt Any Three **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable examples.

d) How to handle missing values in Pandas, explain with example.

Q.6 Attempt Any One **08**

a) What are the features of Pandas? Explain in detail.

b) List types of tables. Explain it with Example. How is the Cross classification table better than the summary table?

Q.7 Compulsory Question. **08**

Write the Python code to visualize the Histogram, Bar Chart. Consider a suitable dataset.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna() b) df.fillna()
c) df.isna() d) df.replace()

2) What is the default type of join used when using pd.merge()?
a) Left join b) Inner join
c) Right join d) Outer join

3) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) plt.hist(data, 10)

4) Which is the correct command to install Matplotlib?
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5) Each row of the table describes an _____ and each column describes a _____.
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6) What does NumPy stand for?
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c) Numeric Program d) Nonlinear Python

7) Which of the following is an example of a nominal variable?
   a) Blood pressure
   b) Eye color
   c) Height of individuals
   d) Time taken to complete a task

8) Which of the following is NOT a step in preparing data tables for analysis?
   a) Data cleaning
   b) Data visualization
   c) Removing irrelevant observations
   d) Converting data into a suitable format for analysis

9) The process of cleaning the data primarily involves _____.
   a) Creating visualizations
   b) Removing missing or invalid data and correcting errors
   c) Aggregating data into groups
   d) Generating hypotheses from data

10) What are the benefits of Data Visualizations?
   a) Better Analysis
   b) Identifying patterns
   c) Exploring Business Insights
   d) All of the above

11) Which method can be used to convert text data to numerical values?
   a) One-hot encoding
   b) Normalization
   c) Binning
   d) Grouping

12) How to handle the missing values in the dataset?
   a) Dropping the missing rows & columns
   b) Replace with some values
   c) Compute with mean/mode/median value
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13) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
   b) can reduce the accuracy of model
   c) a) & b)
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14) After installing Pandas, which command is used to import it in a Python script?
   a) import pandas as pd
   b) import pandas
   c) from pandas import *
   d) import pandas as pd as np

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

SECTION – I

Q.2 Attempt Any Three **12**

a) Describe the process for making sense of data.

b) What are the Different Types of Variables?

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Explain Data preprocessing steps and write Uses of Data Preprocessing.

Q.3 Attempt Any One. **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example.

b) How to convert text to numbers and numbers to text with examples.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

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W. Hands	77
P. Rice	45
F. Marsh	28

1) Mode
2) Median
3) Mean
4) Range
5) Variance
6) Standard deviation

SECTION – II

Q.5 Attempt Any Three **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable examples.

d) How to handle missing values in Pandas, explain with example.

Q.6 Attempt Any One **08**

a) What are the features of Pandas? Explain in detail.

b) List types of tables. Explain it with Example. How is the Cross classification table better than the summary table?

Q.7 Compulsory Question. **08**

Write the Python code to visualize the Histogram, Bar Chart. Consider a suitable dataset.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) What are the benefits of Data Visualizations?
a) Better Analysis b) Identifying patterns
c) Exploring Business Insights d) All of the above

2) Which method can be used to convert text data to numerical values?
a) One-hot encoding b) Normalization
c) Binning d) Grouping

3) How to handle the missing values in the dataset?
a) Dropping the missing rows & columns
b) Replace with some values
c) Compute with mean/mode/median value
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4) Which of the following is true about outliers?
a) Data points that deviate a lot from normal
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5) After installing Pandas, which command is used to import it in a Python script?
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b) Data visualization
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d) Converting data into a suitable format for analysis

14) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEHON-02C)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

SECTION – I

Q.2 Attempt Any Three **12**

a) Describe the process for making sense of data.

b) What are the Different Types of Variables?

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Explain Data preprocessing steps and write Uses of Data Preprocessing.

Q.3 Attempt Any One. **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example.

b) How to convert text to numbers and numbers to text with examples.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

1) Mode
2) Median
3) Mean
4) Range
5) Variance
6) Standard deviation

SECTION – II

Q.5 Attempt Any Three **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable examples.

d) How to handle missing values in Pandas, explain with example.

Q.6 Attempt Any One **08**

a) What are the features of Pandas? Explain in detail.

b) List types of tables. Explain it with Example. How is the Cross classification table better than the summary table?

Q.7 Compulsory Question. **08**

Write the Python code to visualize the Histogram, Bar Chart. Consider a suitable dataset.

SLR-QH-107

Seat No.		Set	P

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Answer the following Objective Type Questions. 50

1) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

2) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

3) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

4) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

5) The value of respect entails _____.
a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

6) Which value involves being accountable for one's decisions and actions?
a) Responsibility b) Flexibility
c) Confidence d) Arrogance

7) The value of integrity entails _____.
a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

8) Which value involves being considerate and thoughtful towards others?
a) Kindness
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9) The value of wisdom involves _____.
a) Making sound and informed judgments based on knowledge and experience
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10) Which value involves being truthful and sincere in one's actions and words?
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11) What is the primary goal of engineering ethics?
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c) To protect public safety and welfare
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12) Which of the following is considered an ethical responsibility of an engineer?
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b) Ensuring the safety of the public
c) Disregarding laws and regulations
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13) Ethical engineering practices promote _____.
a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
d) The minimization of safety regulations

14) Ethical engineers should consider which of the following when making decisions?
a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

15) Which of the following is NOT part of an engineer's ethical responsibility?
a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

16) Ethical engineering involves making decisions based on _____.
a) Personal opinions and values
b) Financial incentives and company pressure
c) Objective analysis, codes of ethics, and consideration for the public good
d) Trends in the field of engineering

17) What should an engineer do if they discover a colleague is involved in unethical practices?
a) Ignore the situation to avoid conflict
b) Report the unethical behavior to management or relevant authorities
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d) Allow the behavior to continue if it does not affect the project

18) Ethical engineering practices include _____.
a) Following industry standards and regulations
b) Ensuring profitability is the main priority
c) Cutting costs by any means necessary
d) Avoiding the reporting of safety hazards

19) What is the primary focus of Kohlberg's theory?
a) Cognitive development b) Social development
c) Moral development d) Emotional development

20) Which term refers to an agreement that is made through discussions and compromises among parties?
a) Conflict b) Consensus
c) Dispute d) Isolation

21) What is the primary goal of risk assessment?
a) To eliminate all risks
b) To identify and mitigate potential risks
c) To ignore potential risks
d) To transfer risks to others

22) What is the primary goal of safety protocols?
a) To increase productivity
b) To reduce costs
c) To prevent injuries and illnesses
d) To improve employee morale

23) What is the difference between a hazard and a risk?
- a) A hazard is a potential risk, while a risk is a real danger
- b) A hazard is a real danger, while a risk is a potential danger
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24) What should you do if you identify a potential risk in the workplace?
- a) Ignore it and hope it goes away
- b) Report it to your supervisor or HR
- c) Try to mitigate it on your own
- d) Transfer the risk to someone else

25) According to the theory of ethical egoism, what should guide an individual's moral actions?
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- b) The individual's own self-interest
- c) Social norms and conventions
- d) Universal moral principles

26) Collegiality in a professional setting refers to _____.
- a) Loyalty to your employer
- b) Cooperation and mutual respect among colleagues
- c) Competing for individual success
- d) Avoiding work conflicts

27) Professional loyalty involves _____.
- a) Reporting colleagues' mistakes publicly
- b) Protecting the interests of the team or organization
- c) Ignoring safety violations to avoid
- d) Disclosing confidential information for personal conflict gain

28) Employee rights include _____.
- a) The right to work without discrimination
- b) The right to disregard company policies
- c) The right to personal opinion but not affecting work
- d) The right to ignore workplace safety standards

29) Intellectual Property Rights (IPR) protect _____.
- a) The financial interests of corporations
- b) The ownership and use of creative ideas and inventions
- c) The physical assets of a company
- d) Workplace performance evaluations

30) *Risk assessment* is important because it helps in _____.
- a) Evaluating the potential impact of hazards on health and safety
- b) Minimizing workplace productivity
- c) Defining job roles
- d) Ignoring environmental issues

31) In risk management, mitigation strategies aim to _____.
a) Accept all risks in the workplace
b) Reduce or eliminate identified risks
c) Increase the likelihood of hazards
d) Focus only on maximizing profits

32) Which of the following is a potential consequence of *occupational crime?*
a) Increased workplace productivity
b) Legal consequences and loss of reputation
c) Improvement in company safety standards
d) Higher employee satisfaction

33) Risk reduction in engineering refers to _____.
a) Implementing measures to lower the work chances of accidents
b) Increasing the number of hazards in the work environment
c) Ignoring potential risks
d) Cutting costs by removing safety measures

34) Public safety regulations are primarily designed to _____.
a) Ensure the safety of the company's assets
b) Protect the general public from potential harm
c) Increase revenue for the government
d) Focus only on preventing natural disasters

35) Multinational corporations (MNCs) are characterized by _____.
a) Operations in multiple countries with a centralized headquarters
b) Operating only in their home country
c) Limited influence on global markets
d) No responsibility toward environmental concerns

36) Environmental ethics primarily deals with _____.
a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
d) Treating employees equally

37) Which of the following is NOT an example of environmental ethics?
a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

38) Computer ethics involves _____.
   a) Programming and coding without considering social consequences
   b) Understanding the moral implications of computing technologies
   c) Focusing only on technological innovation
   d) Ignoring privacy issues

39) Weapons development ethics deals with _____.
   a) The development of new technologies to enhance military capabilities
   b) Restricting the use of all technological advancements
   c) Focusing only on civilian safety
   d) Only addressing the legal aspects of weapon development

40) Engineers as managers are expected to _____.
   a) Focus solely on technical tasks
   b) Lead teams, make strategic decisions, and manage projects
   c) Ignore the business aspects of their work
   d) Avoid taking responsibility for team outcomes

41) Consulting engineers are hired to _____.
   a) Work on projects within the company they are employed
   b) Provide expert advice on technical and engineering problems
   c) Manage public relations for a company
   d) Conduct legal investigations

42) Engineers acting as expert witnesses typically _____.
   a) Present evidence and offer testimony in legal cases
   b) Focus on public relations during a case
   c) Manage engineering projects for legal firms
   d) Directly represent the interests of a company court

43) Sample Code of Ethics of professional organizations typically includes _____.
   a) Guidelines for acceptable behavior and decision-making
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44) ASME stands for _____.
   a) American Society of Mechanical Engineers
   b) American Society of Management Engineers
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45) The ASCE Code of Ethics emphasizes _____.
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c) Focusing on personal financial gain
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46) The IEEE Code of Ethics is primarily concerned with _____.
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c) Maximizing technological advancements at any cost
d) Developing weapons for defense purposes

47) Global issues in engineering ethics include _____.
a) Cultural differences in engineering practices
b) Lack of understanding between technical and ethical concerns
c) Addressing both local and international engineering challenges
d) All of the above

48) A key challenge faced by multinational corporations is _____.
a) Balancing profits with social and environmental
b) Competing only within their home country responsibilities
c) Focusing solely on domestic issues
d) Ignoring corporate social responsibility

49) Empathy is the ability to _____.
a) Solve problems logically
b) Understand and share the feelings of others
c) Be indifferent to others' emotions
d) Only care about your own well-being

50) The quality of "caring" includes _____.
a) Showing concern for others' well-being
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c) Only helping family and friends
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SLR-QH-107

Seat No.		Set	Q

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) What is the primary goal of risk assessment?
a) To eliminate all risks
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c) To ignore potential risks
d) To transfer risks to others

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b) Understand and share the feelings of others
c) Be indifferent to others' emotions
d) Only care about your own well-being

30) The quality of "caring" includes _____.
a) Showing concern for others' well-being
b) Ignoring the needs of others
c) Only helping family and friends
d) Seeking praise for helping others

31) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

32) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

33) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

34) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

35) The value of respect entails _____.
a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

36) Which value involves being accountable for one's decisions and actions?
a) Responsibility b) Flexibility
c) Confidence d) Arrogance

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44) Ethical engineers should consider which of the following when making decisions?

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45) Which of the following is NOT part of an engineer's ethical responsibility?

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SLR-QH-107

Seat No.		Set	R

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

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d) Only addressing the legal aspects of weapon development

50) Engineers as managers are expected to _____.

a) Focus solely on technical tasks
b) Lead teams, make strategic decisions, and manage projects
c) Ignore the business aspects of their work
d) Avoid taking responsibility for team outcomes

SLR-QH-107

Seat No.		Set	S

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) What is the primary goal of engineering ethics?
a) To maximize profits for companies
b) To ensure engineers work efficiently
c) To protect public safety and welfare
d) To follow industry standards

2) Which of the following is considered an ethical responsibility of an engineer?
a) Ignoring environmental concerns to meet deadlines
b) Ensuring the safety of the public
c) Disregarding laws and regulations
d) Making decisions based on personal interests

3) Ethical engineering practices promote _____.
a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
d) The minimization of safety regulations

4) Ethical engineers should consider which of the following when making decisions?
a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

5) Which of the following is NOT part of an engineer's ethical responsibility?
a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

6) Ethical engineering involves making decisions based on _____.
   a) Personal opinions and values
   b) Financial incentives and company pressure
   c) Objective analysis, codes of ethics, and consideration for the public good
   d) Trends in the field of engineering

7) What should an engineer do if they discover a colleague is involved in unethical practices?
   a) Ignore the situation to avoid conflict
   b) Report the unethical behavior to management or relevant authorities
   c) Cover up the situation to protect the colleague
   d) Allow the behavior to continue if it does not affect the project

8) Ethical engineering practices include _____.
   a) Following industry standards and regulations
   b) Ensuring profitability is the main priority
   c) Cutting costs by any means necessary
   d) Avoiding the reporting of safety hazards

9) What is the primary focus of Kohlberg's theory?
   a) Cognitive development b) Social development
   c) Moral development d) Emotional development

10) Which term refers to an agreement that is made through discussions and compromises among parties?
   a) Conflict b) Consensus
   c) Dispute d) Isolation

11) What is the primary goal of risk assessment?
   a) To eliminate all risks
   b) To identify and mitigate potential risks
   c) To ignore potential risks
   d) To transfer risks to others

12) What is the primary goal of safety protocols?
   a) To increase productivity
   b) To reduce costs
   c) To prevent injuries and illnesses
   d) To improve employee morale

13) What is the difference between a hazard and a risk?
   a) A hazard is a potential risk, while a risk is a real danger
   b) A hazard is a real danger, while a risk is a potential danger
   c) A hazard is a physical danger, while a risk is a financial danger
   d) A hazard is a financial danger, while a risk is a physical danger

14) What should you do if you identify a potential risk in the workplace?
a) Ignore it and hope it goes away
b) Report it to your supervisor or HR
c) Try to mitigate it on your own
d) Transfer the risk to someone else

15) According to the theory of ethical egoism, what should guide an individual's moral actions?
a) The well-being of others
b) The individual's own self-interest
c) Social norms and conventions
d) Universal moral principles

16) Collegiality in a professional setting refers to _____.
a) Loyalty to your employer
b) Cooperation and mutual respect among colleagues
c) Competing for individual success
d) Avoiding work conflicts

17) Professional loyalty involves _____.
a) Reporting colleagues' mistakes publicly
b) Protecting the interests of the team or organization
c) Ignoring safety violations to avoid
d) Disclosing confidential information for personal conflict gain

18) Employee rights include _____.
a) The right to work without discrimination
b) The right to disregard company policies
c) The right to personal opinion but not affecting work
d) The right to ignore workplace safety standards

19) Intellectual Property Rights (IPR) protect _____.
a) The financial interests of corporations
b) The ownership and use of creative ideas and inventions
c) The physical assets of a company
d) Workplace performance evaluations

20) *Risk assessment* is important because it helps in _____.
a) Evaluating the potential impact of hazards on health and safety
b) Minimizing workplace productivity
c) Defining job roles
d) Ignoring environmental issues

21) In risk management, mitigation strategies aim to _____.
a) Accept all risks in the workplace
b) Reduce or eliminate identified risks
c) Increase the likelihood of hazards
d) Focus only on maximizing profits

22) Which of the following is a potential consequence of *occupational crime?*

a) Increased workplace productivity
b) Legal consequences and loss of reputation
c) Improvement in company safety standards
d) Higher employee satisfaction

23) Risk reduction in engineering refers to _____.

a) Implementing measures to lower the work chances of accidents
b) Increasing the number of hazards in the work environment
c) Ignoring potential risks
d) Cutting costs by removing safety measures

24) Public safety regulations are primarily designed to _____.

a) Ensure the safety of the company's assets
b) Protect the general public from potential harm
c) Increase revenue for the government
d) Focus only on preventing natural disasters

25) Multinational corporations (MNCs) are characterized by _____.

a) Operations in multiple countries with a centralized headquarters
b) Operating only in their home country
c) Limited influence on global markets
d) No responsibility toward environmental concerns

26) Environmental ethics primarily deals with _____.

a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
d) Treating employees equally

27) Which of the following is NOT an example of environmental ethics?

a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

28) Computer ethics involves _____.

a) Programming and coding without considering social consequences
b) Understanding the moral implications of computing technologies
c) Focusing only on technological innovation
d) Ignoring privacy issues

29) Weapons development ethics deals with _____.
a) The development of new technologies to enhance military capabilities
b) Restricting the use of all technological advancements
c) Focusing only on civilian safety
d) Only addressing the legal aspects of weapon development

30) Engineers as managers are expected to _____.
a) Focus solely on technical tasks
b) Lead teams, make strategic decisions, and manage projects
c) Ignore the business aspects of their work
d) Avoid taking responsibility for team outcomes

31) Consulting engineers are hired to _____.
a) Work on projects within the company they are employed
b) Provide expert advice on technical and engineering problems
c) Manage public relations for a company
d) Conduct legal investigations

32) Engineers acting as expert witnesses typically _____.
a) Present evidence and offer testimony in legal cases
b) Focus on public relations during a case
c) Manage engineering projects for legal firms
d) Directly represent the interests of a company court

33) Sample Code of Ethics of professional organizations typically includes _____.
a) Guidelines for acceptable behavior and decision-making
b) Rules for maximizing profits at any cost
c) Detailed technical specifications for projects
d) Guidelines for political involvement in engineering

34) ASME stands for _____.
a) American Society of Mechanical Engineers
b) American Society of Management Engineers
c) Association of Safety and Mechanical Engineers
d) Association of Scientific and Mechanical Engineers

35) The ASCE Code of Ethics emphasizes _____.
a) Following only local regulations
b) Maintaining professional integrity and responsibility
c) Focusing on personal financial gain
d) Ignoring environmental impacts

36) The IEEE Code of Ethics is primarily concerned with _____.
a) Fostering professional competence and integrity
b) Protecting corporate secrets
c) Maximizing technological advancements at any cost
d) Developing weapons for defense purposes

37) Global issues in engineering ethics include _____.
a) Cultural differences in engineering practices
b) Lack of understanding between technical and ethical concerns
c) Addressing both local and international engineering challenges
d) All of the above

38) A key challenge faced by multinational corporations is _____.
a) Balancing profits with social and environmental
b) Competing only within their home country responsibilities
c) Focusing solely on domestic issues
d) Ignoring corporate social responsibility

39) Empathy is the ability to _____.
a) Solve problems logically
b) Understand and share the feelings of others
c) Be indifferent to others' emotions
d) Only care about your own well-being

40) The quality of "caring" includes _____.
a) Showing concern for others' well-being
b) Ignoring the needs of others
c) Only helping family and friends
d) Seeking praise for helping others

41) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

42) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

43) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

44) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

45) The value of respect entails _____.

a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

46) Which value involves being accountable for one's decisions and actions?

a) Responsibility b) Flexibility
c) Confidence d) Arrogance

47) The value of integrity entails _____.

a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

48) Which value involves being considerate and thoughtful towards others?

a) Kindness b) Determination
c) Independence d) Indifference

49) The value of wisdom involves _____.

a) Making sound and informed judgments based on knowledge and experience
b) Pursuing personal interests at the expense of others
c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

50) Which value involves being truthful and sincere in one's actions and words?

a) Honesty b) Tolerance
c) Flexibility d) Arrogance

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Applied Mathematics – II (BTN03401)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figure to the right indicate full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

2) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

3) The Gauss-Seidel method is used for solving _____.
a) Nonlinear equations
b) Systems of linear equations
c) Ordinary differential equations
d) Partial differential equations

4) Which of the following is a disadvantage of the Gauss-Jacobi method?
a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

5) The use of Romberg's method is _____.
a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

6) The error in Simpson's 1/3rd rule is of order _____.
a) h^3 b) h^4
c) h^2 d) h

7) Power Method is used to find _____.
a) Smallest Eigen Value b) Largest Eigen Value
c) Positive Eigen Value d) Negative Eigen Value

8) To find the Numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

9) A fuzzy set is a collection of objects with _____.
a) Clear boundary b) No boundary
c) Partial membership d) Both b) and c)

10) Fuzzy sets are generalizations of _____.
a) Crisp sets b) Classical sets
c) Both a) and b) d) None

11) The membership value of an element in a fuzzy set lies between _____.
a) 0 and 1 b) 0 and ∞
c) -1 and 1 d) Only 0 or 1

12) Which operation is used for the intersection of fuzzy sets?
a) Maximum b) Minimum
c) Addition d) Subtraction

13) A Linear Programming Problem (LPP) consists of _____.
a) An objective function b) Constraints
c) Non-negativity restrictions d) All of the above

14) The simplex method is used for solving _____.
a) Linear equations
b) Non-linear equations
c) Linear programming problems with more than two variables
d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Applied Mathematics – II (BTN03401)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations)
$27x + 6y - z = 85, \quad 6x + 15y + 2z = 72$
$x + y + 54z = 110$

c) Find positive real root of the equation $x \sin x + \cos x = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equation by using Gauss-Elimination method.
$x + 4y - z = -5, \quad x + y - 6z = -12, \quad -3x - y - z = 4$

e) Evaluate the integral $\int_0^1 \frac{x^2}{1+x^3}\, dx$ using Simpson's $\frac{1}{3}rd$ rule Take $h = 0.25$

Q.3 Attempt Any Three. **09**

a) Use Trapezoidal Rule to compute $\int_0^1 \frac{1}{1+x^2} dx$ Take h as 0.5

b) Solve the integral $\int_0^{1/2} \frac{1}{\sqrt{1-x^2}} dx$ using Weddle's rule Taking $n = 6$

c) Solve by Gauss Seidel Method, the equations
$20x + y - 2z = 17, 3x + 20y - z = -18, 2x - 3y + 20z = 25$ Perform 3 iteration.

d) Find the value of $\sqrt{5}$ using newton's iterative formula. Perform 3 iteration.

e) Determine the largest Eigen value and corresponding Eigen vector of the matrix. $\begin{bmatrix} 5 & 4 \\ 1 & 2 \end{bmatrix}$ by using power method perform three iterations.

Q.4 Attempt Any Two. **10**

a) Perform 2-iteration by Newton's Raphson Method to Solve the non-linear equation.
$x = x^2 + y^2, y = x^2 - y^2$ Take initial approximation $x_0 = 0.8, y_0 = 0.4$

b) Solve the system of equation by LU decomposition Method
$3x + 2y + 7z = 4, \quad 2x + 3y + z = 5, \quad 3x + 4y + z = 7$

c) Use Romberg's method to compute $\int_0^1 \frac{1}{1+x^2} dx$ Take h as $0.5, 0.25, 0.125$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Define membership function and fuzzy set.

b) Find I.B.F.S by using Hungarian method

Warehouse Factory	I	II	III	IV
A	15	14	12	16
B	23	22	25	24
C	31	34	32	33
D	21	32	44	53

c) If $A = \{(1, 0.2), (2, 0.4), (3, 0.8)\}$ and $B = \{(1, 0.5), (2, 0.6), (3, 0.7)\}$ find
- $A \cup B$
- $A \cap B$

d) Define the following terms:
i) Support of a fuzzy set
ii) Height of a fuzzy set
iii) Normalized fuzzy set

e) Evaluate the Following
i) $[1,3] + [5,8]$
ii) $[1,3] - [5,8]$
iii) $[1,3].[5,8]$
iv) $[1,3]/[5,8]$

Q.6 Attempt Any Three. **09**

a) Maximize $Z = 3x_1 + 2x_2$, subject to
$x_1 + x_2 \leq 4, \quad x_1 - x_2 \leq 2, \quad x_1, x_2 \geq 0$

b) Let $A = \{(x_1, 0.3), (x_2, 0.7)\}$ and $B = \{(x_1, 0.5), (x_2, 0.4)\}$
Find the fuzzy difference $A - B$

c) Solve the Assignment Problem

Tasks	E	F	G	H
A	18	26	17	11
B	13	28	14	26
C	38	19	18	15
D	19	26	24	10

d) Let A, B be the fuzzy sets defined on universal set $x = \{0, 1, 2, 3, 4, 5\}$ by the membership functions

$A(x) = \frac{5-x}{x+5}, \qquad B(x) = \frac{5-x}{5}, \forall x \in X$

verify $|A| + |B| = |A \cup B| + |A \cap B|$

e) Determine which of the following fuzzy sets qualify as a fuzzy number.

i) $A(x) = \begin{cases} \frac{1}{2}, & 0 \le x \le 1 \\ 0, & 0.\text{W.} \end{cases}$

ii) $B(x) = \begin{cases} \cos x, & 0 \le x \le \pi/2 \\ 0, & 0.\text{W.} \end{cases}$

Q.7 Attempt Any Two. **10**

a) Solve the Assignment Problem.

	Machine			
Job	A	B	C	D
1	18	24	28	32
2	8	13	17	19
3	10	15	19	22

b) State first decomposition theorem and find $f(A)$ where

$A(x) = \frac{0.7}{-5} + \frac{0.6}{-4} + \frac{1}{-3} + \frac{0.4}{-2} + \frac{0.45}{-1} + \frac{0.75}{0} + \frac{0.81}{1} + \frac{0.34}{2} + \frac{1}{3} + \frac{0.17}{4} + \frac{0.91}{5}$

$X = \{-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

$F: x \to y$ defined by $f(x) = x^2$

c) Find $A + B$ for the following membership function:

$A(x) = \frac{x+1}{2} \qquad -1 < x \le 1$

$= \frac{3-x}{2} \qquad 1 < x < 3$

$= 0 \qquad$ otherwise

$B(x) = \frac{x-1}{2} \qquad 1 < x \le 3$

$= \frac{5-x}{2} \qquad 3 < x \le 5$

$= 0 \qquad$ otherwise

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Applied Mathematics – II (BTN03401)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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1) To find the Numerically largest Eigen value using iterative method we use the equation _____.
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SLR-QH-108

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Applied Mathematics – II (BTN03401)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

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SECTION – I

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SECTION – II

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a) Define membership function and fuzzy set.

b) Find I.B.F.S by using Hungarian method

Warehouse Factory	I	II	III	IV
A	15	14	12	16
B	23	22	25	24
C	31	34	32	33
D	21	32	44	53

c) If $A = \{(1, 0.2), (2, 0.4), (3, 0.8)\}$ and $B = \{(1, 0.5), (2, 0.6), (3, 0.7)\}$ find
- $A \cup B$
- $A \cap B$

d) Define the following terms:
i) Support of a fuzzy set
ii) Height of a fuzzy set
iii) Normalized fuzzy set

e) Evaluate the Following
i) $[1,3] + [5,8]$
ii) $[1,3] - [5,8]$
iii) $[1,3].[5,8]$
iv) $[1,3]/[5,8]$

Q.6 Attempt Any Three. **09**

a) Maximize $Z = 3x_1 + 2x_2$, subject to
$x_1 + x_2 \leq 4, \quad x_1 - x_2 \leq 2, \quad x_1, x_2 \geq 0$

b) Let $A = \{(x_1, 0.3), (x_2, 0.7)\}$ and $B = \{(x_1, 0.5), (x_2, 0.4)\}$
Find the fuzzy difference $A - B$

c) Solve the Assignment Problem

Tasks	E	F	G	H
A	18	26	17	11
B	13	28	14	26
C	38	19	18	15
D	19	26	24	10

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$A(x) = \frac{5-x}{x+5}, \qquad B(x) = \frac{5-x}{5}, \forall x \in X$

verify $|A| + |B| = |A \cup B| + |A \cap B|$

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a) Solve the Assignment Problem.

	Machine			
Job	A	B	C	D
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3	10	15	19	22

b) State first decomposition theorem and find $f(A)$ where

$A(x) = \frac{0.7}{-5} + \frac{0.6}{-4} + \frac{1}{-3} + \frac{0.4}{-2} + \frac{0.45}{-1} + \frac{0.75}{0} + \frac{0.81}{1} + \frac{0.34}{2} + \frac{1}{3} + \frac{0.17}{4} + \frac{0.91}{5}$

$X = \{-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

$F: x \to y$ defined by $f(x) = x^2$

c) Find $A + B$ for the following membership function:

$A(x) = \frac{x+1}{2} \qquad -1 < x \le 1$

$= \frac{3-x}{2} \qquad 1 < x < 3$

$= 0 \qquad$ otherwise

$B(x) = \frac{x-1}{2} \qquad 1 < x \le 3$

$= \frac{5-x}{2} \qquad 3 < x \le 5$

$= 0 \qquad$ otherwise

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Applied Mathematics – II (BTN03401)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figure to the right indicate full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) The membership value of an element in a fuzzy set lies between _____.
a) 0 and 1 b) 0 and ∞
c) -1 and 1 d) Only 0 or 1

2) Which operation is used for the intersection of fuzzy sets?
a) Maximum b) Minimum
c) Addition d) Subtraction

3) A Linear Programming Problem (LPP) consists of _____.
a) An objective function b) Constraints
c) Non-negativity restrictions d) All of the above

4) The simplex method is used for solving _____.
a) Linear equations
b) Non-linear equations
c) Linear programming problems with more than two variables
d) None

5) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

6) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

7) The Gauss-Seidel method is used for solving _____.
   a) Nonlinear equations
   b) Systems of linear equations
   c) Ordinary differential equations
   d) Partial differential equations

8) Which of the following is a disadvantage of the Gauss-Jacobi method?
   a) It converges faster than most direct methods
   b) It requires a large number of iterations for a good approximation
   c) It cannot be used for systems with more than two equations
   d) It works only for symmetric systems

9) The use of Romberg's method is _____.
   a) To solve simultaneous linear equation
   b) To find root of linear equation
   c) To evaluate definite integration
   d) To find the Eigen values

10) The error in Simpson's 1/3rd rule is of order _____.
   a) h^3 b) h^4
   c) h^2 d) h

11) Power Method is used to find _____.
   a) Smallest Eigen Value b) Largest Eigen Value
   c) Positive Eigen Value d) Negative Eigen Value

12) To find the Numerically largest Eigen value using iterative method we use the equation _____.
   a) $A = \lambda X$ b) $AX = X$
   c) $X = \lambda X$ d) $AX = \lambda X$

13) A fuzzy set is a collection of objects with _____.
   a) Clear boundary b) No boundary
   c) Partial membership d) Both b) and c)

14) Fuzzy sets are generalizations of _____.
   a) Crisp sets b) Classical sets
   c) Both a) and b) d) None

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Applied Mathematics – II (BTN03401)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations)
$27x + 6y - z = 85, \quad 6x + 15y + 2z = 72$
$x + y + 54z = 110$

c) Find positive real root of the equation $x \sin x + \cos x = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equation by using Gauss-Elimination method.
$x + 4y - z = -5, \quad x + y - 6z = -12, \quad -3x - y - z = 4$

e) Evaluate the integral $\int_0^1 \frac{x^2}{1+x^3}\, dx$ using Simpson's $\frac{1}{3}rd$ rule Take $h = 0.25$

Q.3 Attempt Any Three. **09**

a) Use Trapezoidal Rule to compute $\int_0^1 \frac{1}{1+x^2} dx$ Take h as 0.5

b) Solve the integral $\int_0^{1/2} \frac{1}{\sqrt{1-x^2}} dx$ using Weddle's rule Taking $n = 6$

c) Solve by Gauss Seidel Method, the equations
$20x + y - 2z = 17, 3x + 20y - z = -18, 2x - 3y + 20z = 25$ Perform 3 iteration.

d) Find the value of $\sqrt{5}$ using newton's iterative formula. Perform 3 iteration.

e) Determine the largest Eigen value and corresponding Eigen vector of the matrix. $\begin{bmatrix} 5 & 4 \\ 1 & 2 \end{bmatrix}$ by using power method perform three iterations.

Q.4 Attempt Any Two. **10**

a) Perform 2-iteration by Newton's Raphson Method to Solve the non-linear equation.
$x = x^2 + y^2, y = x^2 - y^2$ Take initial approximation $x_0 = 0.8, y_0 = 0.4$

b) Solve the system of equation by LU decomposition Method
$3x + 2y + 7z = 4, \quad 2x + 3y + z = 5, \quad 3x + 4y + z = 7$

c) Use Romberg's method to compute $\int_0^1 \frac{1}{1+x^2} dx$ Take h as $0.5, 0.25, 0.125$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Define membership function and fuzzy set.

b) Find I.B.F.S by using Hungarian method

Warehouse Factory	I	II	III	IV
A	15	14	12	16
B	23	22	25	24
C	31	34	32	33
D	21	32	44	53

c) If $A = \{(1, 0.2), (2, 0.4), (3, 0.8)\}$ and $B = \{(1, 0.5), (2, 0.6), (3, 0.7)\}$ find
- $A \cup B$
- $A \cap B$

d) Define the following terms:
i) Support of a fuzzy set
ii) Height of a fuzzy set
iii) Normalized fuzzy set

e) Evaluate the Following
i) $[1,3] + [5,8]$
ii) $[1,3] - [5,8]$
iii) $[1,3].[5,8]$
iv) $[1,3]/[5,8]$

Q.6 Attempt Any Three. **09**

a) Maximize $Z = 3x_1 + 2x_2$, subject to
$x_1 + x_2 \leq 4, \quad x_1 - x_2 \leq 2, \quad x_1, x_2 \geq 0$

b) Let $A = \{(x_1, 0.3), (x_2, 0.7)\}$ and $B = \{(x_1, 0.5), (x_2, 0.4)\}$
Find the fuzzy difference $A - B$

c) Solve the Assignment Problem

Tasks	E	F	G	H
A	18	26	17	11
B	13	28	14	26
C	38	19	18	15
D	19	26	24	10

d) Let A, B be the fuzzy sets defined on universal set $x = \{0, 1, 2, 3, 4, 5\}$ by the membership functions

$A(x) = \frac{5-x}{x+5}, \qquad B(x) = \frac{5-x}{5}, \forall x \in X$

verify $|A| + |B| = |A \cup B| + |A \cap B|$

e) Determine which of the following fuzzy sets qualify as a fuzzy number.

i) $A(x) = \begin{cases} \frac{1}{2}, & 0 \le x \le 1 \\ 0, & 0.\text{W.} \end{cases}$

ii) $B(x) = \begin{cases} \cos x, & 0 \le x \le \pi/2 \\ 0, & 0.\text{W.} \end{cases}$

Q.7 Attempt Any Two. **10**

a) Solve the Assignment Problem.

	Machine			
Job	A	B	C	D
1	18	24	28	32
2	8	13	17	19
3	10	15	19	22

b) State first decomposition theorem and find $f(A)$ where

$A(x) = \frac{0.7}{-5} + \frac{0.6}{-4} + \frac{1}{-3} + \frac{0.4}{-2} + \frac{0.45}{-1} + \frac{0.75}{0} + \frac{0.81}{1} + \frac{0.34}{2} + \frac{1}{3} + \frac{0.17}{4} + \frac{0.91}{5}$

$X = \{-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

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Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Applied Mathematics – II (BTN03401)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figure to the right indicate full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The error in Simpson's 1/3rd rule is of order _____.
a) h^3 b) h^4
c) h^2 d) h

2) Power Method is used to find _____.
a) Smallest Eigen Value b) Largest Eigen Value
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3) To find the Numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
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Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science & Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Applied Mathematics – II (BTN03401)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

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SECTION – II

Q.5 Attempt Any Three. **09**

a) Define membership function and fuzzy set.

b) Find I.B.F.S by using Hungarian method

Warehouse Factory	I	II	III	IV
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i) $[1,3] + [5,8]$
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$x_1 + x_2 \leq 4, \quad x_1 - x_2 \leq 2, \quad x_1, x_2 \geq 0$

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c) Solve the Assignment Problem

Tasks	E	F	G	H
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a) Solve the Assignment Problem.

	Machine			
Job	A	B	C	D
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$A(x) = \frac{0.7}{-5} + \frac{0.6}{-4} + \frac{1}{-3} + \frac{0.4}{-2} + \frac{0.45}{-1} + \frac{0.75}{0} + \frac{0.81}{1} + \frac{0.34}{2} + \frac{1}{3} + \frac{0.17}{4} + \frac{0.91}{5}$

$X = \{-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$

$F: x \to y$ defined by $f(x) = x^2$

c) Find $A + B$ for the following membership function:

$A(x) = \frac{x+1}{2} \qquad -1 < x \le 1$

$= \frac{3-x}{2} \qquad 1 < x < 3$

$= 0 \qquad$ otherwise

$B(x) = \frac{x-1}{2} \qquad 1 < x \le 3$

$= \frac{5-x}{2} \qquad 3 < x \le 5$

$= 0 \qquad$ otherwise

SLR-QH-109

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Network Theory Analysis (ENTPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starring page of the Answer Book Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of Page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

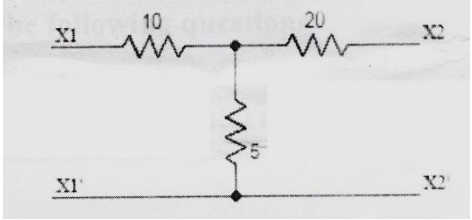
1) In Superposition theorem, while considering a source, all other current sources are?
a) short circuited b) change its position
c) open circuited d) removed from the circuit

2) The maximum power is delivered from a source to its load when the load resistance is _____ the source resistance.
a) greater than b) less than
c) equal to d) less than or equal to

3) As XL = XC in a series resonance circuit, the impedance is _____.
a) purely capacitive b) purely inductive
c) purely resistive d) capacitive and inductive

4) The magnification in resonance considering the voltage across inductor is?
a) V/VL b) VL/V
c) V x VL d) VL

5) In the circuit shown below, find the Z-parameter Z12.



a) 15 b) 10
c) 5 d) 1

6) In determining open circuit impedance parameters, among V1, V2, I1, I2, which of the following are independent variables?
a) I1 and V2 b) V1 and I2
c) I1 and I2 d) V1 and V2

7) The steady state part in the expression of current in the R-L circuit is?
a) (V/R)(exp(R/L)t)) b) (V/R)(-exp(R/L)t))
c) V/R d) R/V

8) The real part of the complex frequency is called?
a) radian frequency b) neper frequency
c) sampling frequency d) angular frequency

9) The transform impedance of the capacitor is?
a) C b) 1/C
c) sC d) 1/sC

10) The ratio of current transform at one port to current transform at other port is called?
a) Transfer admittance b) Transfer impedance
c) Current transfer ratio d) Voltage transfer ratio

11) If V_1 is the voltage at port 1 and V_2 is the voltage at port 2, then the attenuation in dB is?
a) 20 log10 (V_1/V_2) b) 10 log10 (V_1/V_2)
c) 20 log10 (V_2/V_1) d) 10 log10 (V_2/V_1)

12) A filter that passes frequencies between two designated cut-off frequencies and attenuates all other frequencies is called?
a) high pass filter b) band elimination filter
c) band pass filter d) low pass filter

13) In an R-C circuit, when the switch is closed, the response _____.
a) do not vary with time
b) decays with time
c) rises with time
d) first increases and then decreases

14) The nodal method of circuit analysis is based on _____.
a) KVL and Ohm's law b) KCL and Ohm's law
c) KCL, KVL d) KCL, KVL and Ohm's law

SLR-QH-109

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Network Theory Analysis (ENTPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

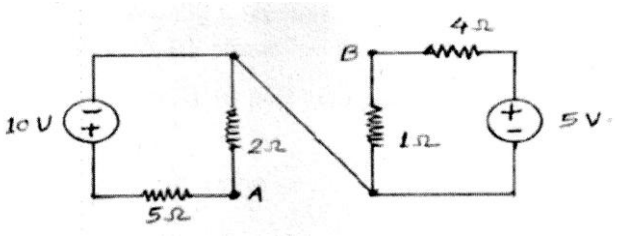
Instructions: 1) All questions are compulsory.
2) figure to right indicate full marks.

SECTION – I

Q.2 Answer Any Four of the following questions. **16**

a) State & prove Maximum power transfer theorem.

b) Determine Thevenin's equivalent circuit across terminals AB for given circuit as shown if Figure 1



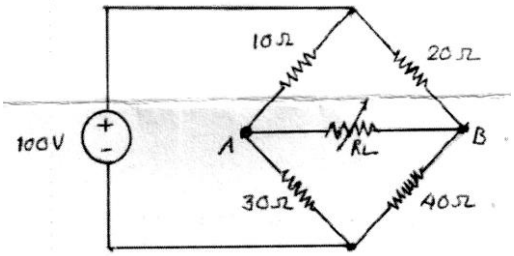
c) A series RLC circuit consists of $\mathrm{R} = 4\Omega, \mathrm{L} = 0.5\mathrm{H}$ & variable capacitance in series across a $100\mathrm{V}, 50\mathrm{Hz}$. Calculate
i) The capacitance to give resonance,
ii) The voltage across capacitor

d) For the T-network, derive:
i) Z parameters in terms of Circuit components.
ii) Circuit components in terms of Z parameters

e) Derive Y-parameter equations for the two-port network in terms of port voltage & currents.

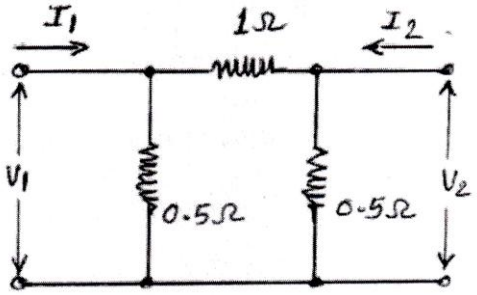
Q.3 Answer Any Two of the following questions. **12**

a) Determine the load resistance to receive maximum power from the source, also find the maximum power delivered to load in the network shown in Figure.



b) Derive the expression for frequency at which the voltage across Inductor will be maximum in series resonance circuit.

c) Determine the ABCD parameters for the π-network shown in Figure 4. Is this network bilateral or not?



SECTION – II

Q.4 Answer Any Four of the following questions. **16**

a) Explain DC response of series RL circuit?

b) For the give network function, draw pole zero plot and comment on stability.

$$F(s) = \frac{5(s+5)}{(s+2)(s+7)}$$

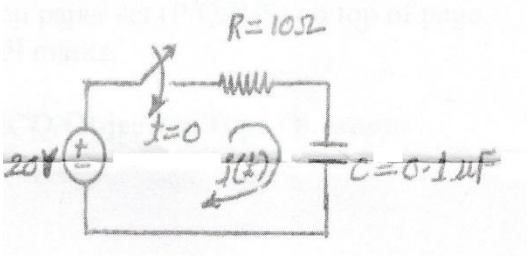
c) Design LPF with T section having cut-off frequency of 2 KHz to operate with a terminated load resistance of 500Ω.

d) What is the need for m-derived filter? Draw T section for m-derived LPF.

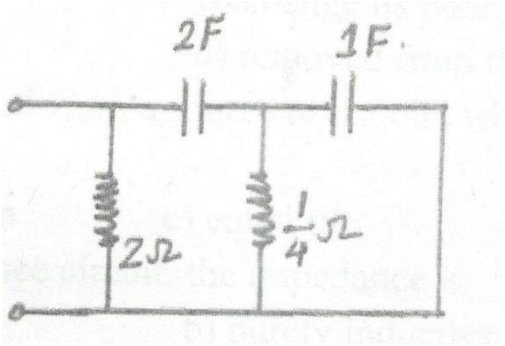
e) Design a T-pad attenuator to give an attenuation of 60dB and to work in line with 500Ω resistance.

Q.5 Answer Any Two of the following questions. **12**

a) A series RC circuit consists of $R = 10\Omega$ and $C = 0.1\mu F$ shown in figures. Initially the switch is kept open for very long time. At $t = 0$ switch is closed. Find the expressions for voltages across C and R expression for current through C.



b) Determine the driving point impedance and driving point admittance for the given network in Figure.



c) Design a m-derived LPF T and π section with a cut off frequency of 1.5 KHz, design impedance of 500Ω and resonant frequency is 1600 Hz.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Network Theory Analysis (ENTPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starring page of the Answer Book Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of Page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) The real part of the complex frequency is called?
a) radian frequency b) neper frequency
c) sampling frequency d) angular frequency

2) The transform impedance of the capacitor is?
a) C b) 1/C
c) sC d) 1/sC

3) The ratio of current transform at one port to current transform at other port is called?
a) Transfer admittance b) Transfer impedance
c) Current transfer ratio d) Voltage transfer ratio

4) If V_1 is the voltage at port 1 and V_2 is the voltage at port 2, then the attenuation in dB is?
a) 20 log10 (V_1/V_2) b) 10 log10 (V_1/V_2)
c) 20 log10 (V_2/V_1) d) 10 log10 (V_2/V_1)

5) A filter that passes frequencies between two designated cut-off frequencies and attenuates all other frequencies is called?
a) high pass filter b) band elimination filter
c) band pass filter d) low pass filter

6) In an R-C circuit, when the switch is closed, the response _____.
a) do not vary with time
b) decays with time
c) rises with time
d) first increases and then decreases

7) The nodal method of circuit analysis is based on _____.
a) KVL and Ohm's law
b) KCL and Ohm's law
c) KCL, KVL
d) KCL, KVL and Ohm's law

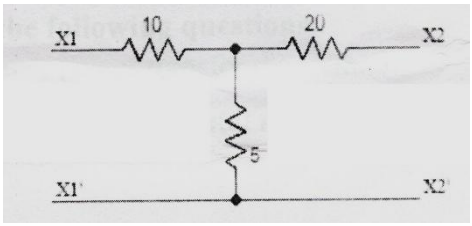
8) In Superposition theorem, while considering a source, all other current sources are?
a) short circuited
b) change its position
c) open circuited
d) removed from the circuit

9) The maximum power is delivered from a source to its load when the load resistance is _____ the source resistance.
a) greater than
b) less than
c) equal to
d) less than or equal to

10) As XL = XC in a series resonance circuit, the impedance is _____.
a) purely capacitive
b) purely inductive
c) purely resistive
d) capacitive and inductive

11) The magnification in resonance considering the voltage across inductor is?
a) V/VL
b) VL/V
c) V x VL
d) VL

12) In the circuit shown below, find the Z-parameter Z12.



a) 15
b) 10
c) 5
d) 1

13) In determining open circuit impedance parameters, among V1, V2, I1, I2, which of the following are independent variables?
a) I1 and V2
b) V1 and I2
c) I1 and I2
d) V1 and V2

14) The steady state part in the expression of current in the R-L circuit is?
a) (V/R)(exp(R/L)t))
b) (V/R)(-exp(R/L)t))
c) V/R
d) R/V

SLR-QH-109

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Network Theory Analysis (ENTPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

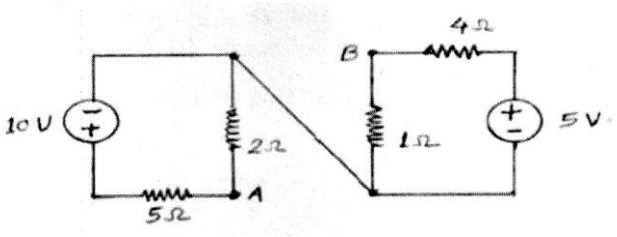
Instructions: 1) All questions are compulsory.
2) figure to right indicate full marks.

SECTION – I

Q.2 Answer Any Four of the following questions. **16**

a) State & prove Maximum power transfer theorem.

b) Determine Thevenin's equivalent circuit across terminals AB for given circuit as shown if Figure 1



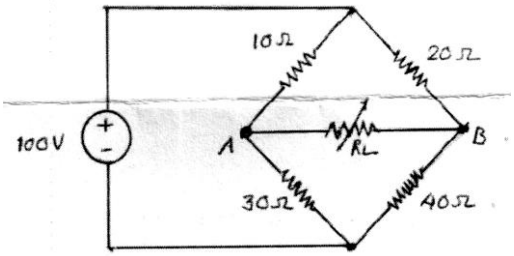
c) A series RLC circuit consists of $\mathrm{R} = 4\Omega, \mathrm{L} = 0.5\mathrm{H}$ & variable capacitance in series across a $100\mathrm{V}, 50\mathrm{Hz}$. Calculate
i) The capacitance to give resonance,
ii) The voltage across capacitor

d) For the T-network, derive:
i) Z parameters in terms of Circuit components.
ii) Circuit components in terms of Z parameters

e) Derive Y-parameter equations for the two-port network in terms of port voltage & currents.

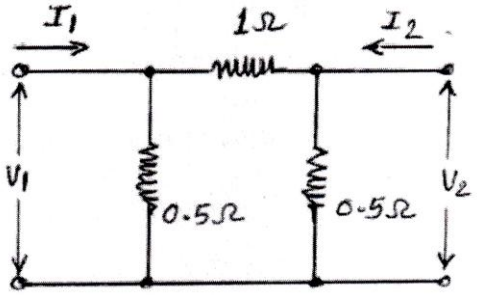
Q.3 Answer Any Two of the following questions. **12**

a) Determine the load resistance to receive maximum power from the source, also find the maximum power delivered to load in the network shown in Figure.



b) Derive the expression for frequency at which the voltage across Inductor will be maximum in series resonance circuit.

c) Determine the ABCD parameters for the π-network shown in Figure 4. Is this network bilateral or not?



SECTION – II

Q.4 Answer Any Four of the following questions. **16**

a) Explain DC response of series RL circuit?

b) For the give network function, draw pole zero plot and comment on stability.

$$F(s) = \frac{5(s+5)}{(s+2)(s+7)}$$

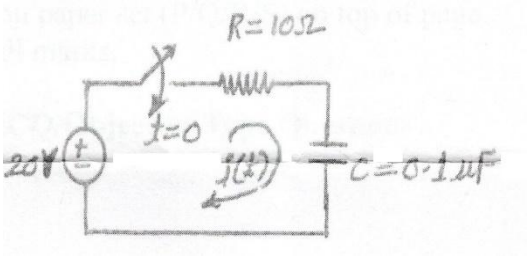
c) Design LPF with T section having cut-off frequency of 2 KHz to operate with a terminated load resistance of 500Ω.

d) What is the need for m-derived filter? Draw T section for m-derived LPF.

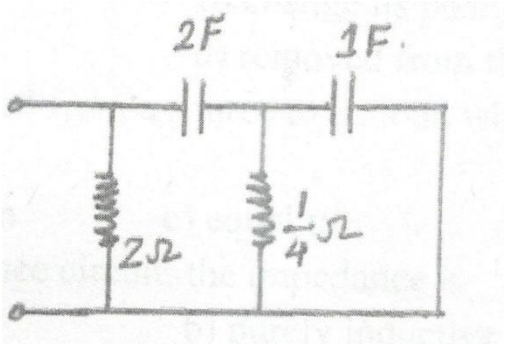
e) Design a T-pad attenuator to give an attenuation of 60dB and to work in line with 500Ω resistance.

Q.5 Answer Any Two of the following questions. **12**

a) A series RC circuit consists of $R = 10\Omega$ and $C = 0.1\mu F$ shown in figures. Initially the switch is kept open for very long time. At $t = 0$ switch is closed. Find the expressions for voltages across C and R expression for current through C.



b) Determine the driving point impedance and driving point admittance for the given network in Figure.



c) Design a m-derived LPF T and π section with a cut off frequency of 1.5 KHz, design impedance of 500Ω and resonant frequency is 1600 Hz.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Network Theory Analysis (ENTPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starring page of the Answer Book Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of Page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) If V_1 is the voltage at port 1 and V_2 is the voltage at port 2, then the attenuation in dB is?
a) 20 log10 (V_1/V_2) b) 10 log10 (V_1/V_2)
c) 20 log10 (V_2/V_1) d) 10 log10 (V_2/V_1)

2) A filter that passes frequencies between two designated cut-off frequencies and attenuates all other frequencies is called?
a) high pass filter b) band elimination filter
c) band pass filter d) low pass filter

3) In an R-C circuit, when the switch is closed, the response _____.
a) do not vary with time
b) decays with time
c) rises with time
d) first increases and then decreases

4) The nodal method of circuit analysis is based on _____.
a) KVL and Ohm's law b) KCL and Ohm's law
c) KCL, KVL d) KCL, KVL and Ohm's law

5) In Superposition theorem, while considering a source, all other current sources are?
a) short circuited b) change its position
c) open circuited d) removed from the circuit

6) The maximum power is delivered from a source to its load when the load resistance is _____ the source resistance.
a) greater than b) less than
c) equal to d) less than or equal to

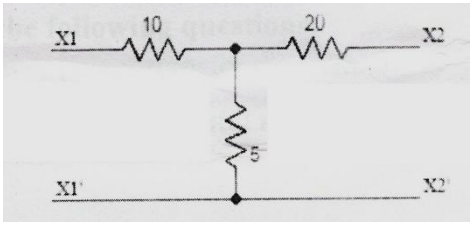
7) As XL = XC in a series resonance circuit, the impedance is _____.

a) purely capacitive
b) purely inductive
c) purely resistive
d) capacitive and inductive

8) The magnification in resonance considering the voltage across inductor is?

a) V/VL
b) VL/V
c) V x VL
d) VL

9) In the circuit shown below, find the Z-parameter Z12.



a) 15
b) 10
c) 5
d) 1

10) In determining open circuit impedance parameters, among V1, V2, I1, I2, which of the following are independent variables?

a) I1 and V2
b) V1 and I2
c) I1 and I2
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11) The steady state part in the expression of current in the R-L circuit is?

a) (V/R)(exp(R/L)t))
b) (V/R)(-exp(R/L)t))
c) V/R
d) R/V

12) The real part of the complex frequency is called?

a) radian frequency
b) neper frequency
c) sampling frequency
d) angular frequency

13) The transform impedance of the capacitor is?

a) C
b) 1/C
c) sC
d) 1/sC

14) The ratio of current transform at one port to current transform at other port is called?

a) Transfer admittance
b) Transfer impedance
c) Current transfer ratio
d) Voltage transfer ratio

SLR-QH-109

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Network Theory Analysis (ENTPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

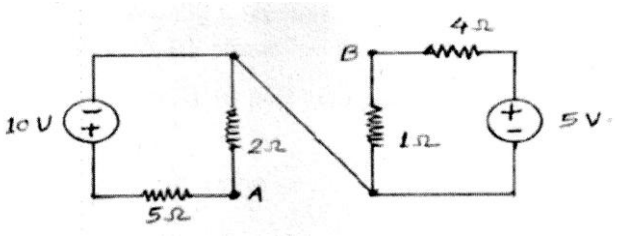
Instructions: 1) All questions are compulsory.
2) figure to right indicate full marks.

SECTION – I

Q.2 Answer Any Four of the following questions. **16**

a) State & prove Maximum power transfer theorem.

b) Determine Thevenin's equivalent circuit across terminals AB for given circuit as shown if Figure 1



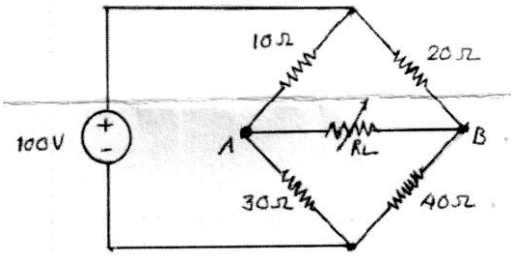
c) A series RLC circuit consists of $\mathrm{R} = 4\Omega, \mathrm{L} = 0.5\mathrm{H}$ & variable capacitance in series across a $100\mathrm{V}, 50\mathrm{Hz}$. Calculate
i) The capacitance to give resonance,
ii) The voltage across capacitor

d) For the T-network, derive:
i) Z parameters in terms of Circuit components.
ii) Circuit components in terms of Z parameters

e) Derive Y-parameter equations for the two-port network in terms of port voltage & currents.

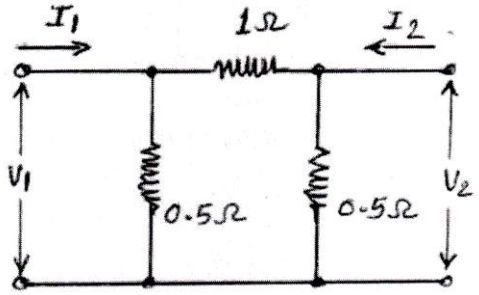
Q.3 Answer Any Two of the following questions. **12**

a) Determine the load resistance to receive maximum power from the source, also find the maximum power delivered to load in the network shown in Figure.



b) Derive the expression for frequency at which the voltage across Inductor will be maximum in series resonance circuit.

c) Determine the ABCD parameters for the π-network shown in Figure 4. Is this network bilateral or not?



SECTION – II

Q.4 Answer Any Four of the following questions. **16**

a) Explain DC response of series RL circuit?

b) For the give network function, draw pole zero plot and comment on stability.

$$F(s) = \frac{5(s+5)}{(s+2)(s+7)}$$

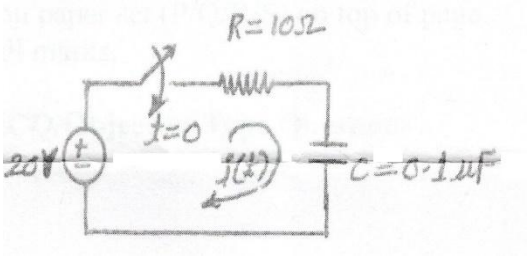
c) Design LPF with T section having cut-off frequency of 2 KHz to operate with a terminated load resistance of 500Ω.

d) What is the need for m-derived filter? Draw T section for m-derived LPF.

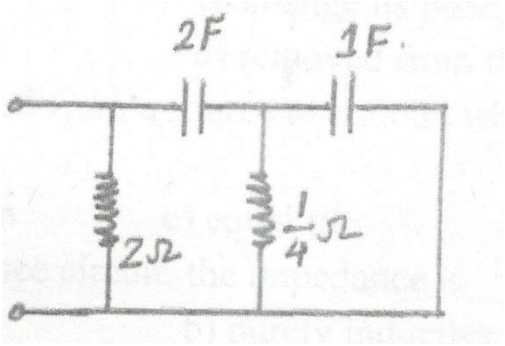
e) Design a T-pad attenuator to give an attenuation of 60dB and to work in line with 500Ω resistance.

Q.5 Answer Any Two of the following questions. **12**

a) A series RC circuit consists of $\mathrm{R} = 10\Omega$ and $\mathrm{C} = 0.1\mu\mathrm{F}$ shown in figures. Initially the switch is kept open for very long time. At $\mathrm{t} = 0$ switch is closed. Find the expressions for voltages across C and R expression for current through C.



b) Determine the driving point impedance and driving point admittance for the given network in Figure.



c) Design a m-derived LPF T and π section with a cut off frequency of 1.5 KHz, design impedance of 500Ω and resonant frequency is 1600 Hz.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Network Theory Analysis (ENTPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book Page no 03 (Starring page of the Answer Book Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of Page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) In determining open circuit impedance parameters, among V1, V2, I1, I2, which of the following are independent variables?
a) I1 and V2 b) V1 and I2
c) I1 and I2 d) V1 and V2

2) The steady state part in the expression of current in the R-L circuit is?
a) (V/R)(exp(R/L)t)) b) (V/R)(-exp(R/L)t))
c) V/R d) R/V

3) The real part of the complex frequency is called?
a) radian frequency b) neper frequency
c) sampling frequency d) angular frequency

4) The transform impedance of the capacitor is?
a) C b) 1/C
c) sC d) 1/sC

5) The ratio of current transform at one port to current transform at other port is called?
a) Transfer admittance b) Transfer impedance
c) Current transfer ratio d) Voltage transfer ratio

6) If V_1 is the voltage at port 1 and V_2 is the voltage at port 2, then the attenuation in dB is?
a) 20 log10 (V_1/V_2) b) 10 log10 (V_1/V_2)
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7) A filter that passes frequencies between two designated cut-off frequencies and attenuates all other frequencies is called?

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c) band pass filter
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8) In an R-C circuit, when the switch is closed, the response _____.

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11) The maximum power is delivered from a source to its load when the load resistance is _____ the source resistance.

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12) As XL = XC in a series resonance circuit, the impedance is _____.

a) purely capacitive
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13) The magnification in resonance considering the voltage across inductor is?

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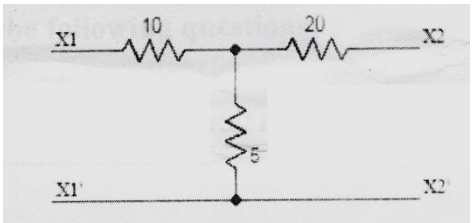
14) In the circuit shown below, find the Z-parameter Z12.



a) 15
b) 10
c) 5
d) 1

SLR-QH-109

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Network Theory Analysis (ENTPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

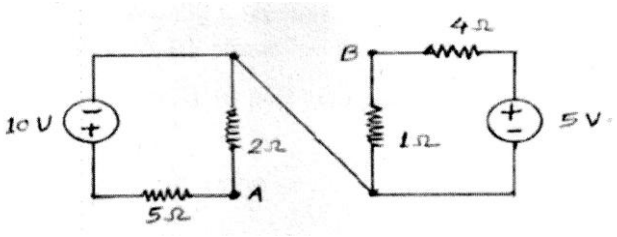
Instructions: 1) All questions are compulsory.
2) figure to right indicate full marks.

SECTION – I

Q.2 Answer Any Four of the following questions. **16**

a) State & prove Maximum power transfer theorem.

b) Determine Thevenin's equivalent circuit across terminals AB for given circuit as shown if Figure 1



c) A series RLC circuit consists of $\mathrm{R} = 4\Omega, \mathrm{L} = 0.5\mathrm{H}$ & variable capacitance in series across a $100\mathrm{V}, 50\mathrm{Hz}$. Calculate
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e) Derive Y-parameter equations for the two-port network in terms of port voltage & currents.

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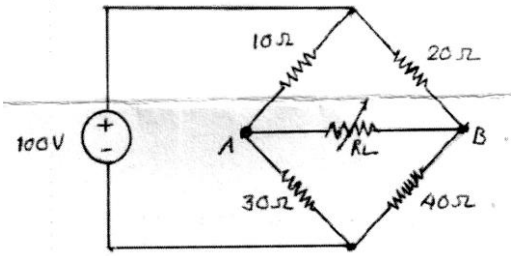
a) Determine the load resistance to receive maximum power from the source, also find the maximum power delivered to load in the network shown in Figure.



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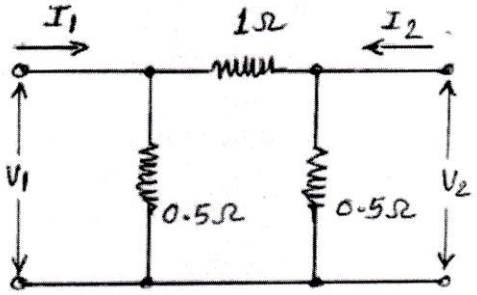

SECTION – II

Q.4 Answer Any Four of the following questions. **16**

a) Explain DC response of series RL circuit?

b) For the give network function, draw pole zero plot and comment on stability.

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c) Design LPF with T section having cut-off frequency of 2 KHz to operate with a terminated load resistance of 500Ω.

d) What is the need for m-derived filter? Draw T section for m-derived LPF.

e) Design a T-pad attenuator to give an attenuation of 60dB and to work in line with 500Ω resistance.

Q.5 Answer Any Two of the following questions. **12**

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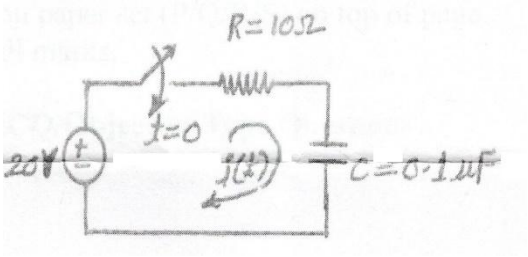
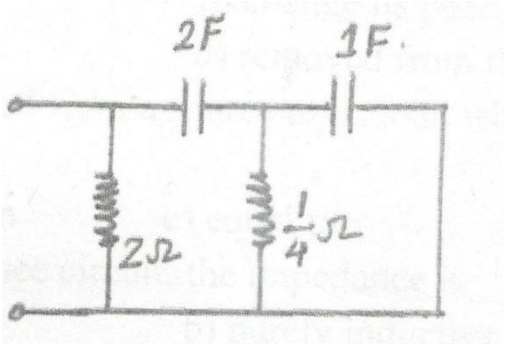


b) Determine the driving point impedance and driving point admittance for the given network in Figure.



c) Design a m-derived LPF T and π section with a cut off frequency of 1.5 KHz, design impedance of 500Ω and resonant frequency is 1600 Hz.

SLR-QH-110

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Electronics Circuit Analysis & Design (ENTPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figure to the right indicates full marks.
4) Assume suitable data if required.
5) Use of calculator and electronic component datasheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice question. **14**

1) The basic components used in voltage multiplier circuits are _____.
a) Resistors and inductors b) Diodes and capacitors
c) Transistors and transformers d) Op-amps and resistors

2) The ripple frequency of a full-wave voltage doubler output is _____.
a) Same as input frequency b) Twice the input frequency
c) Half the input frequency d) Independent of frequency

3) Which of the following is not a type of clipper?
a) Series clipper b) Parallel clipper
c) Biased clipper d) Regulated clipper

4) When the diode in a clipper is Silicon and forward-biased, its voltage drop is _____.
a) 0V b) 0.3V
c) 0.7V d) 1V

5) The Transformer Utilization Factor (TUF) of a Centre tapped full wave rectifier is approximately _____.
a) 0.287 b) 0.693
c) 0.812 d) 1.0

6) The main disadvantage of a half-wave rectifier is _____.
a) High efficiency
b) Low ripple factor
c) Low efficiency and high ripple
d) Requires transformer center tap

7) The main function of a Zener diode in a voltage regulator circuit is to _____.
   a) Act as a variable resistor
   b) Maintain a constant output voltage
   c) Convert AC to DC
   d) Amplify the signal

8) How do we calculate V_1 in a two - port network?
   a) $V_1 = h_{21}I_2 + h_{22}V_2$
   b) $V_1 = h_{11}I_1 + h_{12}V_2$
   c) $V_1 = h_{11}I_2 + h_{12}V_2$
   d) $V_1 = h_{21}I_1 + h_{22}V_2$

9) Which capacitor is used to block DC portion by allowing to pass only AC portion of the amplified signal to load?
   a) Input Coupling Capacitor
   b) Bypass Capacitor
   c) Output Coupling Capacitor
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10) If a BJT is to be used as an amplifier, then it must operate in _____.
   a) Cut-off mode
   b) Active mode
   c) Saturation mode
   d) All of the mentioned

11) A feedback circuit usually employs which type of circuit?
   a) Resistive
   b) Inductive
   c) Capacitive
   d) Shunt

12) Negative feedback in amplifier _____.
   a) Improves the signal-to-noise ratio at input
   b) Increases the voltage gain
   c) Does not improve the signal-to-noise ratio at I/O
   d) Reduce Distortion

13) The gate voltage in a JFET at which drain current becomes zero is called _____ Voltage.
   a) saturation
   b) pinch-off
   c) active
   d) cut-off

14) A MOSFET can be operated with _____.
   a) negative gate voltage only
   b) positive gate voltage only
   c) positive as well as negative gate voltage
   d) None of the above

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electronics Circuit Analysis & Design (ENTPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of calculator and electronic component datasheet is allowed.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

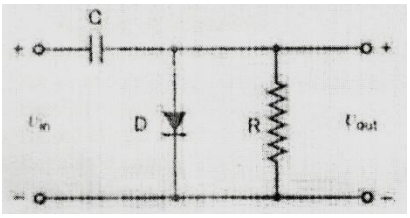
a) Explain voltage multiplier circuit with the help of circuit diagram.

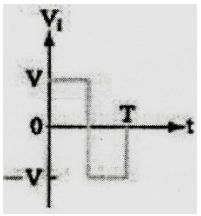
b) What is a voltage regulator? Explain the application of Zener diode as a voltage regulator.

c) Explain combinational clipper circuit with the help of circuit diagram, signal waveforms and transfer function.

d) Derive the expression for Ripple factor of LC filter.

e) Draw and explain the output waveform across load in following circuit. Input voltage waveform is a square wave as shown below. Assume V=10Volts. Assume diode to be an ideal diode.





Q.3 Attempt Any Two of the following. **12**

a) Design DC unregulated power supply using inductor filter to provide 100V DC output voltage across 500Ω with peak ripple not exceeding 10V. Use center tapped full wave rectifier.

b) For the given Zener regulator circuit (Refer fig. 1) Determine VL, VRS, IZ and PZ. Given Vs = 15.5V, Vz = 10V, Rs = 1.2K, RL = 3K, PZM = 30mW.

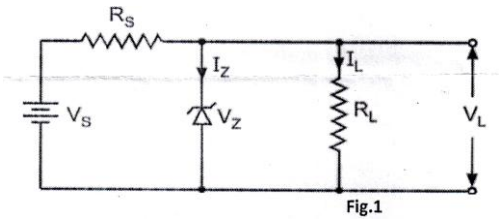


Fig.1

c) List out various performance parameters of Bridge full wave rectifier and center tapped full rectifier. Highlight and comment on the differences between them.

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) Obtain H-parameter model & define H parameters for transistor in CB circuit configuration.

b) Input resistance increases and output resistance decreases, prove this sentence for negative feedback amplifier.

c) Explain working and drain characteristics of N channel JFET.

d) Explain VI characteristics of CE configuration of BJT.

e) Write a short note on CMOS.

Q.5 Attempt Any Two of the following. **12**

a) Design a single stage CE amplifier to provide an output voltage of 6Vp-p across a $5K\Omega$ load. Assume source resistor of 600Ω, supply voltage = 12V, Lower 3dB frequency of 60Hz. Select transistor BC146 with P_d max = 50mW, V_{CE} max = 20V, hfe = 80.

b) Describe the effect of negative feedback on gain stability, bandwidth, noise, and distortion, input & output resistance of feedback amplifier.

c) Explain the effect of V_{GS} and V_{DS} on Channel conductivity and Drain current I_D.

SLR-QH-110

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Electronics Circuit Analysis & Design (ENTPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if required.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice question. **14**

1) How do we calculate V_1 in a two - port network?
a) $V_1 = h_{21}I_2 + h_{22}V_2$ b) $V_1 = h_{11}I_1 + h_{12}V_2$
c) $V_1 = h_{11}I_2 + h_{12}V_2$ d) $V_1 = h_{21}I_1 + h_{22}V_2$

2) Which capacitor is used to block DC portion by allowing to pass only AC portion of the amplified signal to load?
a) Input Coupling Capacitor
b) Bypass Capacitor
c) Output Coupling Capacitor
d) Both coupling and bypass capacitor

3) If a BJT is to be used as an amplifier, then it must operate in _____.
a) Cut-off mode b) Active mode
c) Saturation mode d) All of the mentioned

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a) Resistive b) Inductive
c) Capacitive d) Shunt

5) Negative feedback in amplifier _____.
a) Improves the signal-to-noise ratio at input
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c) Does not improve the signal-to-noise ratio at I/O
d) Reduce Distortion

6) The gate voltage in a JFET at which drain current becomes zero is called _____ Voltage.
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8) The basic components used in voltage multiplier circuits are _____.
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11) When the diode in a clipper is Silicon and forward-biased, its voltage drop is _____.
a) 0V b) 0.3V
c) 0.7V d) 1V

12) The Transformer Utilization Factor (TUF) of a Centre tapped full wave rectifier is approximately _____.
a) 0.287 b) 0.693
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13) The main disadvantage of a half-wave rectifier is _____.
a) High efficiency
b) Low ripple factor
c) Low efficiency and high ripple
d) Requires transformer center tap

14) The main function of a Zener diode in a voltage regulator circuit is to _____.
a) Act as a variable resistor
b) Maintain a constant output voltage
c) Convert AC to DC
d) Amplify the signal

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electronics Circuit Analysis & Design (ENTPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of calculator and electronic component datasheet is allowed.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

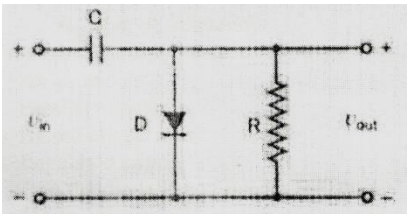
a) Explain voltage multiplier circuit with the help of circuit diagram.

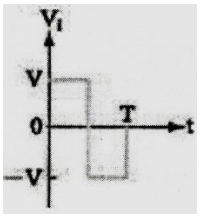
b) What is a voltage regulator? Explain the application of Zener diode as a voltage regulator.

c) Explain combinational clipper circuit with the help of circuit diagram, signal waveforms and transfer function.

d) Derive the expression for Ripple factor of LC filter.

e) Draw and explain the output waveform across load in following circuit. Input voltage waveform is a square wave as shown below. Assume V=10Volts. Assume diode to be an ideal diode.





Q.3 Attempt Any Two of the following. **12**

a) Design DC unregulated power supply using inductor filter to provide 100V DC output voltage across 500Ω with peak ripple not exceeding 10V. Use center tapped full wave rectifier.

b) For the given Zener regulator circuit (Refer fig. 1) Determine VL, VRS, IZ and PZ. Given Vs = 15.5V, Vz = 10V, Rs = 1.2K, RL = 3K, PZM = 30mW.

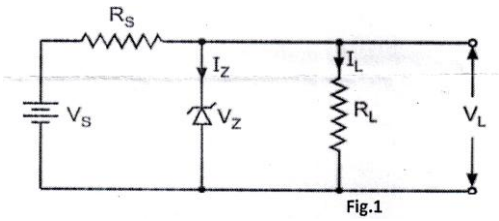


Fig.1

c) List out various performance parameters of Bridge full wave rectifier and center tapped full rectifier. Highlight and comment on the differences between them.

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) Obtain H-parameter model & define H parameters for transistor in CB circuit configuration.

b) Input resistance increases and output resistance decreases, prove this sentence for negative feedback amplifier.

c) Explain working and drain characteristics of N channel JFET.

d) Explain VI characteristics of CE configuration of BJT.

e) Write a short note on CMOS.

Q.5 Attempt Any Two of the following. **12**

a) Design a single stage CE amplifier to provide an output voltage of 6Vp-p across a $5K\Omega$ load. Assume source resistor of 600Ω, supply voltage = 12V, Lower 3dB frequency of 60Hz. Select transistor BC146 with P_d max = 50mW, V_{CE} max = 20V, hfe = 80.

b) Describe the effect of negative feedback on gain stability, bandwidth, noise, and distortion, input & output resistance of feedback amplifier.

c) Explain the effect of V_{GS} and V_{DS} on Channel conductivity and Drain current I_D.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Electronics Circuit Analysis & Design (ENTPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figure to the right indicates full marks.
4) Assume suitable data if required.
5) Use of calculator and electronic component datasheet is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice question. **14**

1) A feedback circuit usually employs which type of circuit?
a) Resistive b) Inductive
c) Capacitive d) Shunt

2) Negative feedback in amplifier _____.
a) Improves the signal-to-noise ratio at input
b) Increases the voltage gain
c) Does not improve the signal-to-noise ratio at I/O
d) Reduce Distortion

3) The gate voltage in a JFET at which drain current becomes zero is called _____ Voltage.
a) saturation b) pinch-off
c) active d) cut-off

4) A MOSFET can be operated with _____.
a) negative gate voltage only
b) positive gate voltage only
c) positive as well as negative gate voltage
d) None of the above

5) The basic components used in voltage multiplier circuits are _____.
a) Resistors and inductors b) Diodes and capacitors
c) Transistors and transformers d) Op-amps and resistors

6) The ripple frequency of a full-wave voltage doubler output is _____.
a) Same as input frequency b) Twice the input frequency
c) Half the input frequency d) Independent of frequency

7) Which of the following is not a type of clipper?
a) Series clipper
b) Parallel clipper
c) Biased clipper
d) Regulated clipper

8) When the diode in a clipper is Silicon and forward-biased, its voltage drop is _____.
a) 0V
b) 0.3V
c) 0.7V
d) 1V

9) The Transformer Utilization Factor (TUF) of a Centre tapped full wave rectifier is approximately _____.
a) 0.287
b) 0.693
c) 0.812
d) 1.0

10) The main disadvantage of a half-wave rectifier is _____.
a) High efficiency
b) Low ripple factor
c) Low efficiency and high ripple
d) Requires transformer center tap

11) The main function of a Zener diode in a voltage regulator circuit is to _____.
a) Act as a variable resistor
b) Maintain a constant output voltage
c) Convert AC to DC
d) Amplify the signal

12) How do we calculate V_1 in a two - port network?
a) $V_1 = h_{21}I_2 + h_{22}V_2$
b) $V_1 = h_{11}I_1 + h_{12}V_2$
c) $V_1 = h_{11}I_2 + h_{12}V_2$
d) $V_1 = h_{21}I_1 + h_{22}V_2$

13) Which capacitor is used to block DC portion by allowing to pass only AC portion of the amplified signal to load?
a) Input Coupling Capacitor
b) Bypass Capacitor
c) Output Coupling Capacitor
d) Both coupling and bypass capacitor

14) If a BJT is to be used as an amplifier, then it must operate in _____.
a) Cut-off mode
b) Active mode
c) Saturation mode
d) All of the mentioned

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electronics Circuit Analysis & Design (ENTPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Use of calculator and electronic component datasheet is allowed.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

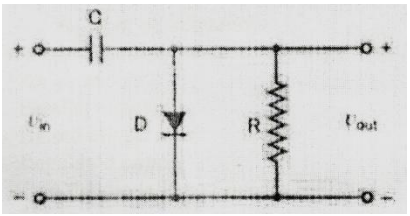
a) Explain voltage multiplier circuit with the help of circuit diagram.

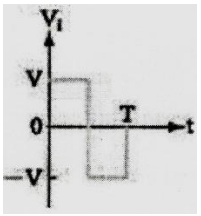
b) What is a voltage regulator? Explain the application of Zener diode as a voltage regulator.

c) Explain combinational clipper circuit with the help of circuit diagram, signal waveforms and transfer function.

d) Derive the expression for Ripple factor of LC filter.

e) Draw and explain the output waveform across load in following circuit. Input voltage waveform is a square wave as shown below. Assume V=10Volts. Assume diode to be an ideal diode.





Q.3 Attempt Any Two of the following. **12**

a) Design DC unregulated power supply using inductor filter to provide 100V DC output voltage across 500Ω with peak ripple not exceeding 10V. Use center tapped full wave rectifier.

b) For the given Zener regulator circuit (Refer fig. 1) Determine VL, VRS, IZ and PZ. Given Vs = 15.5V, Vz = 10V, Rs = 1.2K, RL = 3K, PZM = 30mW.

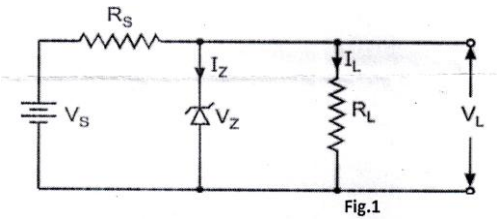


Fig.1

c) List out various performance parameters of Bridge full wave rectifier and center tapped full rectifier. Highlight and comment on the differences between them.

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) Obtain H-parameter model & define H parameters for transistor in CB circuit configuration.

b) Input resistance increases and output resistance decreases, prove this sentence for negative feedback amplifier.

c) Explain working and drain characteristics of N channel JFET.

d) Explain VI characteristics of CE configuration of BJT.

e) Write a short note on CMOS.

Q.5 Attempt Any Two of the following. **12**

a) Design a single stage CE amplifier to provide an output voltage of 6Vp-p across a $5K\Omega$ load. Assume source resistor of 600Ω, supply voltage = 12V, Lower 3dB frequency of 60Hz. Select transistor BC146 with P_d max = 50mW, V_{CE} max = 20V, hfe = 80.

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SLR-QH-110

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Electronics Circuit Analysis & Design (ENTPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice question. **14**

1) The main disadvantage of a half-wave rectifier is _____.
a) High efficiency
b) Low ripple factor
c) Low efficiency and high ripple
d) Requires transformer center tap

2) The main function of a Zener diode in a voltage regulator circuit is to _____.
a) Act as a variable resistor
b) Maintain a constant output voltage
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3) How do we calculate V_1 in a two - port network?
a) $V_1 = h_{21}I_2 + h_{22}V_2$ b) $V_1 = h_{11}I_1 + h_{12}V_2$
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Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electronics Circuit Analysis & Design (ENTPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Explain voltage multiplier circuit with the help of circuit diagram.

b) What is a voltage regulator? Explain the application of Zener diode as a voltage regulator.

c) Explain combinational clipper circuit with the help of circuit diagram, signal waveforms and transfer function.

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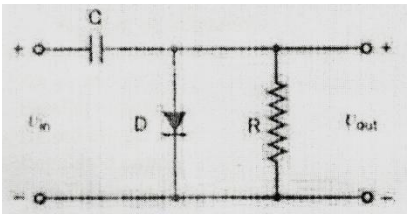
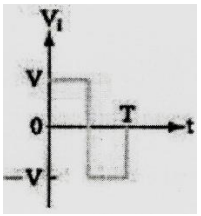
e) Draw and explain the output waveform across load in following circuit. Input voltage waveform is a square wave as shown below. Assume V=10Volts. Assume diode to be an ideal diode.





Q.3 Attempt Any Two of the following. **12**

a) Design DC unregulated power supply using inductor filter to provide 100V DC output voltage across 500Ω with peak ripple not exceeding 10V. Use center tapped full wave rectifier.

b) For the given Zener regulator circuit (Refer fig. 1) Determine VL, VRS, IZ and PZ. Given Vs = 15.5V, Vz = 10V, Rs = 1.2K, RL = 3K, PZM = 30mW.

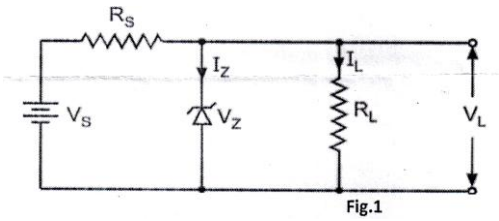


Fig.1

c) List out various performance parameters of Bridge full wave rectifier and center tapped full rectifier. Highlight and comment on the differences between them.

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) Obtain H-parameter model & define H parameters for transistor in CB circuit configuration.

b) Input resistance increases and output resistance decreases, prove this sentence for negative feedback amplifier.

c) Explain working and drain characteristics of N channel JFET.

d) Explain VI characteristics of CE configuration of BJT.

e) Write a short note on CMOS.

Q.5 Attempt Any Two of the following. **12**

a) Design a single stage CE amplifier to provide an output voltage of 6Vp-p across a $5K\Omega$ load. Assume source resistor of 600Ω, supply voltage = 12V, Lower 3dB frequency of 60Hz. Select transistor BC146 with P_d max = 50mW, V_{CE} max = 20V, hfe = 80.

b) Describe the effect of negative feedback on gain stability, bandwidth, noise, and distortion, input & output resistance of feedback amplifier.

c) Explain the effect of V_{GS} and V_{DS} on Channel conductivity and Drain current I_D.

SLR-QH-111

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Communication (ENTPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) TRF receiver does not have _____.
a) Mixer and Local oscillator b) IF block
c) Speaker d) None

2) Selectivity is measure of _____.
a) Tunning and Detunning b) Image Freq
c) Noise d) None

3) Image frequency is _____.
a) Spurious b) Useful and required
c) Noise d) None

4) In AM Automatic Gain Control is derived from _____.
a) Diode Detector b) Local Oscillator
c) IF amp d) None

5) Transmission of FM is _____.
a) Limited to line of sight b) Goes beyond line of sight
c) Limited to few meters d) None above

6) Modulation index in AM is given by _____.
a) Delta/FM b) Delta x FM
c) Vm/Vc d) None

7) Function of balanced modulator is _____.
a) To remove carrier b) Side band suppression
c) To reduce bandwidth d) None of these

8) The maximum value of H is reached for two messages when its probability is _____.

a) $P = {}^{1}/_{2}$ b) $P = 1$

c) $P = 0$ d) $P = 2$

9) Granular noise is associated with _____.

a) PCM b) DM

c) DPCM d) QAM

10) The main disadvantage of PCM is _____.

a) Large bandwidth b) Large power

c) Complex circuitry d) Quantization noise

11) The weight of the code word 1101010 is _____.

a) 2 b) 3

c) 4 d) 7

12) _____ most affected by noise.

a) PSK b) ASK

c) FSK d) MSK

13) Advantage of VSB is _____.

a) More Band width b) Band width saving

c) Power saving d) None

14) Quantization noise can be reduced by using _____.

a) Filters

b) Limiters

c) Increasing quantization levels

d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Communication (ENTPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) What is Independent Side Band? What are its advantages? Comment on SSB. How much power will be saved with SSB for 100 percent modulation.

b) Calculate image frequency and its rejection for a broadcast superheterodyne receiver with loaded Q 50 and image frequency of 455 kHz at frequency of 1 MHz.

c) When the modulation percentage is 75 An AM transmitter produces 10 kw, how much of this is carrier power? Would be the percentage power saving if the carrier and one of the sidebands were suppressed before transmission took place?

d) What is noise explain different types of noises.

e) For the wave represented by $v = 10\ \sin(10^8 t + 3\ \sin 10^4 t)$ Calculate carrier, modulating frequencies, modulation index and power dissipated in 100 ohm.

Q.3 Attempt the following. (Any Two) **12**

a) Explain Ratio detector.

b) Explain principle of non linearity.

c) A 1000kHz carrier is simultaneously modulated with 500Hz, 800Hz and 1 kHz audio sine waves what will be the frequencies present in the output. Find bandwidth in each case.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Compare different digital modulation techniques.

b) Define entropy. Prove that the entropy is maximum when all the messages are equiprobable.

c) With suitable block diagram explain PSK transmitter and receiver.

d) Explain concept of rate of information. What is its significance? Why it is useful?
Apply Shannon Fano coding procedure for below messages. Also find efficiency and redundancy.
[X] = [x1, x2, x3, x4, x5, x6, x7]
[P(X)] = [0.4, 0.2, 0.12, 0.08, 0.08, 0.08, 0.04]

e) Explain quantization error. How signal to noise ratio can be improved with the help of a non-uniform quantization?

Q.5 Attempt the following. (Any Two) **12**

a) Draw, explain and compare coherent and non coherent FSK detection.

b) For the (6,3) Block code the generator matrix is given below:

$$G = \begin{matrix} 1 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & 1 & 1 \end{matrix}$$

Find all the code vectors, error correction and detection capability.

c) What are the limitations of delta modulation? How are they overcome in adaptive delta modulation.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Communication (ENTPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The maximum value of H is reached for two messages when its probability is _____.
a) $P = {}^{1}/_{2}$ b) $P = 1$
c) $P = 0$ d) $P = 2$

2) Granular noise is associated with _____.
a) PCM b) DM
c) DPCM d) QAM

3) The main disadvantage of PCM is _____.
a) Large bandwidth b) Large power
c) Complex circuitry d) Quantization noise

4) The weight of the code word 1101010 is _____.
a) 2 b) 3
c) 4 d) 7

5) _____ most affected by noise.
a) PSK b) ASK
c) FSK d) MSK

6) Advantage of VSB is _____.
a) More Band width b) Band width saving
c) Power saving d) None

7) Quantization noise can be reduced by using _____.
a) Filters
b) Limiters
c) Increasing quantization levels
d) None

8) TRF receiver does not have _____.
a) Mixer and Local oscillator b) IF block
c) Speaker d) None

9) Selectivity is measure of _____.
a) Tunning and Detunning b) Image Freq
c) Noise d) None

10) Image frequency is _____.
a) Spurious b) Useful and required
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11) In AM Automatic Gain Control is derived from _____.
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a) Limited to line of sight b) Goes beyond line of sight
c) Limited to few meters d) None above

13) Modulation index in AM is given by _____.
a) Delta/FM b) Delta x FM
c) Vm/Vc d) None

14) Function of balanced modulator is _____.
a) To remove carrier b) Side band suppression
c) To reduce bandwidth d) None of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Communication (ENTPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) What is Independent Side Band? What are its advantages? Comment on SSB. How much power will be saved with SSB for 100 percent modulation.

b) Calculate image frequency and its rejection for a broadcast superheterodyne receiver with loaded Q 50 and image frequency of 455 kHz at frequency of 1 MHz.

c) When the modulation percentage is 75 An AM transmitter produces 10 kw, how much of this is carrier power? Would be the percentage power saving if the carrier and one of the sidebands were suppressed before transmission took place?

d) What is noise explain different types of noises.

e) For the wave represented by $v = 10\ \sin(10^8 t + 3\ \sin 10^4 t)$ Calculate carrier, modulating frequencies, modulation index and power dissipated in 100 ohm.

Q.3 Attempt the following. (Any Two) **12**

a) Explain Ratio detector.

b) Explain principle of non linearity.

c) A 1000kHz carrier is simultaneously modulated with 500Hz, 800Hz and 1 kHz audio sine waves what will be the frequencies present in the output. Find bandwidth in each case.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Compare different digital modulation techniques.

b) Define entropy. Prove that the entropy is maximum when all the messages are equiprobable.

c) With suitable block diagram explain PSK transmitter and receiver.

d) Explain concept of rate of information. What is its significance? Why it is useful?
Apply Shannon Fano coding procedure for below messages. Also find efficiency and redundancy.
[X] = [x1, x2, x3, x4, x5, x6, x7]
[P(X)] = [0.4, 0.2, 0.12, 0.08, 0.08, 0.08, 0.04]

e) Explain quantization error. How signal to noise ratio can be improved with the help of a non-uniform quantization?

Q.5 Attempt the following. (Any Two) **12**

a) Draw, explain and compare coherent and non coherent FSK detection.

b) For the (6,3) Block code the generator matrix is given below:

$$G = \begin{matrix} 1 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & 1 & 1 \end{matrix}$$

Find all the code vectors, error correction and detection capability.

c) What are the limitations of delta modulation? How are they overcome in adaptive delta modulation.

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Communication (ENTPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The weight of the code word 1101010 is _____.
a) 2 b) 3
c) 4 d) 7

2) _____ most affected by noise.
a) PSK b) ASK
c) FSK d) MSK

3) Advantage of VSB is _____.
a) More Band width b) Band width saving
c) Power saving d) None

4) Quantization noise can be reduced by using _____.
a) Filters
b) Limiters
c) Increasing quantization levels
d) None

5) TRF receiver does not have _____.
a) Mixer and Local oscillator b) IF block
c) Speaker d) None

6) Selectivity is measure of _____.
a) Tunning and Detunning b) Image Freq
c) Noise d) None

7) Image frequency is _____.
a) Spurious b) Useful and required
c) Noise d) None

8) In AM Automatic Gain Control is derived from _____.
a) Diode Detector b) Local Oscillator
c) IF amp d) None

9) Transmission of FM is _____.
a) Limited to line of sight b) Goes beyond line of sight
c) Limited to few meters d) None above

10) Modulation index in AM is given by _____.
a) Delta/FM b) Delta x FM
c) Vm/Vc d) None

11) Function of balanced modulator is _____.
a) To remove carrier b) Side band suppression
c) To reduce bandwidth d) None of these

12) The maximum value of H is reached for two messages when its probability is _____.
a) $P = {}^{1}/_{2}$ b) $P = 1$
c) $P = 0$ d) $P = 2$

13) Granular noise is associated with _____.
a) PCM b) DM
c) DPCM d) QAM

14) The main disadvantage of PCM is _____.
a) Large bandwidth b) Large power
c) Complex circuitry d) Quantization noise

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Communication (ENTPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) What is Independent Side Band? What are its advantages? Comment on SSB. How much power will be saved with SSB for 100 percent modulation.

b) Calculate image frequency and its rejection for a broadcast superheterodyne receiver with loaded Q 50 and image frequency of 455 kHz at frequency of 1 MHz.

c) When the modulation percentage is 75 An AM transmitter produces 10 kw, how much of this is carrier power? Would be the percentage power saving if the carrier and one of the sidebands were suppressed before transmission took place?

d) What is noise explain different types of noises.

e) For the wave represented by $v = 10\ \sin(10^8 t + 3\ \sin 10^4 t)$ Calculate carrier, modulating frequencies, modulation index and power dissipated in 100 ohm.

Q.3 Attempt the following. (Any Two) **12**

a) Explain Ratio detector.

b) Explain principle of non linearity.

c) A 1000kHz carrier is simultaneously modulated with 500Hz, 800Hz and 1 kHz audio sine waves what will be the frequencies present in the output. Find bandwidth in each case.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Compare different digital modulation techniques.

b) Define entropy. Prove that the entropy is maximum when all the messages are equiprobable.

c) With suitable block diagram explain PSK transmitter and receiver.

d) Explain concept of rate of information. What is its significance? Why it is useful?
Apply Shannon Fano coding procedure for below messages. Also find efficiency and redundancy.
[X] = [x1, x2, x3, x4, x5, x6, x7]
[P(X)] = [0.4, 0.2, 0.12, 0.08, 0.08, 0.08, 0.04]

e) Explain quantization error. How signal to noise ratio can be improved with the help of a non-uniform quantization?

Q.5 Attempt the following. (Any Two) **12**

a) Draw, explain and compare coherent and non coherent FSK detection.

b) For the (6,3) Block code the generator matrix is given below:

$$G = \begin{matrix} 1 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & 1 & 1 \end{matrix}$$

Find all the code vectors, error correction and detection capability.

c) What are the limitations of delta modulation? How are they overcome in adaptive delta modulation.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Communication (ENTPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Modulation index in AM is given by _____.
a) Delta/FM b) Delta x FM
c) Vm/Vc d) None

2) Function of balanced modulator is _____.
a) To remove carrier b) Side band suppression
c) To reduce bandwidth d) None of these

3) The maximum value of H is reached for two messages when its probability is _____.
a) $P = {}^{1}/_{2}$ b) $P = 1$
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4) Granular noise is associated with _____.
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c) DPCM d) QAM

5) The main disadvantage of PCM is _____.
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c) Complex circuitry d) Quantization noise

6) The weight of the code word 1101010 is _____.
a) 2 b) 3
c) 4 d) 7

7) _____ most affected by noise.
a) PSK b) ASK
c) FSK d) MSK

8) Advantage of VSB is _____.
a) More Band width
b) Band width saving
c) Power saving
d) None

9) Quantization noise can be reduced by using _____.
a) Filters
b) Limiters
c) Increasing quantization levels
d) None

10) TRF receiver does not have _____.
a) Mixer and Local oscillator
b) IF block
c) Speaker
d) None

11) Selectivity is measure of _____.
a) Tunning and Detunning
b) Image Freq
c) Noise
d) None

12) Image frequency is _____.
a) Spurious
b) Useful and required
c) Noise
d) None

13) In AM Automatic Gain Control is derived from _____.
a) Diode Detector
b) Local Oscillator
c) IF amp
d) None

14) Transmission of FM is _____.
a) Limited to line of sight
b) Goes beyond line of sight
c) Limited to few meters
d) None above

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Communication (ENTPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) What is Independent Side Band? What are its advantages? Comment on SSB. How much power will be saved with SSB for 100 percent modulation.

b) Calculate image frequency and its rejection for a broadcast superheterodyne receiver with loaded Q 50 and image frequency of 455 kHz at frequency of 1 MHz.

c) When the modulation percentage is 75 An AM transmitter produces 10 kw, how much of this is carrier power? Would be the percentage power saving if the carrier and one of the sidebands were suppressed before transmission took place?

d) What is noise explain different types of noises.

e) For the wave represented by $v = 10\ \sin(10^8 t + 3\ \sin 10^4 t)$ Calculate carrier, modulating frequencies, modulation index and power dissipated in 100 ohm.

Q.3 Attempt the following. (Any Two) **12**

a) Explain Ratio detector.

b) Explain principle of non linearity.

c) A 1000kHz carrier is simultaneously modulated with 500Hz, 800Hz and 1 kHz audio sine waves what will be the frequencies present in the output. Find bandwidth in each case.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Compare different digital modulation techniques.

b) Define entropy. Prove that the entropy is maximum when all the messages are equiprobable.

c) With suitable block diagram explain PSK transmitter and receiver.

d) Explain concept of rate of information. What is its significance? Why it is useful?
Apply Shannon Fano coding procedure for below messages. Also find efficiency and redundancy.
[X] = [x1, x2, x3, x4, x5, x6, x7]
[P(X)] = [0.4, 0.2, 0.12, 0.08, 0.08, 0.08, 0.04]

e) Explain quantization error. How signal to noise ratio can be improved with the help of a non-uniform quantization?

Q.5 Attempt the following. (Any Two) **12**

a) Draw, explain and compare coherent and non coherent FSK detection.

b) For the (6,3) Block code the generator matrix is given below:

$$G = \begin{matrix} 1 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & 1 & 1 \end{matrix}$$

Find all the code vectors, error correction and detection capability.

c) What are the limitations of delta modulation? How are they overcome in adaptive delta modulation.

SLR-QH-112

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

2) $\frac{1}{D-a} X$ is equal to _____.

a) $\int Xe^{ax}dx$ b) $e^{ax}\int X.e^{-ax}dx$

c) $\int Xe^{-ax}dx$ d) $e^{-ax}\int Xe^{-ax}dx$

3) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

4) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

5) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

6) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

7) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

8) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

9) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

10) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

11) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78

c) 0.81 d) 0.95

12) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1

c) ± 1 d) 1

13) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$

b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2

d) μ, and $\frac{\sigma^2}{n}$

14) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$

b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$

d) $\sum \frac{(O-E)^2}{E}$

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7
c) -1.2 d) -4

2) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6
c) 3 d) 5

3) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$
c) $3/2$ d) 0

4) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78
c) 0.81 d) 0.95

5) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1
c) ± 1 d) 1

6) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

7) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

8) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

9) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

10) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

11) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

12) The solution of $p + q = 1$ is _____.

a) $z = ax + (1-a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1-y) + c$ d) $z = a(1-x) + b(1-y) + c$

13) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

14) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$

b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$

d) $\frac{\mu_4}{\mu_2^3}$

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set | **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78
c) 0.81 d) 0.95

2) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1
c) ± 1 d) 1

3) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

4) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$
c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

5) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

6) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

7) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

8) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

9) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

10) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

11) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

12) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

13) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

14) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

2) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

3) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

4) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

5) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

6) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78

c) 0.81 d) 0.95

7) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1

c) ± 1 d) 1

8) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

9) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

10) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

11) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

12) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

13) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

14) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

SLR-QH-112

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

SLR-QH-113

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: 14

1) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com b) e-bay
c) Rentalic.com d) All of the above

2) Which type of E - Commerce is Amazon?
a) B2B b) B2C
c) G2B d) G2C

3) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model b) Business model
c) Business plan d) Revenue model

4) All of the following are major B2C business models except _____.
a) content provider b) industry consortium
c) transaction broker d) service provider

5) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

6) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling b) Connectivity
c) Communication d) Customer

7) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business
b) Business to Government
c) Consumer to Business
d) Business to Consumer

8) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo
b) regret
c) provide rating for
d) forget

9) Digital Cash has the following characteristics _____.
a) Anonymity
b) Security
c) Confidentiality
d) All of the Above

10) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

11) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack
b) Brute force attack
c) Phlashing
d) Smurf attack

12) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business
b) Business to Consumer
c) Business to Business
d) Consumer to Consumer

13) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway
b) E - E-Commerce gateway
c) Software gateway
d) E-Wallets

14) What is another name called PDoS?
a) Brute force attack
b) Non-technical attack
c) Phlashing
d) Smurf attack

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: **14**

1) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo b) regret
c) provide rating for d) forget

2) Digital Cash has the following characteristics _____.
a) Anonymity b) Security
c) Confidentiality d) All of the Above

3) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

4) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

5) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business b) Business to Consumer
c) Business to Business d) Consumer to Consumer

6) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway b) E - E-Commerce gateway
c) Software gateway d) E-Wallets

7) What is another name called PDoS?
a) Brute force attack
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d) Smurf attack

8) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com
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9) Which type of E - Commerce is Amazon?
a) B2B
b) B2C
c) G2B
d) G2C

10) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
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b) Business model
c) Business plan
d) Revenue model

11) All of the following are major B2C business models except _____.
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b) industry consortium
c) transaction broker
d) service provider

12) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

13) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling
b) Connectivity
c) Communication
d) Customer

14) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business
b) Business to Government
c) Consumer to Business
d) Business to Consumer

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: **14**

1) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

2) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business b) Business to Consumer
c) Business to Business d) Consumer to Consumer

3) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway b) E - E-Commerce gateway
c) Software gateway d) E-Wallets

4) What is another name called PDoS?
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c) ability to buy products not available in the local market
d) All of them

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: **14**

1) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling b) Connectivity
c) Communication d) Customer

2) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business b) Business to Government
c) Consumer to Business d) Business to Consumer

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7) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?

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a) B2B
b) B2C
c) G2B
d) G2C

12) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?

a) Profit model
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c) Business plan
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13) All of the following are major B2C business models except _____.

a) content provider
b) industry consortium
c) transaction broker
d) service provider

14) After completing an E-Commerce transaction, the buyer needs to _____.

a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-114

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. 14

1) History is best defined as the study of _____.
a) Future events b) Past human activities
c) Natural phenomena d) Scientific experiments

2) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

3) Which of the following disciplines deals with political systems and governance?
a) Economics b) Political Science
c) Sociology d) Cultural Studies

4) Urbanization is best described as _____.
a) Decline of rural population b) Growth of cities and towns
c) Spread of agriculture d) Industrial decline

5) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

6) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

7) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

8) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

9) Socialization refers to _____.
a) Economic growth
b) Learning social norms
c) Political participation
d) Cultural diffusion

10) The study of language structure and its evolution is called _____.
a) Sociology
b) Linguistics
c) Psychology
d) Anthropology

11) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women’s rights
c) Political ideologies
d) Technological advancements

12) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science
b) Psychoanalysis
c) Economic theory
d) Structural linguistics

13) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology
b) Political Science
c) Economics
d) History

14) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

Seat No.	

Set | P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

SLR-QH-114

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026 Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

2) Socialization refers to _____.
a) Economic growth
b) Learning social norms
c) Political participation
d) Cultural diffusion

3) The study of language structure and its evolution is called _____.
a) Sociology
b) Linguistics
c) Psychology
d) Anthropology

4) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women's rights
c) Political ideologies
d) Technological advancements

5) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science
b) Psychoanalysis
c) Economic theory
d) Structural linguistics

6) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology
b) Political Science
c) Economics
d) History

7) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

8) History is best defined as the study of _____.
a) Future events
b) Past human activities
c) Natural phenomena
d) Scientific experiments

9) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

10) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

11) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

12) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

13) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

14) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

SLR-QH-114

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026 Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women's rights
c) Political ideologies
d) Technological advancements

2) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science b) Psychoanalysis
c) Economic theory d) Structural linguistics

3) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology b) Political Science
c) Economics d) History

4) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning b) Moral principles and conduct
c) Aesthetics and beauty d) Scientific discovery

5) History is best defined as the study of _____.
a) Future events b) Past human activities
c) Natural phenomena d) Scientific experiments

6) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

7) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

8) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

9) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

10) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

11) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

12) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

13) Socialization refers to _____.
a) Economic growth
b) Learning social norms
c) Political participation
d) Cultural diffusion

14) The study of language structure and its evolution is called _____.
a) Sociology
b) Linguistics
c) Psychology
d) Anthropology

SLR-QH-114

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026 Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

Seat No.	

Set | S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026 Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

2) In which ancient civilization did the term "democracy" originate?
a) Ancient Egypt b) Ancient Greece
c) Ancient Rome d) Mesopotamia

3) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

4) Socialization refers to _____.
a) Economic growth b) Learning social norms
c) Political participation d) Cultural diffusion

5) The study of language structure and its evolution is called _____.
a) Sociology b) Linguistics
c) Psychology d) Anthropology

6) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women's rights
c) Political ideologies
d) Technological advancements

7) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science
b) Psychoanalysis
c) Economic theory
d) Structural linguistics

8) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology
b) Political Science
c) Economics
d) History

9) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

10) History is best defined as the study of _____.
a) Future events
b) Past human activities
c) Natural phenomena
d) Scientific experiments

11) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

12) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

13) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

14) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

SLR-QH-114

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026 Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

SLR-QH-115

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

2) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing b) Controlling
c) Planning d) Leading

3) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

4) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

5) Which is the first step in the planning process?
a) Developing alternatives b) Evaluating alternatives
c) Setting objectives d) Selecting the best alternative

6) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

7) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

8) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs
b) Social needs
c) Esteem needs
d) Self-actualization

9) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

10) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

11) Which of the following is not typically considered an element of quality?
a) Performance
b) Reliability
c) Advertising
d) Durability

12) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

13) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

14) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

Seat No.	

Set | P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: **14**

1) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs b) Social needs
c) Esteem needs d) Self-actualization

2) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

3) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

4) Which of the following is not typically considered an element of quality?
a) Performance b) Reliability
c) Advertising d) Durability

5) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

6) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

7) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

8) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

9) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

10) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

11) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

12) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

13) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

14) What is the main purpose of employee training and development?

a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

SLR-QH-115

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) Which of the following is not typically considered an element of quality?
a) Performance b) Reliability
c) Advertising d) Durability

2) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

3) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

4) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

5) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

6) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

7) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

8) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

9) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

10) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

11) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

12) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs
b) Social needs
c) Esteem needs
d) Self-actualization

13) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

14) Which of the following best defines “quality” in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

Seat No.	

Set | S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

2) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

3) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs b) Social needs
c) Esteem needs d) Self-actualization

4) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

5) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

6) Which of the following is not typically considered an element of quality?
a) Performance
b) Reliability
c) Advertising
d) Durability

7) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

8) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

9) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

10) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

11) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

12) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

13) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

14) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

SLR-QH-115

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-116

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$
c) $(C_1 + C_2x)e^x$ d) x^2e^x

2) The general solution of $(D^2 - 4)^2y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$
b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$
c) $y = C_1\cos 2x + C_2\sin 2x + (C_3 + C_4x)e^{2x}$
d) None of these

3) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$
c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

4) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$
c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

5) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

6) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^k d) 3^{-k-1}

7) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

8) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2

c) 3 and 4 d) 0 and 1

9) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$

c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

10) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.

a) 0 b) $\frac{1}{2}$

c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

11) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

12) For the function $f(x) \begin{matrix} = & 0, & -\pi < x < 0 \\ = & x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

13) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

14) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \quad (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\, \cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

SLR-QH-116

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.
a) 2 and 3 b) 1 and 2
c) 3 and 4 d) 0 and 1

2) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.
a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$
c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

3) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.
a) 0 b) $\frac{1}{2}$
c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

4) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.
a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$
c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

5) For the function $f(x) \begin{matrix} = & 0, & -\pi < x < 0 \\ = & x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

6) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

7) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

8) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

9) The general solution of $(D^2 - 4)^2 y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1 \cos 2x + C_2 \sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

10) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

11) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

12) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

13) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^{k} d) 3^{-k-1}

14) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \quad (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\, \cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

2) For the function $f(x) \begin{matrix} = \\ = \end{matrix} \begin{matrix} 0, & -\pi < x < 0 \\ x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

3) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

4) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

5) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

6) The general solution of $(D^2 - 4)^2y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1\cos 2x + C_2\sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

7) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

8) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

9) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

10) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^k d) 3^{-k-1}

11) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

12) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2

c) 3 and 4 d) 0 and 1

13) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$

c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

14) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.

a) 0 b) $\frac{1}{2}$

c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \quad (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\, \cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}
c) 3^{k} d) 3^{-k-1}

2) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2
c) $\sqrt{2}$ d) 3

3) A positive real root of the equation $xe^{x} - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2
c) 3 and 4 d) 0 and 1

4) Since $z\{1\} = \frac{z}{z-1}, z\{a^{k}\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$
c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

5) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^{2}$ is _____.

a) 0 b) $\frac{1}{2}$
c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

6) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

7) For the function $f(x) \begin{matrix} = \\ = \end{matrix} \begin{matrix} 0, & -\pi < x < 0 \\ x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

8) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

9) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

10) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

11) The general solution of $(D^2 - 4)^2 y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1 \cos 2x + C_2 \sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

12) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

13) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

14) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \ \ (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if $\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

SLR-QH-117

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

2) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

3) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

4) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

5) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

6) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

7) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

8) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

9) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

10) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

11) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

12) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

13) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

14) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

SLR-QH-117

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

2) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

3) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

4) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

5) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

6) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

7) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

8) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

9) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

10) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

11) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

12) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

13) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

14) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

SLR-QH-117

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

2) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

3) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

4) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

5) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

6) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

7) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

8) Stress is defined as _____.
   a) A physical or emotional reaction to challenges or demands
   b) A type of disease
   c) Only physical pain
   d) A mental disorder

9) Time management means _____.
   a) Doing work very quickly
   b) Planning and organizing how to spend time effectively
   c) Wasting time
   d) Avoiding responsibilities

10) Effective non-verbal communication in presentations helps to _____.
   a) Confuse the audience
   b) Improve understanding and engagement
   c) Reduce communication
   d) Replace verbal communication

11) Which of the following helps in effective presentation?
   a) Organizing ideas clearly b) Using complex language
   c) Ignoring the audience d) All of the above

12) The main purpose of an interview is to _____.
   a) Test physical strength
   b) Assess a candidate's suitability
   c) Conduct training
   d) Provide entertainment

13) Which of the following is part of presentation etiquette?
   a) Clear speaking b) Good posture
   c) Proper visual aids d) All of the above

14) Good posture during a presentation indicates _____.
   a) Confidence b) Nervousness
   c) Disinterest d) Laziness

SLR-QH-117

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

2) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

3) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

4) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

5) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

6) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

7) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

8) Procrastination means _____.
a) Completing work early
b) Delaying tasks unnecessarily
c) Planning work
d) Finishing tasks on time

9) Taking short breaks during work helps to _____.
a) Reduce efficiency
b) Improve focus
c) Waste time
d) Increase stress

10) In the process of communication, _____ is the person who encodes the message.
a) Receiver
b) Driver
c) Cleaner
d) Sender

11) Which among the following barriers is related to fault in the channel?
a) Physical
b) Mechanical
c) Psychological
d) All of above

12) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy
b) Self-awareness
c) Emotional intelligence
d) Relationship management

13) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

14) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

SLR-QH-117

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-118

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Computational Statistics (ENTHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) In the regression equation $Y = 21 - 3X$, the slope is _____.
a) 21 b) -21
c) 3 d) -3

2) The difference between the actual Y value and predicted Y value found using a regression equation is called the _____.
a) Slope b) residual
c) outlier d) Scatter plot

3) All symmetrical distributions are Gaussian distribution.
a) True b) False
c) Both d) None of these

4) In square matrix, Sum of diagonal elements is given as _____.
a) trace b) rank
c) Eigen Value d) None

5) Skewness for Gaussian distribution is _____.
a) Zero b) Infinite
c) One d) None of these

6) In the regression equation $Y = 75.65 + 0.50X$, the intercept is _____.
a) 0.50 b) 75.65
c) 1.00 d) indeterminable

7) A die is thrown once. What is the probability that the score is a factor of 6?
a) $1/6$ b) $1/2$
c) $2/3$ d) 1

8) Rank of a $(m \times n)$ matrix is determined by the number of linearly rows present in the matrix.

a) Dependent
b) Independent
c) Both
d) None

9) Correlation values ranges from to _____

a) $-1, 1$
b) $-2, 1$
c) $-1, 2$
d) None

10) For orthogonal variables, correlation value is _____.

a) 0
b) 1
c) -1
d) None

11) Linear regression is example of learning _____.

a) Supervised
b) Un Supervised
c) Reinforcement
d) None

12) _____ is a state where the model cannot model itself on the training data.

a) Underfitting
b) Overfitting
c) Both
d) None

13) Overfitting has high _____.

a) Bias
b) Variance
c) Both
d) None

14) Following is/are applications of Machine Learning _____.

a) Self driving car
b) Email Spam Filtering
c) Product Recommendation
d) All

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026 Computational Statistics (ENTHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

SECTION – I

Q.2 Attempt Any Four **16**

a) From a standard deck of playing cards, a single card is drawn. The probability that the card is king is $4/52$, then calculate posterior probability P(King|Face), which means the drawn face card is a king card.

b) A die is rolled twice and two numbers are obtained, let X be the outcome of first role and Y be the outcome of the second roll. Given that $X + Y = 5$, what is the probability of $X = 4$ or $Y = 4$?

c) Solve following using Substitute method $2x - 3y = -2\ 4x + y = 24$.

d) Explain Gaussian distribution with its features in brief.

e) Explain regression with proper example.

Q.3 Attempt Any Two **12**

a) Sunil Chhetri is best Indian Soccer Player. He loves being Goalkeeper. But that depends on coach,
i) With coach Ashley probability of being Goalkeeper is 0.5
ii) With coach Khalid probability of being Goalkeeper is 0.3. Ashley is coach more often about 6 out of every 10. So, what is probability that Sunil will be goalkeeper today?

b) Consider two bags, an orange bag and black bag. There are 4 candies in orange bag and 5 candies in black bag. There are also 2 chocolates in orange bag and 3 chocolates in black bag. A sweet is to be chosen randomly from any of the bags. What is probability that chosen sweet is chocolate from black bag?

c) Explain construction of probability space. Also discuss Discrete and Continuous Probabilities in brief.

SECTION – II

Q.4 Attempt Any Four **16**

a) Differentiate between Supervised, Unsupervised and Reinforcement Learning.

b) Differentiate between Training data and Testing Data.

c) Explain in short applications of machine learning.

d) Explain backward feature elimination technique for dimensionality reduction.

e) Explain steps in PCA.

Q.5 Attempt Any Two **12**

a) Explain various issues in machine learning.

b) Explain the significance of Dimensionality Reduction.

c) What is Bias, Variance and what do you mean by Bias-Variance Trade-off? Differentiate between overfitting & Underfitting.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Computational Statistics (ENTHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) Rank of a $(m \times n)$ matrix is determined by the number of linearly rows present in the matrix.
a) Dependent b) Independent
c) Both d) None

2) Correlation values ranges from to _____
a) $-1, 1$ b) $-2, 1$
c) $-1, 2$ d) None

3) For orthogonal variables, correlation value is _____.
a) 0 b) 1
c) -1 d) None

4) Linear regression is example of learning _____.
a) Supervised b) Un Supervised
c) Reinforcement d) None

5) _____ is a state where the model cannot model itself on the training data.
a) Underfitting b) Overfitting
c) Both d) None

6) Overfitting has high _____.
a) Bias b) Variance
c) Both d) None

7) Following is/are applications of Machine Learning _____.
a) Self driving car b) Email Spam Filtering
c) Product Recommendation d) All

8) In the regression equation $Y = 21 - 3X$, the slope is _____.
a) 21 b) -21
c) 3 d) -3

9) The difference between the actual Y value and predicted Y value found using a regression equation is called the _____.
a) Slope b) residual
c) outlier d) Scatter plot

10) All symmetrical distributions are Gaussian distribution.
a) True b) False
c) Both d) None of these

11) In square matrix, Sum of diagonal elements is given as _____.
a) trace b) rank
c) Eigen Value d) None

12) Skewness for Gaussian distribution is _____.
a) Zero b) Infinite
c) One d) None of these

13) In the regression equation $Y = 75.65 + 0.50X$, the intercept is _____.
a) 0.50 b) 75.65
c) 1.00 d) indeterminable

14) A die is thrown once. What is the probability that the score is a factor of 6?
a) $1/6$ b) $1/2$
c) $2/3$ d) 1

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026 Computational Statistics (ENTHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

SECTION – I

Q.2 Attempt Any Four **16**

a) From a standard deck of playing cards, a single card is drawn. The probability that the card is king is $4/52$, then calculate posterior probability P(King|Face), which means the drawn face card is a king card.

b) A die is rolled twice and two numbers are obtained, let X be the outcome of first role and Y be the outcome of the second roll. Given that $X + Y = 5$, what is the probability of $X = 4$ or $Y = 4$?

c) Solve following using Substitute method $2x - 3y = -2$ $4x + y = 24$.

d) Explain Gaussian distribution with its features in brief.

e) Explain regression with proper example.

Q.3 Attempt Any Two **12**

a) Sunil Chhetri is best Indian Soccer Player. He loves being Goalkeeper. But that depends on coach,
i) With coach Ashley probability of being Goalkeeper is 0.5
ii) With coach Khalid probability of being Goalkeeper is 0.3. Ashley is coach more often about 6 out of every 10. So, what is probability that Sunil will be goalkeeper today?

b) Consider two bags, an orange bag and black bag. There are 4 candies in orange bag and 5 candies in black bag. There are also 2 chocolates in orange bag and 3 chocolates in black bag. A sweet is to be chosen randomly from any of the bags. What is probability that chosen sweet is chocolate from black bag?

c) Explain construction of probability space. Also discuss Discrete and Continuous Probabilities in brief.

SECTION – II

Q.4 Attempt Any Four **16**

a) Differentiate between Supervised, Unsupervised and Reinforcement Learning.

b) Differentiate between Training data and Testing Data.

c) Explain in short applications of machine learning.

d) Explain backward feature elimination technique for dimensionality reduction.

e) Explain steps in PCA.

Q.5 Attempt Any Two **12**

a) Explain various issues in machine learning.

b) Explain the significance of Dimensionality Reduction.

c) What is Bias, Variance and what do you mean by Bias-Variance Trade-off? Differentiate between overfitting & Underfitting.

Seat No.	

Set | **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Computational Statistics (ENTHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) Linear regression is example of learning _____.
a) Supervised b) Un Supervised
c) Reinforcement d) None

2) _____ is a state where the model cannot model itself on the training data.
a) Underfitting b) Overfitting
c) Both d) None

3) Overfitting has high _____.
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c) Both d) None

4) Following is/are applications of Machine Learning _____.
a) Self driving car b) Email Spam Filtering
c) Product Recommendation d) All

5) In the regression equation $Y = 21 - 3X$, the slope is _____.
a) 21 b) -21
c) 3 d) -3

6) The difference between the actual Y value and predicted Y value found using a regression equation is called the _____.
a) Slope b) residual
c) outlier d) Scatter plot

7) All symmetrical distributions are Gaussian distribution.
a) True b) False
c) Both d) None of these

8) In square matrix, Sum of diagonal elements is given as _____.
a) trace
b) rank
c) Eigen Value
d) None

9) Skewness for Gaussian distribution is _____.
a) Zero
b) Infinite
c) One
d) None of these

10) In the regression equation $Y = 75.65 + 0.50X$, the intercept is _____.
a) 0.50
b) 75.65
c) 1.00
d) indeterminable

11) A die is thrown once. What is the probability that the score is a factor of 6?
a) $1/6$
b) $1/2$
c) $2/3$
d) 1

12) Rank of a $(m \times n)$ matrix is determined by the number of linearly rows present in the matrix.
a) Dependent
b) Independent
c) Both
d) None

13) Correlation values ranges from to _____
a) $-1, 1$
b) $-2, 1$
c) $-1, 2$
d) None

14) For orthogonal variables, correlation value is _____.
a) 0
b) 1
c) -1
d) None

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026 Computational Statistics (ENTHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

SECTION – I

Q.2 Attempt Any Four **16**

a) From a standard deck of playing cards, a single card is drawn. The probability that the card is king is $4/52$, then calculate posterior probability P(King|Face), which means the drawn face card is a king card.

b) A die is rolled twice and two numbers are obtained, let X be the outcome of first role and Y be the outcome of the second roll. Given that $X + Y = 5$, what is the probability of $X = 4$ or $Y = 4$?

c) Solve following using Substitute method $2x - 3y = -2\ 4x + y = 24$.

d) Explain Gaussian distribution with its features in brief.

e) Explain regression with proper example.

Q.3 Attempt Any Two **12**

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i) With coach Ashley probability of being Goalkeeper is 0.5
ii) With coach Khalid probability of being Goalkeeper is 0.3. Ashley is coach more often about 6 out of every 10. So, what is probability that Sunil will be goalkeeper today?

b) Consider two bags, an orange bag and black bag. There are 4 candies in orange bag and 5 candies in black bag. There are also 2 chocolates in orange bag and 3 chocolates in black bag. A sweet is to be chosen randomly from any of the bags. What is probability that chosen sweet is chocolate from black bag?

c) Explain construction of probability space. Also discuss Discrete and Continuous Probabilities in brief.

SECTION – II

Q.4 Attempt Any Four **16**

a) Differentiate between Supervised, Unsupervised and Reinforcement Learning.

b) Differentiate between Training data and Testing Data.

c) Explain in short applications of machine learning.

d) Explain backward feature elimination technique for dimensionality reduction.

e) Explain steps in PCA.

Q.5 Attempt Any Two **12**

a) Explain various issues in machine learning.

b) Explain the significance of Dimensionality Reduction.

c) What is Bias, Variance and what do you mean by Bias-Variance Trade-off? Differentiate between overfitting & Underfitting.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Computational Statistics (ENTHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct option. **14**

1) In the regression equation $Y = 75.65 + 0.50X$, the intercept is _____.
a) 0.50 b) 75.65
c) 1.00 d) indeterminable

2) A die is thrown once. What is the probability that the score is a factor of 6?
a) $1/6$ b) $1/2$
c) $2/3$ d) 1

3) Rank of a $(m \times n)$ matrix is determined by the number of linearly rows present in the matrix.
a) Dependent b) Independent
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4) Correlation values ranges from to _____
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5) For orthogonal variables, correlation value is _____.
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c) -1 d) None

6) Linear regression is example of learning _____.
a) Supervised b) Un Supervised
c) Reinforcement d) None

7) _____ is a state where the model cannot model itself on the training data.
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c) Both d) None

8) Overfitting has high _____.
a) Bias
b) Variance
c) Both
d) None

9) Following is/are applications of Machine Learning _____.
a) Self driving car
b) Email Spam Filtering
c) Product Recommendation
d) All

10) In the regression equation $Y = 21 - 3X$, the slope is _____.
a) 21
b) -21
c) 3
d) -3

11) The difference between the actual Y value and predicted Y value found using a regression equation is called the _____.
a) Slope
b) residual
c) outlier
d) Scatter plot

12) All symmetrical distributions are Gaussian distribution.
a) True
b) False
c) Both
d) None of these

13) In square matrix, Sum of diagonal elements is given as _____.
a) trace
b) rank
c) Eigen Value
d) None

14) Skewness for Gaussian distribution is _____.
a) Zero
b) Infinite
c) One
d) None of these

SLR-QH-118

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026 Computational Statistics (ENTHON-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

SECTION – I

Q.2 Attempt Any Four **16**

a) From a standard deck of playing cards, a single card is drawn. The probability that the card is king is $4/52$, then calculate posterior probability P(King|Face), which means the drawn face card is a king card.

b) A die is rolled twice and two numbers are obtained, let X be the outcome of first role and Y be the outcome of the second roll. Given that $X + Y = 5$, what is the probability of $X = 4$ or $Y = 4$?

c) Solve following using Substitute method $2x - 3y = -2$ $4x + y = 24$.

d) Explain Gaussian distribution with its features in brief.

e) Explain regression with proper example.

Q.3 Attempt Any Two **12**

a) Sunil Chhetri is best Indian Soccer Player. He loves being Goalkeeper. But that depends on coach,
i) With coach Ashley probability of being Goalkeeper is 0.5
ii) With coach Khalid probability of being Goalkeeper is 0.3. Ashley is coach more often about 6 out of every 10. So, what is probability that Sunil will be goalkeeper today?

b) Consider two bags, an orange bag and black bag. There are 4 candies in orange bag and 5 candies in black bag. There are also 2 chocolates in orange bag and 3 chocolates in black bag. A sweet is to be chosen randomly from any of the bags. What is probability that chosen sweet is chocolate from black bag?

c) Explain construction of probability space. Also discuss Discrete and Continuous Probabilities in brief.

SECTION – II

Q.4 Attempt Any Four **16**

a) Differentiate between Supervised, Unsupervised and Reinforcement Learning.

b) Differentiate between Training data and Testing Data.

c) Explain in short applications of machine learning.

d) Explain backward feature elimination technique for dimensionality reduction.

e) Explain steps in PCA.

Q.5 Attempt Any Two **12**

a) Explain various issues in machine learning.

b) Explain the significance of Dimensionality Reduction.

c) What is Bias, Variance and what do you mean by Bias-Variance Trade-off? Differentiate between overfitting & Underfitting.

SLR-QH-119

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Database Management System (ENTHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. 14

1) Which of the following is not included in DML (Data Manipulation Language)?
a) UPDATE b) CREATE
c) INSERT d) DELETE

2) Tables in second normal form (2NF) _____.
a) Eliminate all hidden dependencies
b) Eliminate the possibility of a insertion anomalies
c) Have a composite key
d) Have all non-key fields depend on the whole primary key

3) The basic data type char(n) is a _____ length character string and varchar(n) is _____ length character.
a) Fixed, equal b) Equal, variable
c) Fixed, variable d) Variable, equal

4) A transaction is delimited by statements (or function calls) of the form _____.
a) Begin transaction and end transaction
b) Start transaction and stop transaction
c) Get transaction and post transaction
d) Read transaction and write transaction

5) A _____ in a table represents a relationship among a set of values.
a) Column b) Key
c) Row d) Entry

6) Which one of the following is a procedural language?
a) Domain relational calculus b) Tuple relational calculus
c) Relational algebra d) Query language

7) Which of the following is used at the end of the view to reject the tuples which do not satisfy the condition in where clause?
a) With b) Check
c) With check d) All of the mentioned

8) For the view Create view instructor_jnfo as
SELECT ID, name, building
FROM instructor, department
WHERE instructor.dept name= department.dept name;
If we insert tuple into the view as insert into instructor info values (’69987’, ’White’, ’Taylor’);
What will be the values of the other attributes in instructor and department relations?
a) Default value b) Null
c) Error statement d) 0

9) In the _____ normal form, a composite attribute is converted to individual attributes.
a) First b) Second
c) Third d) Fourth

10) To include integrity constraint in an existing relation use _____.
a) Create table b) Modify table
c) Alter table d) Drop table

11) Which of the following is not an integrity constraint?
a) Not null b) Positive
c) Unique d) Check ‘predicate’

12) What are the ways of dealing with deadlock?
a) Deadlock prevention b) Deadlock recovery
c) Deadlock detection d) All of the mentioned

13) In a _____ clustering index, the index record contains the search-key value and a pointer to the first data record with that search-key value and the rest of the records will be in the sequential pointers.
a) Dense b) Sparse
c) Straight d) Continuous

14) The union operation automatically _____ unlike the select clause.
a) Adds tuples b) Eliminates unique tuples
c) Adds common tuples d) Eliminates duplicate

Seat No.	

Set | P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Database Management System (ENTHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if required.
3) Figures to the right indicates full marks.

SECTION – I

Q.2 Solve Any Four questions. **16**

a) What are the functions of database administrator?

b) Write a short note on Database Languages.

c) Explain different Integrity constraints and Authorization SQL queries with examples.

d) Explain different Set operations in SQL.

e) Give the difference between Specialization and Generalization.

Q.3 Solve Any Two questions. **12**

a) Explain with proper example following Relational algebra Operations.
i) Select
ii) Project
iii) Union
iv) Set- Difference
v) Cartesian-Product
vi) Set - Intersection

b) Write in brief Nested subqueries with example.

c) Explain with example various attributes types in ER model. (draw company ER diagram)

SECTION – II

Q.4 Solve Any Four questions. **16**

a) Give and explain the good reasons for allowing concurrency in detail.

b) Write a short note on Two phase locking protocol.

c) Explain in detail the concept of Conflict serializability with example.

d) Write a short note on Multiple Key access.

e) Explain natural join operation with example.

Q.5 Solve Any Two questions. **12**

a) Explain the distinction between closed and open hashing. Discuss merits of both techniques in database applications.

b) Explain Time stamp ordering protocol with example.

c) What is transaction? Explain its state diagram.

SLR-QH-119

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Database Management System (ENTHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) For the view Create view instructor_jnfo as
SELECT ID, name, building
FROM instructor, department
WHERE instructor.dept name= department.dept name;
If we insert tuple into the view as insert into instructor info values ('69987', 'White', 'Taylor');
What will be the values of the other attributes in instructor and department relations?
a) Default value b) Null
c) Error statement d) 0

2) In the _____ normal form, a composite attribute is converted to individual attributes.
a) First b) Second
c) Third d) Fourth

3) To include integrity constraint in an existing relation use _____.
a) Create table b) Modify table
c) Alter table d) Drop table

4) Which of the following is not an integrity constraint?
a) Not null b) Positive
c) Unique d) Check 'predicate'

5) What are the ways of dealing with deadlock?
a) Deadlock prevention b) Deadlock recovery
c) Deadlock detection d) All of the mentioned

6) In a _____ clustering index, the index record contains the search-key value and a pointer to the first data record with that search-key value and the rest of the records will be in the sequential pointers.
a) Dense
b) Sparse
c) Straight
d) Continuous

7) The union operation automatically _____ unlike the select clause.
a) Adds tuples
b) Eliminates unique tuples
c) Adds common tuples
d) Eliminates duplicate

8) Which of the following is not included in DML (Data Manipulation Language)?
a) UPDATE
b) CREATE
c) INSERT
d) DELETE

9) Tables in second normal form (2NF) _____.
a) Eliminate all hidden dependencies
b) Eliminate the possibility of a insertion anomalies
c) Have a composite key
d) Have all non-key fields depend on the whole primary key

10) The basic data type char(n) is a _____ length character string and varchar(n) is _____ length character.
a) Fixed, equal
b) Equal, variable
c) Fixed, variable
d) Variable, equal

11) A transaction is delimited by statements (or function calls) of the form _____.
a) Begin transaction and end transaction
b) Start transaction and stop transaction
c) Get transaction and post transaction
d) Read transaction and write transaction

12) A _____ in a table represents a relationship among a set of values.
a) Column
b) Key
c) Row
d) Entry

13) Which one of the following is a procedural language?
a) Domain relational calculus
b) Tuple relational calculus
c) Relational algebra
d) Query language

14) Which of the following is used at the end of the view to reject the tuples which do not satisfy the condition in where clause?
a) With
b) Check
c) With check
d) All of the mentioned

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Database Management System (ENTHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if required.
3) Figures to the right indicates full marks.

SECTION – I

Q.2 Solve Any Four questions. **16**

a) What are the functions of database administrator?

b) Write a short note on Database Languages.

c) Explain different Integrity constraints and Authorization SQL queries with examples.

d) Explain different Set operations in SQL.

e) Give the difference between Specialization and Generalization.

Q.3 Solve Any Two questions. **12**

a) Explain with proper example following Relational algebra Operations.
i) Select
ii) Project
iii) Union
iv) Set- Difference
v) Cartesian-Product
vi) Set - Intersection

b) Write in brief Nested subqueries with example.

c) Explain with example various attributes types in ER model. (draw company ER diagram)

SECTION – II

Q.4 Solve Any Four questions. **16**

a) Give and explain the good reasons for allowing concurrency in detail.

b) Write a short note on Two phase locking protocol.

c) Explain in detail the concept of Conflict serializability with example.

d) Write a short note on Multiple Key access.

e) Explain natural join operation with example.

Q.5 Solve Any Two questions. **12**

a) Explain the distinction between closed and open hashing. Discuss merits of both techniques in database applications.

b) Explain Time stamp ordering protocol with example.

c) What is transaction? Explain its state diagram.

SLR-QH-119

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Database Management System (ENTHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. 14

1) Which of the following is not an integrity constraint?
a) Not null b) Positive
c) Unique d) Check 'predicate'

2) What are the ways of dealing with deadlock?
a) Deadlock prevention b) Deadlock recovery
c) Deadlock detection d) All of the mentioned

3) In a _____ clustering index, the index record contains the search-key value and a pointer to the first data record with that search-key value and the rest of the records will be in the sequential pointers.
a) Dense b) Sparse
c) Straight d) Continuous

4) The union operation automatically _____ unlike the select clause.
a) Adds tuples b) Eliminates unique tuples
c) Adds common tuples d) Eliminates duplicate

5) Which of the following is not included in DML (Data Manipulation Language)?
a) UPDATE b) CREATE
c) INSERT d) DELETE

6) Tables in second normal form (2NF) _____.
a) Eliminate all hidden dependencies
b) Eliminate the possibility of a insertion anomalies
c) Have a composite key
d) Have all non-key fields depend on the whole primary key

7) The basic data type char(n) is a _____ length character string and varchar(n) is _____ length character.
a) Fixed, equal
b) Equal, variable
c) Fixed, variable
d) Variable, equal

8) A transaction is delimited by statements (or function calls) of the form _____.
a) Begin transaction and end transaction
b) Start transaction and stop transaction
c) Get transaction and post transaction
d) Read transaction and write transaction

9) A _____ in a table represents a relationship among a set of values.
a) Column
b) Key
c) Row
d) Entry

10) Which one of the following is a procedural language?
a) Domain relational calculus
b) Tuple relational calculus
c) Relational algebra
d) Query language

11) Which of the following is used at the end of the view to reject the tuples which do not satisfy the condition in where clause?
a) With
b) Check
c) With check
d) All of the mentioned

12) For the view Create view instructor_jnfo as
SELECT ID, name, building
FROM instructor, department
WHERE instructor.dept name= department.dept name;
If we insert tuple into the view as insert into instructor info values (’69987’, ’White’, ’Taylor’);
What will be the values of the other attributes in instructor and department relations?
a) Default value
b) Null
c) Error statement
d) 0

13) In the _____ normal form, a composite attribute is converted to individual attributes.
a) First
b) Second
c) Third
d) Fourth

14) To include integrity constraint in an existing relation use _____.
a) Create table
b) Modify table
c) Alter table
d) Drop table

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Database Management System (ENTHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if required.
3) Figures to the right indicates full marks.

SECTION – I

Q.2 Solve Any Four questions. **16**

a) What are the functions of database administrator?

b) Write a short note on Database Languages.

c) Explain different Integrity constraints and Authorization SQL queries with examples.

d) Explain different Set operations in SQL.

e) Give the difference between Specialization and Generalization.

Q.3 Solve Any Two questions. **12**

a) Explain with proper example following Relational algebra Operations.
i) Select
ii) Project
iii) Union
iv) Set- Difference
v) Cartesian-Product
vi) Set - Intersection

b) Write in brief Nested subqueries with example.

c) Explain with example various attributes types in ER model. (draw company ER diagram)

SECTION – II

Q.4 Solve Any Four questions. **16**

a) Give and explain the good reasons for allowing concurrency in detail.

b) Write a short note on Two phase locking protocol.

c) Explain in detail the concept of Conflict serializability with example.

d) Write a short note on Multiple Key access.

e) Explain natural join operation with example.

Q.5 Solve Any Two questions. **12**

a) Explain the distinction between closed and open hashing. Discuss merits of both techniques in database applications.

b) Explain Time stamp ordering protocol with example.

c) What is transaction? Explain its state diagram.

Seat No.	

Set | S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Database Management System (ENTHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) Which one of the following is a procedural language?
a) Domain relational calculus b) Tuple relational calculus
c) Relational algebra d) Query language

2) Which of the following is used at the end of the view to reject the tuples which do not satisfy the condition in where clause?
a) With b) Check
c) With check d) All of the mentioned

3) For the view Create view instructor_jnfo as
SELECT ID, name, building
FROM instructor, department
WHERE instructor.dept name= department.dept name;
If we insert tuple into the view as insert into instructor info values ('69987', 'White', 'Taylor');
What will be the values of the other attributes in instructor and department relations?
a) Default value b) Null
c) Error statement d) 0

4) In the _____ normal form, a composite attribute is converted to individual attributes.
a) First b) Second
c) Third d) Fourth

5) To include integrity constraint in an existing relation use _____.
a) Create table b) Modify table
c) Alter table d) Drop table

6) Which of the following is not an integrity constraint?
a) Not null
b) Positive
c) Unique
d) Check 'predicate'

7) What are the ways of dealing with deadlock?
a) Deadlock prevention
b) Deadlock recovery
c) Deadlock detection
d) All of the mentioned

8) In a _____ clustering index, the index record contains the search-key value and a pointer to the first data record with that search-key value and the rest of the records will be in the sequential pointers.
a) Dense
b) Sparse
c) Straight
d) Continuous

9) The union operation automatically _____ unlike the select clause.
a) Adds tuples
b) Eliminates unique tuples
c) Adds common tuples
d) Eliminates duplicate

10) Which of the following is not included in DML (Data Manipulation Language)?
a) UPDATE
b) CREATE
c) INSERT
d) DELETE

11) Tables in second normal form (2NF) _____.
a) Eliminate all hidden dependencies
b) Eliminate the possibility of a insertion anomalies
c) Have a composite key
d) Have all non-key fields depend on the whole primary key

12) The basic data type char(n) is a _____ length character string and varchar(n) is _____ length character.
a) Fixed, equal
b) Equal, variable
c) Fixed, variable
d) Variable, equal

13) A transaction is delimited by statements (or function calls) of the form _____.
a) Begin transaction and end transaction
b) Start transaction and stop transaction
c) Get transaction and post transaction
d) Read transaction and write transaction

14) A _____ in a table represents a relationship among a set of values.
a) Column
b) Key
c) Row
d) Entry

SLR-QH-119

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Database Management System (ENTHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if required.
3) Figures to the right indicates full marks.

SECTION – I

Q.2 Solve Any Four questions. **16**

a) What are the functions of database administrator?

b) Write a short note on Database Languages.

c) Explain different Integrity constraints and Authorization SQL queries with examples.

d) Explain different Set operations in SQL.

e) Give the difference between Specialization and Generalization.

Q.3 Solve Any Two questions. **12**

a) Explain with proper example following Relational algebra Operations.
i) Select
ii) Project
iii) Union
iv) Set- Difference
v) Cartesian-Product
vi) Set - Intersection

b) Write in brief Nested subqueries with example.

c) Explain with example various attributes types in ER model. (draw company ER diagram)

SECTION – II

Q.4 Solve Any Four questions. **16**

a) Give and explain the good reasons for allowing concurrency in detail.

b) Write a short note on Two phase locking protocol.

c) Explain in detail the concept of Conflict serializability with example.

d) Write a short note on Multiple Key access.

e) Explain natural join operation with example.

Q.5 Solve Any Two questions. **12**

a) Explain the distinction between closed and open hashing. Discuss merits of both techniques in database applications.

b) Explain Time stamp ordering protocol with example.

c) What is transaction? Explain its state diagram.

SLR-QH-120

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Railway Engineering: A Beginner's Perspective (ENTHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. 14

1) The first passenger train in India ran between _____.
a) Delhi and Agra b) Mumbai and Thane
c) Chennai and Arakkonam d) Kolkata and Howrah

2) The total route length of Indian Railways is approximately _____.
a) 25,000 km b) 45,000 km
c) 67,000 km d) 90,000 km

3) Which of the following is responsible for ensuring railway safety?
a) Railway Board
b) Railway Safety Commission
c) Commission of Railway Safety
d) Ministry of Transport

4) The Railway Recruitment Boards (RRBs) are responsible for ____.
a) Ticket booking b) Recruitment of staff
c) Safety inspection d) Accounting

5) The Indian Railways Information Systems (CRIS) mainly deals with ____.
a) Ticketing and freight management
b) Locomotive maintenance
c) Track construction
d) Bridge design

6) The term “locomotive"’ refers to _____.
   a) A passenger coach
   b) A self-propelled vehicle for pulling trains
   c) A goods wagon
   d) A type of rail

7) Which is not part of Railway track layer?
   a) Ballast
   b) Fishplate
   c) Switches
   d) Subgrade

8) The _____ is the centralized agency for railway electrification of Indian Railways.
   a) CORE
   b) CRIS
   c) PRS
   d) Central Railway Board

9) Which is not part of Rail?
   a) Head
   b) Web
   c) Foot
   d) Frog

10) Which of following is not the advantage of maglev trains?
   a) Higher top speeds
   b) Superior acceleration and deceleration
   c) Higher noise
   d) Lower maintenance costs

11) Which is not Problem with overhead equipment?
   a) Power storms can knock the power out
   b) Ice may coat overhead lines
   c) Dewirement due to rails
   d) Lines may sag during hot weather

12) Indian Railways propose to install large format display screens under _____ the project.
   a) Railway Board
   b) Railway Display Network (“RDN”)
   c) Railway Ministry
   d) Railway Department

13) The first Metro train in India _____
   a) Mumbai
   b) Kolkatta
   c) Delhi
   d) Chennai

14) Which technology does Maglev trains uses for transportation?
   a) Hydroelectric
   b) Electrification
   c) Magnetic levitation
   d) Using fossil fuels

Seat No.	

Set | P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Railway Engineering: A Beginner's Perspective (ENTHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

SECTION – I

Q.2 Attempt Any Four **16**

a) Explain growth of Indian Railways.

b) Which are the Layers of material on Tracks? Explain.

c) Which are the different organizations related to Indian Railways.

d) What are Bogies and Coaches? Explain.

e) Define Terms:
i) Fishplate
ii) Pantograph
iii) Sleepers
iv) Gauges

Q.3 Attempt Any Two **12**

a) Give the different modes of traction system. Write down its advantages and disadvantages.

b) Give types of Braking Systems in Railways. Explain.

c) Which is the overhead equipment? Explain.

SECTION – II

Q.4 Attempt Any Four **16**

a) Write note on Rail Display Network.

b) Which Material is Used for Railing system.

c) Write a short note on Safety measures in Railways.

d) Give details of Bullet Trains and Metro in India.

e) What is Clean Energy concept in Railways? Explain.

Q.5 Attempt Any Two **12**

a) Write note on "Anubhuti" Coaches in Indian Railways explain. Give its features.

b) Explain the role of Computer Engineering in Railways.

c) Explain concept Maglev Technology in Railways.

SLR-QH-120

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Railway Engineering: A Beginner's Perspective (ENTHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. 14

1) The _____ is the centralized agency for railway electrification of Indian Railways.
a) CORE b) CRIS
c) PRS d) Central Railway Board

2) Which is not part of Rail?
a) Head b) Web
c) Foot d) Frog

3) Which of following is not the advantage of maglev trains?
a) Higher top speeds
b) Superior acceleration and deceleration
c) Higher noise
d) Lower maintenance costs

4) Which is not Problem with overhead equipment?
a) Power storms can knock the power out
b) Ice may coat overhead lines
c) Dewirement due to rails
d) Lines may sag during hot weather

5) Indian Railways propose to install large format display screens under _____ the project.
a) Railway Board
b) Railway Display Network ("RDN")
c) Railway Ministry
d) Railway Department

6) The first Metro train in India _____
a) Mumbai b) Kolkatta
c) Delhi d) Chennai

7) Which technology does Maglev trains uses for transportation?
a) Hydroelectric b) Electrification
c) Magnetic levitation d) Using fossil fuels

8) The first passenger train in India ran between _____.
a) Delhi and Agra b) Mumbai and Thane
c) Chennai and Arakkonam d) Kolkata and Howrah

9) The total route length of Indian Railways is approximately _____.
a) 25,000 km b) 45,000 km
c) 67,000 km d) 90,000 km

10) Which of the following is responsible for ensuring railway safety?
a) Railway Board
b) Railway Safety Commission
c) Commission of Railway Safety
d) Ministry of Transport

11) The Railway Recruitment Boards (RRBs) are responsible for ____.
a) Ticket booking b) Recruitment of staff
c) Safety inspection d) Accounting

12) The Indian Railways Information Systems (CRIS) mainly deals with ____.
a) Ticketing and freight management
b) Locomotive maintenance
c) Track construction
d) Bridge design

13) The term “locomotive"’ refers to _____.
a) A passenger coach
b) A self-propelled vehicle for pulling trains
c) A goods wagon
d) A type of rail

14) Which is not part of Railway track layer?
a) Ballast b) Fishplate
c) Switches d) Subgrade

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Railway Engineering: A Beginner's Perspective (ENTHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

SECTION – I

Q.2 Attempt Any Four **16**

a) Explain growth of Indian Railways.

b) Which are the Layers of material on Tracks? Explain.

c) Which are the different organizations related to Indian Railways.

d) What are Bogies and Coaches? Explain.

e) Define Terms:
i) Fishplate
ii) Pantograph
iii) Sleepers
iv) Gauges

Q.3 Attempt Any Two **12**

a) Give the different modes of traction system. Write down its advantages and disadvantages.

b) Give types of Braking Systems in Railways. Explain.

c) Which is the overhead equipment? Explain.

SECTION – II

Q.4 Attempt Any Four **16**

a) Write note on Rail Display Network.

b) Which Material is Used for Railing system.

c) Write a short note on Safety measures in Railways.

d) Give details of Bullet Trains and Metro in India.

e) What is Clean Energy concept in Railways? Explain.

Q.5 Attempt Any Two **12**

a) Write note on "Anubhuti" Coaches in Indian Railways explain. Give its features.

b) Explain the role of Computer Engineering in Railways.

c) Explain concept Maglev Technology in Railways.

SLR-QH-120

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Railway Engineering: A Beginner's Perspective (ENTHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. 14

1) Which is not Problem with overhead equipment?
a) Power storms can knock the power out
b) Ice may coat overhead lines
c) Dewirement due to rails
d) Lines may sag during hot weather

2) Indian Railways propose to install large format display screens under _____ the project.
a) Railway Board
b) Railway Display Network ("RDN")
c) Railway Ministry
d) Railway Department

3) The first Metro train in India _____
a) Mumbai b) Kolkatta
c) Delhi d) Chennai

4) Which technology does Maglev trains uses for transportation?
a) Hydroelectric b) Electrification
c) Magnetic levitation d) Using fossil fuels

5) The first passenger train in India ran between _____.
a) Delhi and Agra b) Mumbai and Thane
c) Chennai and Arakkonam d) Kolkata and Howrah

6) The total route length of Indian Railways is approximately _____.
a) 25,000 km b) 45,000 km
c) 67,000 km d) 90,000 km

7) Which of the following is responsible for ensuring railway safety?
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b) Railway Safety Commission
c) Commission of Railway Safety
d) Ministry of Transport

8) The Railway Recruitment Boards (RRBs) are responsible for ____.
a) Ticket booking
b) Recruitment of staff
c) Safety inspection
d) Accounting

9) The Indian Railways Information Systems (CRIS) mainly deals with ____.
a) Ticketing and freight management
b) Locomotive maintenance
c) Track construction
d) Bridge design

10) The term “locomotive"’ refers to _____.
a) A passenger coach
b) A self-propelled vehicle for pulling trains
c) A goods wagon
d) A type of rail

11) Which is not part of Railway track layer?
a) Ballast
b) Fishplate
c) Switches
d) Subgrade

12) The _____ is the centralized agency for railway electrification of Indian Railways.
a) CORE
b) CRIS
c) PRS
d) Central Railway Board

13) Which is not part of Rail?
a) Head
b) Web
c) Foot
d) Frog

14) Which of following is not the advantage of maglev trains?
a) Higher top speeds
b) Superior acceleration and deceleration
c) Higher noise
d) Lower maintenance costs

SLR-QH-120

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Railway Engineering: A Beginner's Perspective (ENTHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

SECTION – I

Q.2 Attempt Any Four **16**

a) Explain growth of Indian Railways.

b) Which are the Layers of material on Tracks? Explain.

c) Which are the different organizations related to Indian Railways.

d) What are Bogies and Coaches? Explain.

e) Define Terms:
i) Fishplate
ii) Pantograph
iii) Sleepers
iv) Gauges

Q.3 Attempt Any Two **12**

a) Give the different modes of traction system. Write down its advantages and disadvantages.

b) Give types of Braking Systems in Railways. Explain.

c) Which is the overhead equipment? Explain.

SECTION – II

Q.4 Attempt Any Four **16**

a) Write note on Rail Display Network.

b) Which Material is Used for Railing system.

c) Write a short note on Safety measures in Railways.

d) Give details of Bullet Trains and Metro in India.

e) What is Clean Energy concept in Railways? Explain.

Q.5 Attempt Any Two **12**

a) Write note on "Anubhuti" Coaches in Indian Railways explain. Give its features.

b) Explain the role of Computer Engineering in Railways.

c) Explain concept Maglev Technology in Railways.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Railway Engineering: A Beginner's Perspective (ENTHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. 14

1) The term "locomotive"' refers to _____.
a) A passenger coach
b) A self-propelled vehicle for pulling trains
c) A goods wagon
d) A type of rail

2) Which is not part of Railway track layer?
a) Ballast b) Fishplate
c) Switches d) Subgrade

3) The _____ is the centralized agency for railway electrification of Indian Railways.
a) CORE b) CRIS
c) PRS d) Central Railway Board

4) Which is not part of Rail?
a) Head b) Web
c) Foot d) Frog

5) Which of following is not the advantage of maglev trains?
a) Higher top speeds
b) Superior acceleration and deceleration
c) Higher noise
d) Lower maintenance costs

6) Which is not Problem with overhead equipment?
a) Power storms can knock the power out
b) Ice may coat overhead lines
c) Dewirement due to rails
d) Lines may sag during hot weather

7) Indian Railways propose to install large format display screens under _____ the project.
a) Railway Board
b) Railway Display Network (“RDN”)
c) Railway Ministry
d) Railway Department

8) The first Metro train in India _____
a) Mumbai
b) Kolkatta
c) Delhi
d) Chennai

9) Which technology does Maglev trains uses for transportation?
a) Hydroelectric
b) Electrification
c) Magnetic levitation
d) Using fossil fuels

10) The first passenger train in India ran between _____.
a) Delhi and Agra
b) Mumbai and Thane
c) Chennai and Arakkonam
d) Kolkata and Howrah

11) The total route length of Indian Railways is approximately _____.
a) 25,000 km
b) 45,000 km
c) 67,000 km
d) 90,000 km

12) Which of the following is responsible for ensuring railway safety?
a) Railway Board
b) Railway Safety Commission
c) Commission of Railway Safety
d) Ministry of Transport

13) The Railway Recruitment Boards (RRBs) are responsible for ____.
a) Ticket booking
b) Recruitment of staff
c) Safety inspection
d) Accounting

14) The Indian Railways Information Systems (CRIS) mainly deals with ____.
a) Ticketing and freight management
b) Locomotive maintenance
c) Track construction
d) Bridge design

SLR-QH-120

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Railway Engineering: A Beginner's Perspective (ENTHON-01D)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.

SECTION – I

Q.2 Attempt Any Four **16**

a) Explain growth of Indian Railways.

b) Which are the Layers of material on Tracks? Explain.

c) Which are the different organizations related to Indian Railways.

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e) Define Terms:
i) Fishplate
ii) Pantograph
iii) Sleepers
iv) Gauges

Q.3 Attempt Any Two **12**

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b) Give types of Braking Systems in Railways. Explain.

c) Which is the overhead equipment? Explain.

SECTION – II

Q.4 Attempt Any Four **16**

a) Write note on Rail Display Network.

b) Which Material is Used for Railing system.

c) Write a short note on Safety measures in Railways.

d) Give details of Bullet Trains and Metro in India.

e) What is Clean Energy concept in Railways? Explain.

Q.5 Attempt Any Two **12**

a) Write note on "Anubhuti" Coaches in Indian Railways explain. Give its features.

b) Explain the role of Computer Engineering in Railways.

c) Explain concept Maglev Technology in Railways.

SLR-QH-121

Seat No.		Set	P

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Value education enables us _____.
a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

2) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

3) _____ is the basic unit of any human society.
a) Group b) Individual
c) Nature d) Society

4) Natural acceptance & _____ are the two processes of knowing.
a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

5) Present Education system gives more focus to skills.
a) True b) False
c) May be d) None of the above

6) Value of an entity is _____.
a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

7) _____ are as Basic Human Aspirations.
a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

8) Any course content on value education needs to be _____.
a) Universal b) Rational
c) Natural d) All of above

9) When we live with correct understanding of values, we feel _____.
a) Deprived b) Frustrated
c) Happy d) Unhappy

10) Following are the basic guidelines for value education except _____.
a) Universal b) Personal
c) Rational d) Natural

11) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

12) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

13) Right Understanding and Physical Facilities leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

14) ____ are the content of self-exploration.
a) Program b) Desire
c) Both a and b d) None of the above

15) To be in state of liking is _____.
a) Happy b) Unhappy
c) Both a and b d) None of the above

16) _____ helps the human being to transform from Animal consciousness to human consciousness.
a) Physical Facility b) Right understanding
c) Relationship d) All of above

17) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.

a) Value b) Skill
c) Technology d) All of above

18) _____ means physical facilities more than to satisfy my needs.

a) Health b) Prosperity
c) Happiness d) None of above

19) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

a) naturally acceptable b) pushed
c) common d) None of above

20) Physical facilities are necessary and complete for _____.

a) Animal b) Human being
c) Nature d) All of the above

21) Beside physical facilities human being want _____.

a) Name b) Fame
c) Relationship d) None of the above

22) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.

a) Swatantra b) Partantra
c) Prosperous d) None of the above

23) To be in state of _____ is unhappiness.

a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

24) Which of following leads to variety of problems at different levels of our living?

a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

25) Working only for physical facilities in living is called _____.

a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

26) Self and _____ are different in nature, materiality, needs and activities.

a) Trust b) Body
c) Belief d) None of the above

27) Sukh and _____ both are needed and can't replace each other.

a) Self b) Body
c) Suvidha d) Belief

28) In value education Sanyama means _____.

a) Self-regulation b) Health
c) Happiness d) Prosperity

29) Sadupyog of the Body mean _____ of the Body.

a) Self-regulation b) Care
c) Happiness d) Right utilization

30) Knowing means having the _____.

a) Assumption b) Right understanding
c) Right feeling d) None of the above

31) Each human being is co-existence of the _____ and the _____.

a) self, self b) body, body
c) self, body d) None of the above

32) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.

a) Swasthya b) Sanyam
c) Prosperity d) None of the above

33) The system of the body works in a _____ way.

a) Happy b) Self organized
c) Random d) Independent

34) The self is _____ in nature while body is _____ in nature.

a) Unconscious, Physico-chemical
b) Conscious, Physico-chemical
c) Physico-chemical, Conscious
d) Physico-chemical, Unconscious

35) The activity of desire, thought and expecting together is called as _____.

a) Body b) Health
c) Imagination d) Future

36) Harmony should be maintained in _____.

a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

37) Sah-astitva means _____.

a) Co-existence b) Co-operation
c) Co-ordination d) Corporate identity

38) The process of education and right living leads to _____ in the individual.

a) Right understanding b) Health
c) Prosperity d) None of the above

39) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness b) Confusion
c) Confidence d) Fear

40) _____ is the foundational value in relationship.

a) Respect b) Love
c) Trust d) Glory

41) To be assured of others at all time is the feeling of _____.

a) Respect b) Love
c) Trust d) Glory

42) _____ is the feeling for someone who has made efforts for excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

43) _____ is the feeling of acceptance for those who have made efforts for my excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

44) The feeling of relatedness to all human beings is called _____.

a) Love b) Affection
c) Gratitude d) Respect

45) All the units of nature can be classified into _____ orders.

a) Two b) Three
c) Four d) Six

46) Which of the following does not form an order in nature?

a) Bio b) Animal
c) Consciousness d) Human

47) Which of the following statement is not true?

a) There is interconnectedness in nature
b) There is recyclability and self-regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

48) Harmony in the family is the building block for harmony in the _____.

a) society b) individual
c) friend d) relative

49) _____ in the family means that the family is able to identify its needs.

a) wealth
b) prosperity
c) harmony
d) happiness

50) _____ means right evaluation.

a) Respect
b) Love
c) Trust
d) Glory

SLR-QH-121

Seat No.		Set	Q

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Beside physical facilities human being want _____.
a) Name b) Fame
c) Relationship d) None of the above

2) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.
a) Swatantra b) Partantra
c) Prosperous d) None of the above

3) To be in state of _____ is unhappiness.
a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

4) Which of following leads to variety of problems at different levels of our living?
a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

5) Working only for physical facilities in living is called _____.
a) Animal Consciousness b) Human Consciousness
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6) Self and _____ are different in nature, materiality, needs and activities.
a) Trust b) Body
c) Belief d) None of the above

7) Sukh and _____ both are needed and can't replace each other.
a) Self b) Body
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8) In value education Sanyama means _____.
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21) To be assured of others at all time is the feeling of _____.

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22) _____ is the feeling for someone who has made efforts for excellence.

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a) wealth b) prosperity
c) harmony d) happiness

30) _____ means right evaluation.

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c) Trust d) Glory

31) Value education enables us _____.

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b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

32) One of the basic desires of every human being is to be always _____.

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c) Laugh d) Earn Money

33) _____ is the basic unit of any human society.

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c) Nature d) Society

34) Natural acceptance & _____ are the two processes of knowing.

a) Self -Actualization b) Self Exploration
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35) Present Education system gives more focus to skills.

a) True b) False
c) May be d) None of the above

36) Value of an entity is _____.

a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

37) _____ are as Basic Human Aspirations.

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b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

38) Any course content on value education needs to be _____.

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49) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

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c) common d) None of above

50) Physical facilities are necessary and complete for _____.

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c) Nature d) All of the above

SLR-QH-121

Seat No.		Set	R

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

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a) Physical Facilities, Right Understanding and Relationship
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a) Name b) Fame
c) Relationship d) None of the above

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c) Prosperous d) None of the above

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c) Disharmony or contradiction d) None of the above

34) Which of following leads to variety of problems at different levels of our living?
a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

35) Working only for physical facilities in living is called _____.
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c) Rich Consciousness d) None of these

36) Self and _____ are different in nature, materiality, needs and activities.
a) Trust b) Body
c) Belief d) None of the above

37) Sukh and _____ both are needed and can't replace each other.
a) Self b) Body
c) Suvidha d) Belief

38) In value education Sanyama means _____.
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c) Happiness d) Prosperity

39) Sadupyog of the Body mean _____ of the Body.
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c) Happiness d) Right utilization

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c) Right feeling d) None of the above

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a) Swasthya b) Sanyam
c) Prosperity d) None of the above

43) The system of the body works in a _____ way.
a) Happy b) Self organized
c) Random d) Independent

44) The self is _____ in nature while body is _____ in nature.
a) Unconscious, Physico-chemical
b) Conscious, Physico-chemical
c) Physico-chemical, Conscious
d) Physico-chemical, Unconscious

45) The activity of desire, thought and expecting together is called as _____.
a) Body b) Health
c) Imagination d) Future

46) Harmony should be maintained in _____.
a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

47) Sah-astitva means _____.
a) Co-existence b) Co-operation
c) Co-ordination d) Corporate identity

48) The process of education and right living leads to _____ in the individual.
a) Right understanding b) Health
c) Prosperity d) None of the above

49) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness
b) Confusion
c) Confidence
d) Fear

50) _____ is the foundational value in relationship.

a) Respect
b) Love
c) Trust
d) Glory

SLR-QH-121

Seat No.		Set	S

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

2) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

3) Right Understanding and Physical Facilities leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

4) ____ are the content of self-exploration.
a) Program b) Desire
c) Both a and b d) None of the above

5) To be in state of liking is _____.
a) Happy b) Unhappy
c) Both a and b d) None of the above

6) _____ helps the human being to transform from Animal consciousness to human consciousness.
a) Physical Facility b) Right understanding
c) Relationship d) All of above

7) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.

a) Value b) Skill
c) Technology d) All of above

8) _____ means physical facilities more than to satisfy my needs.

a) Health b) Prosperity
c) Happiness d) None of above

9) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

a) naturally acceptable b) pushed
c) common d) None of above

10) Physical facilities are necessary and complete for _____.

a) Animal b) Human being
c) Nature d) All of the above

11) Beside physical facilities human being want _____.

a) Name b) Fame
c) Relationship d) None of the above

12) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.

a) Swatantra b) Partantra
c) Prosperous d) None of the above

13) To be in state of _____ is unhappiness.

a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

14) Which of following leads to variety of problems at different levels of our living?

a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

15) Working only for physical facilities in living is called _____.

a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

16) Self and _____ are different in nature, materiality, needs and activities.

a) Trust b) Body
c) Belief d) None of the above

17) Sukh and _____ both are needed and can't replace each other.

a) Self b) Body
c) Suvidha d) Belief

18) In value education Sanyama means _____.

a) Self-regulation b) Health
c) Happiness d) Prosperity

19) Sadupyog of the Body mean _____ of the Body.

a) Self-regulation b) Care
c) Happiness d) Right utilization

20) Knowing means having the _____.

a) Assumption b) Right understanding
c) Right feeling d) None of the above

21) Each human being is co-existence of the _____ and the _____.

a) self, self b) body, body
c) self, body d) None of the above

22) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.

a) Swasthya b) Sanyam
c) Prosperity d) None of the above

23) The system of the body works in a _____ way.

a) Happy b) Self organized
c) Random d) Independent

24) The self is _____ in nature while body is _____ in nature.

a) Unconscious, Physico-chemical
b) Conscious, Physico-chemical
c) Physico-chemical, Conscious
d) Physico-chemical, Unconscious

25) The activity of desire, thought and expecting together is called as _____.

a) Body b) Health
c) Imagination d) Future

26) Harmony should be maintained in _____.

a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

27) Sah-astitva means _____.

a) Co-existence b) Co-operation
c) Co-ordination d) Corporate identity

28) The process of education and right living leads to _____ in the individual.

a) Right understanding b) Health
c) Prosperity d) None of the above

29) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness b) Confusion
c) Confidence d) Fear

30) _____ is the foundational value in relationship.

a) Respect b) Love
c) Trust d) Glory

31) To be assured of others at all time is the feeling of _____.

a) Respect b) Love
c) Trust d) Glory

32) _____ is the feeling for someone who has made efforts for excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

33) _____ is the feeling of acceptance for those who have made efforts for my excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

34) The feeling of relatedness to all human beings is called _____.

a) Love b) Affection
c) Gratitude d) Respect

35) All the units of nature can be classified into _____ orders.

a) Two b) Three
c) Four d) Six

36) Which of the following does not form an order in nature?

a) Bio b) Animal
c) Consciousness d) Human

37) Which of the following statement is not true?

a) There is interconnectedness in nature
b) There is recyclability and self-regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

38) Harmony in the family is the building block for harmony in the _____.

a) society b) individual
c) friend d) relative

39) _____ in the family means that the family is able to identify its needs.

a) wealth b) prosperity
c) harmony d) happiness

40) _____ means right evaluation.

a) Respect b) Love
c) Trust d) Glory

41) Value education enables us _____.

a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

42) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

43) _____ is the basic unit of any human society.

a) Group b) Individual
c) Nature d) Society

44) Natural acceptance & _____ are the two processes of knowing.

a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

45) Present Education system gives more focus to skills.

a) True b) False
c) May be d) None of the above

46) Value of an entity is _____.

a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

47) _____ are as Basic Human Aspirations.

a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

48) Any course content on value education needs to be _____.

a) Universal b) Rational
c) Natural d) All of above

49) When we live with correct understanding of values, we feel _____.

a) Deprived
b) Frustrated
c) Happy
d) Unhappy

50) Following are the basic guidelines for value education except _____.

a) Universal
b) Personal
c) Rational
d) Natural

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Engineering Mathematics – III (BTN06301)

Day & Date: Monday, 18-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and state it clearly.
5) Use of non-programmable scientific calculator allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The complementary function of the equation $[(D+1)^2(D+4)]y = 2t$ is _____.

a) $c_1e^{-t} + c_2e^{-4t} + c_3e^{t}$ b) $c_1\cos t + c_2\sin t + c_3e^{-4t}$

c) $(c_1 + c_2t)e^{t} + c_3e^{-4t}$ d) $(c_1 + c_2t)e^{-t} + c_3e^{-4t}$

2) The general solution of $(D^4 + 2D^2 + 1)y = 0$ is _____.

a) $c_1\cos x + c_2\sin x + c_3\cos x + c_4\sin x$

b) $(c_1 + c_2x)e^{x}$

c) $(c_1 + c_2x)\cos x + (c_3 + c_4x)\sin x$

d) $(c_1 + c_2x + c_3x^2 + c_4x^3)e^{-x}$

3) The value of the integral $\int_0^{\infty} e^{-2t}\cos 3t dt$ is _____.

a) $1/13$ b) $2/13$

c) 13^2 d) 13

4) $L^{-1}\left\{\frac{1}{s^2-3^2}\right\} =$ _____.

a) $\frac{1}{3}\sin 3t$ b) $\frac{1}{3}\cos 3t$

c) $\frac{1}{3}\cosh 3t$ d) $\frac{1}{3}\sinh 3t$

5) The formula used for solving the equation using Regula Falsi method is _____.

I) $x = \frac{bf(a) - af(b)}{f(a) - f(b)}$ II) $x = \frac{af(b) - bf(a)}{f(a) - f(b)}$

a) Only I is correct b) Only II is correct

c) Both I, II are correct d) Both I, II are incorrect

6) The value of $\int_0^1 \frac{dx}{1+x}$ by Gaussian three point formula is _____.

a) 0.6931 b) 0.7931
c) 0.8931 d) None

7) Which of the following is not a Dirichlet's condition?

a) $f(x)$ is periodic b) $f(x)$ is single valued
c) $f(x)$ is even function d) $f(x)$ is infinite

8) If $f(x) = x^2$ is expanded as a cosine series in $(0, \pi)$ then the constant term is _____.

a) $\frac{\pi^2}{3}$ b) $\frac{\pi^3}{3}$
c) $\frac{2\pi^2}{3}$ d) $\frac{3\pi^2}{2}$

9) Correlation analysis help us to _____ our activities.

a) Control b) Plan
c) Predict d) All of above

10) A discrete probability distribution function of a discrete random variable is given by,

x:	0	1	2	3	4
$P(x)$:	k	$3k$	$5k$	$4k$	$2k$

then $k =$ _____.

a) $1/3$ b) $1/15$
c) $1/5$ d) 1

11) If $L\{f(t)\} = \frac{1}{s}e^{-1/s}$, then $L\{f(3t)\} =$ _____.

a) $\frac{1}{s}e^{-3/s}$ b) $\frac{1}{3s}e^{-3/s}$
c) $\frac{1}{3}e^{-3/s}$ d) $\frac{1}{3}e^{-s/3}$

12) If $b_{yx} = {}^{5}/_{18}$, $b_{xy} = {}^{8}/_{5}$, then $r =$ _____.

a) $2/5$ b) $2/3$
c) $1/2$ d) $3/2$

13) The Fourier cosine transform of $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 1 \end{cases}$ is _____.

a) $\sqrt{\frac{2}{\pi}}s$ b) $\sqrt{\frac{2}{\pi}}\sin s$
c) $\sqrt{\frac{2}{\pi}}\frac{\sin s}{s}$ d) $\sqrt{\frac{2}{\pi}}\frac{s}{\sin s}$

14) The Fourier sine integral of $f(x)$ is _____.

a) $\int_0^\infty f(s) \sin ws \, ds$

b) $\int_0^\infty \sin wx \times \left(\int_0^\infty f(w) \sin ws \, ds\right) dw$

c) $\frac{1}{\pi}\int_0^\infty \sin wx \times \left(\int_0^\infty f(w) \sin ws \, ds\right) dw$

d) $\frac{2}{\pi}\int_0^\infty \sin wx \times \left(\int_0^\infty f(w) \sin ws \, ds\right) dw$

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Engineering Mathematics – III (BTN06301)

Day & Date: Monday, 18-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and state it clearly.
4) Use of non-programmable scientific calculator allowed.

Section – I

Q.2 Attempt the following. (Any Three) **09**

a) Solve $(D^4 + 8D^2 + 16)y = \sin^2 x$

b) Obtain Fourier series expansion of $f(x) = \frac{x(\pi^2 - x^2)}{12}$ in $(-\pi, \pi)$.

c) In a sample of 1000 students, the mean and standard deviation of marks obtained by the students in a certain test are 14 and 2.5. Assuming the distribution to be normal find the number of students getting marks
i) between 12 and 15
ii) above 18
iii) below 8

(Given: - For a S. N. V. z area between $z = 0$ and $z = 0.4$ is 0.1554, that between $z = 0$ and $z = 0.8$ is 0.2881, that between $z = 0$ and $z = 1.6$ is 0.4452, that between $z = 0$ and $z = 2.4$ is 0.4918.)

d) Calculate
i) k
ii) $p(x > 5)$
iii) $p(0 \leq x \leq 5)$, if a random variable x has the following probability distribution

x	1	2	3	4	5	6	7
$p(x)$	k	$2k$	$3k$	k^2	$k^2 + k$	$2k^2$	$4k^2$

e) Solve $(D^2 - 2D + 1)y = x^2 e^{3x}$

Q.3 Attempt the following. (Any Three) **09**

a) Solve $(D^3 - D^2 - 6D)y = x^2 + 1$

b) Obtain half range cosine series of $f(x) = e^{-x}$ in $0 < x < \pi$

c) Calculate the correlation co-efficient between x and y, if Nine students obtained the following percentage of marks in the college examination (x) and in the University examination (y).

x	51	53	73	46	50	60	47	36	60
y	49	72	74	44	58	66	50	30	55

d) Assuming that half of the population in a city is vegetarian so that the chance of an individual being vegetarian is 1/2 and assuming that 100 investigators take a sample of 10 individuals to see whether they are vegetarian, how many investigators would you expect to report that three people or less were vegetarian.

e) Obtain the Fourier series expansion of, $f(x) = 2x - x^2$ in $(0,3)$.

Q.4 Attempt the following. (Any Two) **10**

a) An uncharged condenser of capacity C is charged by applying an electromotive force of value $\mathrm{E}\sin\mathrm{pt}$ through the leads of an inductance L and negligible resistance. The charge Q on the plate of the condenser satisfies the differential equation $\frac{d^2Q}{dt^2} + \frac{Q}{LC} = \frac{E}{L}\sin nt$. Prove that charge at any time t is given by, $Q = \frac{E}{2n^2L}[\sin nt - nt.\cos nt]$ where $n^2 = \frac{1}{LC}$

b) Obtain the Fourier series of, $f(x) = \left(\frac{\pi - x}{2}\right)^2$, in $(0,2\pi)$ and hence deduce that.

$$\frac{\pi^2}{6} = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots$$

c) Calculate the equations of two lines of regression and calculate expected height of son when the height of father is 154 cms. Heights of fathers and sons are given below.

Ht. of Father(x)	150	152	155	157	160	161	164	166
Ht. of Son(y)	154	156	158	159	160	162	161	164

Section – II

Q.5 Attempt the following. (Any Three) **09**

a) Find $L\{t.\sqrt{1-\sin t}\}$.

b) Find the Fourier Transform of $f(x) = e^{-x2}$

c) Find the root of the equation $4x - e^x = 0$ that lies between 2 and 3 by using Newton Raphson method correct up to four decimal places.

d) Apply Simpson's 1/3rd rule to evaluate $\int_0^1 \frac{x^2}{1+x^3}dx$ with $h = 0.25$

e) Find the inverse Laplace transform of $\frac{s+29}{(s+4)(s^2+9)}$.

Q.6 Attempt the following. (Any Three) **09**

a) Evaluate $\int_0^\infty e^{-t}\left(\frac{1-\cos t}{t}\right)dt$

b) Apply Simpson's 3/8th rule to evaluate $\int_0^6 \frac{1}{1+x}dx$. Also check answer with exact solution.

c) Find the Fourier sine transform of $f(x) = \frac{1}{x}$

d) Find $L^{-1}\left\{\log\left(1+\frac{a^2}{s^2}\right)\right\}$

e) Apply Gaussian Quadrature 2-point formula to evaluate $\int_{-2}^{2} e^{-x/2}\,dx$

Q.7 Attempt the following. (Any Two) **10**

a) Using Laplace transform method.
solve $y''(t)-2y'(t)+y(t)=e^{2t}$, with $y(0)=0, y'(0)=-1$.

b) Find the double root of the equation $x^3-5.4x^2+9.24x-5.096=0$.
Given that it is near to 1.5

c) Express $f(x)=\sin x, 0\le x<\pi$
$=0, x=\pi$
$=0, x>\pi$ as Fourier integral and hence deduce that
$\int_0^{\infty}\frac{\cos(\omega\pi/2)}{1-\omega^2}d\omega=\frac{\pi}{2}$

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Engineering Mathematics – III (BTN06301)

Day & Date: Monday, 18-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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a) $\frac{\pi^2}{3}$ b) $\frac{\pi^3}{3}$
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then $k =$ _____.

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4) If $L\{f(t)\} = \frac{1}{s}e^{-1/s}$, then $L\{f(3t)\} =$ _____.

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13) The value of $\int_0^1 \frac{dx}{1+x}$ by Gaussian three point formula is _____.

a) 0.6931 b) 0.7931

c) 0.8931 d) None

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c) $f(x)$ is even function d) $f(x)$ is infinite

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Engineering Mathematics – III (BTN06301)

Day & Date: Monday, 18-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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4) Use of non-programmable scientific calculator allowed.

Section – I

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(Given: - For a S. N. V. z area between $z = 0$ and $z = 0.4$ is 0.1554, that between $z = 0$ and $z = 0.8$ is 0.2881, that between $z = 0$ and $z = 1.6$ is 0.4452, that between $z = 0$ and $z = 2.4$ is 0.4918.)

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ii) $p(x > 5)$
iii) $p(0 \leq x \leq 5)$, if a random variable x has the following probability distribution

x	1	2	3	4	5	6	7
$p(x)$	k	$2k$	$3k$	k^2	$k^2 + k$	$2k^2$	$4k^2$

e) Solve $(D^2 - 2D + 1)y = x^2 e^{3x}$

Q.3 Attempt the following. (Any Three) **09**

a) Solve $(D^3 - D^2 - 6D)y = x^2 + 1$

b) Obtain half range cosine series of $f(x) = e^{-x}$ in $0 < x < \pi$

c) Calculate the correlation co-efficient between x and y, if Nine students obtained the following percentage of marks in the college examination (x) and in the University examination (y).

x	51	53	73	46	50	60	47	36	60
y	49	72	74	44	58	66	50	30	55

d) Assuming that half of the population in a city is vegetarian so that the chance of an individual being vegetarian is 1/2 and assuming that 100 investigators take a sample of 10 individuals to see whether they are vegetarian, how many investigators would you expect to report that three people or less were vegetarian.

e) Obtain the Fourier series expansion of, $f(x) = 2x - x^2$ in $(0,3)$.

Q.4 Attempt the following. (Any Two) **10**

a) An uncharged condenser of capacity C is charged by applying an electromotive force of value $\mathrm{E}\sin\mathrm{pt}$ through the leads of an inductance L and negligible resistance. The charge Q on the plate of the condenser satisfies the differential equation $\frac{d^2Q}{dt^2} + \frac{Q}{LC} = \frac{E}{L}\sin nt$. Prove that charge at any time t is given by, $Q = \frac{E}{2n^2L}[\sin nt - nt.\cos nt]$ where $n^2 = \frac{1}{LC}$

b) Obtain the Fourier series of, $f(x) = \left(\frac{\pi - x}{2}\right)^2$, in $(0,2\pi)$ and hence deduce that.

$$\frac{\pi^2}{6} = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots$$

c) Calculate the equations of two lines of regression and calculate expected height of son when the height of father is 154 cms. Heights of fathers and sons are given below.

Ht. of Father(x)	150	152	155	157	160	161	164	166
Ht. of Son(y)	154	156	158	159	160	162	161	164

Section – II

Q.5 Attempt the following. (Any Three) **09**

a) Find $L\{t.\sqrt{1-\sin t}\}$.

b) Find the Fourier Transform of $f(x) = e^{-x2}$

c) Find the root of the equation $4x - e^x = 0$ that lies between 2 and 3 by using Newton Raphson method correct up to four decimal places.

d) Apply Simpson's 1/3rd rule to evaluate $\int_0^1 \frac{x^2}{1+x^3}\,dx$ with $h = 0.25$

e) Find the inverse Laplace transform of $\frac{s+29}{(s+4)(s^2+9)}$.

Q.6 Attempt the following. (Any Three) **09**

a) Evaluate $\int_0^\infty e^{-t}\left(\frac{1-\cos t}{t}\right)dt$

b) Apply Simpson's 3/8th rule to evaluate $\int_0^6 \frac{1}{1+x}\,dx$. Also check answer with exact solution.

c) Find the Fourier sine transform of $f(x) = \frac{1}{x}$

d) Find $L^{-1}\left\{\log\left(1+\frac{a^2}{s^2}\right)\right\}$

e) Apply Gaussian Quadrature 2-point formula to evaluate $\int_{-2}^{2} e^{-x/2}\,dx$

Q.7 Attempt the following. (Any Two) **10**

a) Using Laplace transform method.
solve $y''(t)-2y'(t)+y(t)=e^{2t}$, with $y(0)=0, y'(0)=-1$.

b) Find the double root of the equation $x^3-5.4x^2+9.24x-5.096=0$.
Given that it is near to 1.5

c) Express $f(x)=\sin x, 0\le x<\pi$
$=0, x=\pi$
$=0, x>\pi$ as Fourier integral and hence deduce that
$\int_0^{\infty}\frac{\cos(\omega\pi/2)}{1-\omega^2}d\omega=\frac{\pi}{2}$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Engineering Mathematics – III (BTN06301)

Day & Date: Monday, 18-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and state it clearly.
5) Use of non-programmable scientific calculator allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) If $L\{f(t)\} = \frac{1}{s}e^{-1/s}$, then $L\{f(3t)\} =$ _____.

a) $\frac{1}{s}e^{-3/s}$ b) $\frac{1}{3s}e^{-3/s}$

c) $\frac{1}{3}e^{-3/s}$ d) $\frac{1}{3}e^{-s/3}$

2) If $b_{yx} = {}^{5}/_{18}$, $b_{xy} = {}^{8}/_{5}$, then $r =$ _____.

a) $2/5$ b) $2/3$

c) $1/2$ d) $3/2$

3) The Fourier cosine transform of $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 1 \end{cases}$ is _____.

a) $\sqrt{\frac{2}{\pi}}s$ b) $\sqrt{\frac{2}{\pi}}\sin s$

c) $\sqrt{\frac{2}{\pi}}\frac{\sin s}{s}$ d) $\sqrt{\frac{2}{\pi}}\frac{s}{\sin s}$

4) The Fourier sine integral of $f(x)$ is _____.

a) $\int_0^\infty f(s)\sin ws\, ds$

b) $\int_0^\infty \sin wx \times \left(\int_0^\infty f(w)\sin ws\, ds\right)dw$

c) $\frac{1}{\pi}\int_0^\infty \sin wx \times \left(\int_0^\infty f(w)\sin ws\, ds\right)dw$

d) $\frac{2}{\pi}\int_0^\infty \sin wx \times \left(\int_0^\infty f(w)\sin ws\, ds\right)dw$

5) The complementary function of the equation $[(D+1)^2(D+4)]y = 2t$ is _____.

a) $c_1e^{-t} + c_2e^{-4t} + c_3e^{t}$ b) $c_1\cos t + c_2\sin t + c_3e^{-4t}$

c) $(c_1 + c_2t)e^{t} + c_3e^{-4t}$ d) $(c_1 + c_2t)e^{-t} + c_3e^{-4t}$

6) The general solution of $(D^4 + 2D^2 + 1)y = 0$ is _____.

a) $c_1\cos x + c_2\sin x + c_3\cos x + c_4\sin x$

b) $(c_1 + c_2x)e^{x}$

c) $(c_1 + c_2x)\cos x + (c_3 + c_4x)\sin x$

d) $(c_1 + c_2x + c_3x^2 + c_4x^3)e^{-x}$

7) The value of the integral $\int_0^{\infty} e^{-2t}\cos 3t dt$ is _____.

a) $1/13$ b) $2/13$

c) 13^2 d) 13

8) $L^{-1}\left\{\frac{1}{s^2-3^2}\right\} =$ _____.

a) $\frac{1}{3}\sin 3t$ b) $\frac{1}{3}\cos 3t$

c) $\frac{1}{3}\cosh 3t$ d) $\frac{1}{3}\sinh 3t$

9) The formula used for solving the equation using Regula Falsi method is _____.

I) $x = \frac{bf(a) - af(b)}{f(a) - f(b)}$ II) $x = \frac{af(b) - bf(a)}{f(a) - f(b)}$

a) Only I is correct b) Only II is correct

c) Both I, II are correct d) Both I, II are incorrect

10) The value of $\int_0^1 \frac{dx}{1+x}$ by Gaussian three point formula is _____.

a) 0.6931 b) 0.7931

c) 0.8931 d) None

11) Which of the following is not a Dirichlet's condition?

a) $f(x)$ is periodic b) $f(x)$ is single valued

c) $f(x)$ is even function d) $f(x)$ is infinite

12) If $f(x) = x^2$ is expanded as a cosine series in $(0, \pi)$ then the constant term is _____.

a) $\frac{\pi^2}{3}$ b) $\frac{\pi^3}{3}$

c) $\frac{2\pi^2}{3}$ d) $\frac{3\pi^2}{2}$

13) Correlation analysis help us to _____ our activities.

a) Control
b) Plan
c) Predict
d) All of above

14) A discrete probability distribution function of a discrete random variable is given by,

x:	0	1	2	3	4
$P(x)$:	k	$3k$	$5k$	$4k$	$2k$

then $k =$ _____.

a) $1/3$
b) $1/15$
c) $1/5$
d) 1

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Engineering Mathematics – III (BTN06301)

Day & Date: Monday, 18-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and state it clearly.
4) Use of non-programmable scientific calculator allowed.

Section – I

Q.2 Attempt the following. (Any Three) **09**

a) Solve $(D^4 + 8D^2 + 16)y = \sin^2 x$

b) Obtain Fourier series expansion of $f(x) = \frac{x(\pi^2 - x^2)}{12}$ in $(-\pi, \pi)$.

c) In a sample of 1000 students, the mean and standard deviation of marks obtained by the students in a certain test are 14 and 2.5. Assuming the distribution to be normal find the number of students getting marks
i) between 12 and 15
ii) above 18
iii) below 8

(Given: - For a S. N. V. z area between $z = 0$ and $z = 0.4$ is 0.1554, that between $z = 0$ and $z = 0.8$ is 0.2881, that between $z = 0$ and $z = 1.6$ is 0.4452, that between $z = 0$ and $z = 2.4$ is 0.4918.)

d) Calculate
i) k
ii) $p(x > 5)$
iii) $p(0 \leq x \leq 5)$, if a random variable x has the following probability distribution

x	1	2	3	4	5	6	7
$p(x)$	k	$2k$	$3k$	k^2	$k^2 + k$	$2k^2$	$4k^2$

e) Solve $(D^2 - 2D + 1)y = x^2 e^{3x}$

Q.3 Attempt the following. (Any Three) **09**

a) Solve $(D^3 - D^2 - 6D)y = x^2 + 1$

b) Obtain half range cosine series of $f(x) = e^{-x}$ in $0 < x < \pi$

c) Calculate the correlation co-efficient between x and y, if Nine students obtained the following percentage of marks in the college examination (x) and in the University examination (y).

x	51	53	73	46	50	60	47	36	60
y	49	72	74	44	58	66	50	30	55

d) Assuming that half of the population in a city is vegetarian so that the chance of an individual being vegetarian is 1/2 and assuming that 100 investigators take a sample of 10 individuals to see whether they are vegetarian, how many investigators would you expect to report that three people or less were vegetarian.

e) Obtain the Fourier series expansion of, $f(x) = 2x - x^2$ in $(0,3)$.

Q.4 Attempt the following. (Any Two) **10**

a) An uncharged condenser of capacity C is charged by applying an electromotive force of value $\mathrm{E}\sin\mathrm{pt}$ through the leads of an inductance L and negligible resistance. The charge Q on the plate of the condenser satisfies the differential equation $\frac{d^2Q}{dt^2} + \frac{Q}{LC} = \frac{E}{L}\sin nt$. Prove that charge at any time t is given by, $Q = \frac{E}{2n^2L}[\sin nt - nt.\cos nt]$ where $n^2 = \frac{1}{LC}$

b) Obtain the Fourier series of, $f(x) = \left(\frac{\pi - x}{2}\right)^2$, in $(0,2\pi)$ and hence deduce that.

$$\frac{\pi^2}{6} = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots$$

c) Calculate the equations of two lines of regression and calculate expected height of son when the height of father is 154 cms. Heights of fathers and sons are given below.

Ht. of Father(x)	150	152	155	157	160	161	164	166
Ht. of Son(y)	154	156	158	159	160	162	161	164

Section – II

Q.5 Attempt the following. (Any Three) **09**

a) Find $L\{t.\sqrt{1-\sin t}\}$.

b) Find the Fourier Transform of $f(x) = e^{-x2}$

c) Find the root of the equation $4x - e^x = 0$ that lies between 2 and 3 by using Newton Raphson method correct up to four decimal places.

d) Apply Simpson's 1/3rd rule to evaluate $\int_0^1 \frac{x^2}{1+x^3}\,dx$ with $h = 0.25$

e) Find the inverse Laplace transform of $\frac{s+29}{(s+4)(s^2+9)}$.

Q.6 Attempt the following. (Any Three) **09**

a) Evaluate $\int_0^\infty e^{-t}\left(\frac{1-\cos t}{t}\right)dt$

b) Apply Simpson's 3/8th rule to evaluate $\int_0^6 \frac{1}{1+x}\,dx$. Also check answer with exact solution.

c) Find the Fourier sine transform of $f(x) = \frac{1}{x}$

d) Find $L^{-1}\left\{\log\left(1+\frac{a^2}{s^2}\right)\right\}$

e) Apply Gaussian Quadrature 2-point formula to evaluate $\int_{-2}^{2} e^{-x/2}\,dx$

Q.7 Attempt the following. (Any Two) **10**

a) Using Laplace transform method.
solve $y''(t)-2y'(t)+y(t)=e^{2t}$, with $y(0)=0, y'(0)=-1$.

b) Find the double root of the equation $x^3-5.4x^2+9.24x-5.096=0$.
Given that it is near to 1.5

c) Express $f(x)=\sin x, 0\le x<\pi$
$=0, x=\pi$
$=0, x>\pi$ as Fourier integral and hence deduce that
$\int_0^{\infty}\frac{\cos(\omega\pi/2)}{1-\omega^2}d\omega=\frac{\pi}{2}$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Engineering Mathematics – III (BTN06301)

Day & Date: Monday, 18-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and state it clearly.
5) Use of non-programmable scientific calculator allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The value of $\int_0^1 \frac{dx}{1+x}$ by Gaussian three point formula is _____.

a) 0.6931 b) 0.7931
c) 0.8931 d) None

2) Which of the following is not a Dirichlet's condition?

a) $f(x)$ is periodic b) $f(x)$ is single valued
c) $f(x)$ is even function d) $f(x)$ is infinite

3) If $f(x) = x^2$ is expanded as a cosine series in $(0, \pi)$ then the constant term is _____.

a) $\frac{\pi^2}{3}$ b) $\frac{\pi^3}{3}$
c) $\frac{2\pi^2}{3}$ d) $\frac{3\pi^2}{2}$

4) Correlation analysis help us to _____ our activities.

a) Control b) Plan
c) Predict d) All of above

5) A discrete probability distribution function of a discrete random variable is given by,

x:	0	1	2	3	4
$P(x)$:	k	$3k$	$5k$	$4k$	$2k$

then $k =$ _____.

a) $1/3$ b) $1/15$
c) $1/5$ d) 1

6) If $L\{f(t)\} = \frac{1}{s}e^{-1/s}$, then $L\{f(3t)\} =$ _____.

a) $\frac{1}{s}e^{-3/s}$ b) $\frac{1}{3s}e^{-3/s}$

c) $\frac{1}{3}e^{-3/s}$ d) $\frac{1}{3}e^{-s/3}$

7) If $b_{yx} = {}^{5}/_{18}, b_{xy} = {}^{8}/_{5}$, then $r =$ _____.

a) $2/5$ b) $2/3$

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8) The Fourier cosine transform of $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 1 \end{cases}$ is _____.

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c) $\sqrt{\frac{2}{\pi}}\frac{\sin s}{s}$ d) $\sqrt{\frac{2}{\pi}}\frac{s}{\sin s}$

9) The Fourier sine integral of $f(x)$ is _____.

a) $\int_0^\infty f(s)\sin ws\, ds$

b) $\int_0^\infty \sin wx \times \left(\int_0^\infty f(w)\sin ws\, ds\right)dw$

c) $\frac{1}{\pi}\int_0^\infty \sin wx \times \left(\int_0^\infty f(w)\sin ws\, ds\right)dw$

d) $\frac{2}{\pi}\int_0^\infty \sin wx \times \left(\int_0^\infty f(w)\sin ws\, ds\right)dw$

10) The complementary function of the equation $[(D+1)^2(D+4)]y = 2t$ is _____.

a) $c_1e^{-t} + c_2e^{-4t} + c_3e^{t}$ b) $c_1\cos t + c_2\sin t + c_3e^{-4t}$

c) $(c_1 + c_2t)e^{t} + c_3e^{-4t}$ d) $(c_1 + c_2t)e^{-t} + c_3e^{-4t}$

11) The general solution of $(D^4 + 2D^2 + 1)y = 0$ is _____.

a) $c_1\cos x + c_2\sin x + c_3\cos x + c_4\sin x$

b) $(c_1 + c_2x)e^{x}$

c) $(c_1 + c_2x)\cos x + (c_3 + c_4x)\sin x$

d) $(c_1 + c_2x + c_3x^2 + c_4x^3)e^{-x}$

12) The value of the integral $\int_0^\infty e^{-2t}\cos 3t dt$ is _____.

a) $1/13$ b) $2/13$

c) 13^2 d) 13

13) $L^{-1}\left\{\frac{1}{s^2-3^2}\right\} =$ _____.

a) $\frac{1}{3}\sin 3t$ b) $\frac{1}{3}\cos 3t$

c) $\frac{1}{3}\cosh 3t$ d) $\frac{1}{3}\sinh 3t$

14) The formula used for solving the equation using Regula Falsi method is _____.

I) $x = \frac{bf(a) - af(b)}{f(a) - f(b)}$ II) $x = \frac{af(b) - bf(a)}{f(a) - f(b)}$

a) Only I is correct b) Only II is correct

c) Both I, Il are correct d) Both I, II are incorrect

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Engineering Mathematics – III (BTN06301)

Day & Date: Monday, 18-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and state it clearly.
4) Use of non-programmable scientific calculator allowed.

Section – I

Q.2 Attempt the following. (Any Three) **09**

a) Solve $(D^4 + 8D^2 + 16)y = \sin^2 x$

b) Obtain Fourier series expansion of $f(x) = \frac{x(\pi^2 - x^2)}{12}$ in $(-\pi, \pi)$.

c) In a sample of 1000 students, the mean and standard deviation of marks obtained by the students in a certain test are 14 and 2.5. Assuming the distribution to be normal find the number of students getting marks
i) between 12 and 15
ii) above 18
iii) below 8

(Given: - For a S. N. V. z area between $z = 0$ and $z = 0.4$ is 0.1554, that between $z = 0$ and $z = 0.8$ is 0.2881, that between $z = 0$ and $z = 1.6$ is 0.4452, that between $z = 0$ and $z = 2.4$ is 0.4918.)

d) Calculate
i) k
ii) $p(x > 5)$
iii) $p(0 \leq x \leq 5)$, if a random variable x has the following probability distribution

x	1	2	3	4	5	6	7
$p(x)$	k	$2k$	$3k$	k^2	$k^2 + k$	$2k^2$	$4k^2$

e) Solve $(D^2 - 2D + 1)y = x^2 e^{3x}$

Q.3 Attempt the following. (Any Three) **09**

a) Solve $(D^3 - D^2 - 6D)y = x^2 + 1$

b) Obtain half range cosine series of $f(x) = e^{-x}$ in $0 < x < \pi$

c) Calculate the correlation co-efficient between x and y, if Nine students obtained the following percentage of marks in the college examination (x) and in the University examination (y).

x	51	53	73	46	50	60	47	36	60
y	49	72	74	44	58	66	50	30	55

d) Assuming that half of the population in a city is vegetarian so that the chance of an individual being vegetarian is 1/2 and assuming that 100 investigators take a sample of 10 individuals to see whether they are vegetarian, how many investigators would you expect to report that three people or less were vegetarian.

e) Obtain the Fourier series expansion of, $f(x) = 2x - x^2$ in $(0,3)$.

Q.4 Attempt the following. (Any Two) **10**

a) An uncharged condenser of capacity C is charged by applying an electromotive force of value $\mathrm{E}\sin\mathrm{pt}$ through the leads of an inductance L and negligible resistance. The charge Q on the plate of the condenser satisfies the differential equation $\frac{d^2Q}{dt^2} + \frac{Q}{LC} = \frac{E}{L}\sin nt$. Prove that charge at any time t is given by, $Q = \frac{E}{2n^2L}[\sin nt - nt.\cos nt]$ where $n^2 = \frac{1}{LC}$

b) Obtain the Fourier series of, $f(x) = \left(\frac{\pi - x}{2}\right)^2$, in $(0,2\pi)$ and hence deduce that.

$$\frac{\pi^2}{6} = \frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + \frac{1}{4^2} + \cdots$$

c) Calculate the equations of two lines of regression and calculate expected height of son when the height of father is 154 cms. Heights of fathers and sons are given below.

Ht. of Father(x)	150	152	155	157	160	161	164	166
Ht. of Son(y)	154	156	158	159	160	162	161	164

Section – II

Q.5 Attempt the following. (Any Three) **09**

a) Find $L\{t.\sqrt{1-\sin t}\}$.

b) Find the Fourier Transform of $f(x) = e^{-x2}$

c) Find the root of the equation $4x - e^x = 0$ that lies between 2 and 3 by using Newton Raphson method correct up to four decimal places.

d) Apply Simpson's 1/3rd rule to evaluate $\int_0^1 \frac{x^2}{1+x^3}\,dx$ with $h = 0.25$

e) Find the inverse Laplace transform of $\frac{s+29}{(s+4)(s^2+9)}$.

Q.6 Attempt the following. (Any Three) **09**

a) Evaluate $\int_0^\infty e^{-t}\left(\frac{1-\cos t}{t}\right)dt$

b) Apply Simpson's 3/8th rule to evaluate $\int_0^6 \frac{1}{1+x}\,dx$. Also check answer with exact solution.

c) Find the Fourier sine transform of $f(x) = \frac{1}{x}$

d) Find $L^{-1}\left\{\log\left(1+\frac{a^2}{s^2}\right)\right\}$

e) Apply Gaussian Quadrature 2-point formula to evaluate $\int_{-2}^{2} e^{-x/2}\,dx$

Q.7 Attempt the following. (Any Two) **10**

a) Using Laplace transform method.
solve $y''(t)-2y'(t)+y(t)=e^{2t}$, with $y(0)=0, y'(0)=-1$.

b) Find the double root of the equation $x^3-5.4x^2+9.24x-5.096=0$.
Given that it is near to 1.5

c) Express $f(x)=\sin x, 0\le x<\pi$
$=0, x=\pi$
$=0, x>\pi$ as Fourier integral and hence deduce that
$\int_0^{\infty}\frac{\cos(\omega\pi/2)}{1-\omega^2}d\omega=\frac{\pi}{2}$

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Digital Techniques (BTN06304)

Day & Date: Wednesday, 20-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Which of the following Boolean expressions represents a valid Sum of Products (SOP) form?
a) $((A+B)(B+C))$ b) $(\bar{A}'+\bar{B}'C)$
c) $((A+\bar{B}').\bar{C}')$ d) $(A(B+C))$

2) The individual product terms in a Sum of Products (SOP) expression are commonly known as _____.
a) Maxterms b) Minterms
c) Sum terms d) Literal terms

3) How many total cells are present in a 4-variable K-map?
a) 4 b) 8
c) 16 d) 32

4) How is the minterm represented when the input variables are $(A=0, B=0, C=1)$?
a) $(A+B+\bar{C}')$ b) $(\bar{A}'\bar{B}'C)$
c) $(A+\bar{B}'+C)$ d) $(\bar{A}'+\bar{B}'+\bar{C}')$

5) Which of the following grouping sizes is invalid when combining cells in a K-map?
a) 2 b) 4
c) 6 d) 8

6) What logic gates are required to construct a half adder?
a) One XOR gate and one OR gate
b) One XOR gate and one AND gate
c) One XNOR gate and one AND gate
d) One XOR gate and one NOR gate

7) If the inputs to a half adder are $(A = 1)$ and $(B = 1)$, what are the Sum $((S))$ and Carry $((C))$ outputs?

a) $(S = 0, C = 0)$ b) $(S = 1, C = 0)$
c) $(S = 0, C = 1)$ d) $(S = 1, C = 1)$

8) A multiplexer is classified as which type of digital circuit?

a) Sequential circuit b) Combinational circuit
c) Memory circuit d) Amplifier circuit

9) Which logic gates are primarily used to construct a basic RS flip-flop?

a) AND and OR b) EX-OR and EX-NOR
c) NOR and NAND d) NOT and AND

10) How many stable states does a D flip-flop have?

a) One b) Two
c) Three d) Four

11) What is the output state of a $J - K$ flip-flop when $(J = 0)$ and $(K = 1)$?

a) Set $((Q = 1))$ b) Reset $((Q = 0))$
c) No change d) Toggle

12) The race around condition typically occurs in which of the following?

a) S-R flip-flop b) Level-triggered J-K flip-flop
c) Edge-triggered D flip-flop d) Master-Slave J-K flip-flop

13) In a 4-bit SISO shift register, what is the total number of clock cycles required to shift in a 4-bit data stream completely?

a) 3 b) 4
c) 5 d) 8

14) What is the fundamental building block used to construct a SISO shift register?

a) Logic gates b) Multiplexers
c) Flip-flops d) Decoders

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Digital Techniques (BTN06304)

Day & Date: Wednesday, 20-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Create Gray code from the following binary numbers:
i) (1111)
ii) (1011)

b) Using the logic diagram that goes with it, describe how a half adder works.

c) Use the truth table and logic diagram of a 4:1 multiplexer to demonstrate it.

d) Describe in detail how to use K-maps to solve and simplify Boolean equations.

e) Describe the logic function's standard representation.

Q.3 Attempt the following. (Any Two) **12**

a) Describe the Binary to Gray conversion in great detail.

b) Using a suitable diagram and truth table, describe the Full Adder.

c) Utilize the K Map to resolve
$F(A, B, C, D) = \sum(0, 2, 3, 4, 5, 10, 13, 14, 15)$

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Describe the SR Flip-Flop using logic gates.

b) Using a suitable diagram and truth table, explain T-Flip-Flop.

c) Describe the distinctions between sequential circuits that are synchronous and asynchronous.

d) Using a suitable graphic, explain the SIPO type shift register.

e) What is meant by the Race-Round condition? Explain the plan for resolving this situation.

Q.5 Attempt the following. (Any Two) **12**

a) Design the MOD-10 Counter.

b) Using a suitable truth table and diagram, describe the JK flip flop.

c) Using a suitable graphic, describe a 4-bit UP counter.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Digital Techniques (BTN06304)

Day & Date: Wednesday, 20-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) A multiplexer is classified as which type of digital circuit?
a) Sequential circuit b) Combinational circuit
c) Memory circuit d) Amplifier circuit

2) Which logic gates are primarily used to construct a basic RS flip-flop?
a) AND and OR b) EX-OR and EX-NOR
c) NOR and NAND d) NOT and AND

3) How many stable states does a D flip-flop have?
a) One b) Two
c) Three d) Four

4) What is the output state of a $J-K$ flip-flop when $(J=0)$ and $(K=1)$?
a) Set $((Q=1))$ b) Reset $((Q=0))$
c) No change d) Toggle

5) The race around condition typically occurs in which of the following?
a) S-R flip-flop b) Level-triggered J-K flip-flop
c) Edge-triggered D flip-flop d) Master-Slave J-K flip-flop

6) In a 4-bit SISO shift register, what is the total number of clock cycles required to shift in a 4-bit data stream completely?
a) 3 b) 4
c) 5 d) 8

7) What is the fundamental building block used to construct a SISO shift register?
a) Logic gates b) Multiplexers
c) Flip-flops d) Decoders

8) Which of the following Boolean expressions represents a valid Sum of Products (SOP) form?

a) $((A + B)(B + C))$ b) $(\bar{A}' + \bar{B}'C)$

c) $((A + \bar{B}').\bar{C}')$ d) $(A(B + C))$

9) The individual product terms in a Sum of Products (SOP) expression are commonly known as _____.

a) Maxterms b) Minterms

c) Sum terms d) Literal terms

10) How many total cells are present in a 4-variable K-map?

a) 4 b) 8

c) 16 d) 32

11) How is the minterm represented when the input variables are $(A = 0, B = 0, C = 1)$?

a) $(A + B + \bar{C}')$ b) $(\bar{A}'\bar{B}'C)$

c) $(A + \bar{B}' + C)$ d) $(\bar{A}' + \bar{B}' + \bar{C}')$

12) Which of the following grouping sizes is invalid when combining cells in a K-map?

a) 2 b) 4

c) 6 d) 8

13) What logic gates are required to construct a half adder?

a) One XOR gate and one OR gate

b) One XOR gate and one AND gate

c) One XNOR gate and one AND gate

d) One XOR gate and one NOR gate

14) If the inputs to a half adder are $(A = 1)$ and $(B = 1)$, what are the Sum $((S))$ and Carry $((C))$ outputs?

a) $(S = 0, C = 0)$ b) $(S = 1, C = 0)$

c) $(S = 0, C = 1)$ d) $(S = 1, C = 1)$

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Digital Techniques (BTN06304)

Day & Date: Wednesday, 20-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Create Gray code from the following binary numbers:
i) (1111)
ii) (1011)

b) Using the logic diagram that goes with it, describe how a half adder works.

c) Use the truth table and logic diagram of a 4:1 multiplexer to demonstrate it.

d) Describe in detail how to use K-maps to solve and simplify Boolean equations.

e) Describe the logic function's standard representation.

Q.3 Attempt the following. (Any Two) **12**

a) Describe the Binary to Gray conversion in great detail.

b) Using a suitable diagram and truth table, describe the Full Adder.

c) Utilize the K Map to resolve
$F(A, B, C, D) = \sum(0, 2, 3, 4, 5, 10, 13, 14, 15)$

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Describe the SR Flip-Flop using logic gates.

b) Using a suitable diagram and truth table, explain T-Flip-Flop.

c) Describe the distinctions between sequential circuits that are synchronous and asynchronous.

d) Using a suitable graphic, explain the SIPO type shift register.

e) What is meant by the Race-Round condition? Explain the plan for resolving this situation.

Q.5 Attempt the following. (Any Two) **12**

a) Design the MOD-10 Counter.

b) Using a suitable truth table and diagram, describe the JK flip flop.

c) Using a suitable graphic, describe a 4-bit UP counter.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Digital Techniques (BTN06304)

Day & Date: Wednesday, 20-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) What is the output state of a $J-K$ flip-flop when $(J=0)$ and $(K=1)$?
a) Set $((Q=1))$ b) Reset $((Q=0))$
c) No change d) Toggle

2) The race around condition typically occurs in which of the following?
a) S-R flip-flop b) Level-triggered J-K flip-flop
c) Edge-triggered D flip-flop d) Master-Slave J-K flip-flop

3) In a 4-bit SISO shift register, what is the total number of clock cycles required to shift in a 4-bit data stream completely?
a) 3 b) 4
c) 5 d) 8

4) What is the fundamental building block used to construct a SISO shift register?
a) Logic gates b) Multiplexers
c) Flip-flops d) Decoders

5) Which of the following Boolean expressions represents a valid Sum of Products (SOP) form?
a) $((A+B)(B+C))$ b) $(\bar{A}'+\bar{B}'C)$
c) $((A+\bar{B}').\bar{C}')$ d) $(A(B+C))$

6) The individual product terms in a Sum of Products (SOP) expression are commonly known as _____.
a) Maxterms b) Minterms
c) Sum terms d) Literal terms

7) How many total cells are present in a 4-variable K-map?
a) 4 b) 8
c) 16 d) 32

8) How is the minterm represented when the input variables are $(A = 0, B = 0, C = 1)$?
a) $(A + B + \bar{C}')$ b) $(\bar{A}'\bar{B}'C)$
c) $(A + \bar{B}' + C)$ d) $(\bar{A}' + \bar{B}' + \bar{C}')$

9) Which of the following grouping sizes is invalid when combining cells in a K-map?
a) 2 b) 4
c) 6 d) 8

10) What logic gates are required to construct a half adder?
a) One XOR gate and one OR gate
b) One XOR gate and one AND gate
c) One XNOR gate and one AND gate
d) One XOR gate and one NOR gate

11) If the inputs to a half adder are $(A = 1)$ and $(B = 1)$, what are the Sum $((S))$ and Carry $((C))$ outputs?
a) $(S = 0, C = 0)$ b) $(S = 1, C = 0)$
c) $(S = 0, C = 1)$ d) $(S = 1, C = 1)$

12) A multiplexer is classified as which type of digital circuit?
a) Sequential circuit b) Combinational circuit
c) Memory circuit d) Amplifier circuit

13) Which logic gates are primarily used to construct a basic RS flip-flop?
a) AND and OR b) EX-OR and EX-NOR
c) NOR and NAND d) NOT and AND

14) How many stable states does a D flip-flop have?
a) One b) Two
c) Three d) Four

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Digital Techniques (BTN06304)

Day & Date: Wednesday, 20-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Create Gray code from the following binary numbers:
i) (1111)
ii) (1011)

b) Using the logic diagram that goes with it, describe how a half adder works.

c) Use the truth table and logic diagram of a 4:1 multiplexer to demonstrate it.

d) Describe in detail how to use K-maps to solve and simplify Boolean equations.

e) Describe the logic function's standard representation.

Q.3 Attempt the following. (Any Two) **12**

a) Describe the Binary to Gray conversion in great detail.

b) Using a suitable diagram and truth table, describe the Full Adder.

c) Utilize the K Map to resolve
$F(A, B, C, D) = \sum(0, 2, 3, 4, 5, 10, 13, 14, 15)$

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Describe the SR Flip-Flop using logic gates.

b) Using a suitable diagram and truth table, explain T-Flip-Flop.

c) Describe the distinctions between sequential circuits that are synchronous and asynchronous.

d) Using a suitable graphic, explain the SIPO type shift register.

e) What is meant by the Race-Round condition? Explain the plan for resolving this situation.

Q.5 Attempt the following. (Any Two) **12**

a) Design the MOD-10 Counter.

b) Using a suitable truth table and diagram, describe the JK flip flop.

c) Using a suitable graphic, describe a 4-bit UP counter.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Digital Techniques (BTN06304)

Day & Date: Wednesday, 20-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) What logic gates are required to construct a half adder?
a) One XOR gate and one OR gate
b) One XOR gate and one AND gate
c) One XNOR gate and one AND gate
d) One XOR gate and one NOR gate

2) If the inputs to a half adder are $(A = 1)$ and $(B = 1)$, what are the Sum $((S))$ and Carry $((C))$ outputs?
a) $(S = 0, C = 0)$ b) $(S = 1, C = 0)$
c) $(S = 0, C = 1)$ d) $(S = 1, C = 1)$

3) A multiplexer is classified as which type of digital circuit?
a) Sequential circuit b) Combinational circuit
c) Memory circuit d) Amplifier circuit

4) Which logic gates are primarily used to construct a basic RS flip-flop?
a) AND and OR b) EX-OR and EX-NOR
c) NOR and NAND d) NOT and AND

5) How many stable states does a D flip-flop have?
a) One b) Two
c) Three d) Four

6) What is the output state of a $J - K$ flip-flop when $(J = 0)$ and $(K = 1)$?
a) Set $((Q = 1))$ b) Reset $((Q = 0))$
c) No change d) Toggle

7) The race around condition typically occurs in which of the following?
a) S-R flip-flop b) Level-triggered J-K flip-flop
c) Edge-triggered D flip-flop d) Master-Slave J-K flip-flop

8) In a 4-bit SISO shift register, what is the total number of clock cycles required to shift in a 4-bit data stream completely?

a) 3 b) 4
c) 5 d) 8

9) What is the fundamental building block used to construct a SISO shift register?

a) Logic gates b) Multiplexers
c) Flip-flops d) Decoders

10) Which of the following Boolean expressions represents a valid Sum of Products (SOP) form?

a) $((A + B)(B + C))$ b) $(\bar{A}' + \bar{B}'C)$
c) $((A + \bar{B}').\bar{C}')$ d) $(A(B + C))$

11) The individual product terms in a Sum of Products (SOP) expression are commonly known as _____.

a) Maxterms b) Minterms
c) Sum terms d) Literal terms

12) How many total cells are present in a 4-variable K-map?

a) 4 b) 8
c) 16 d) 32

13) How is the minterm represented when the input variables are $(A = 0, B = 0, C = 1)$?

a) $(A + B + \bar{C}')$ b) $(\bar{A}'\bar{B}'C)$
c) $(A + \bar{B}' + C)$ d) $(\bar{A}' + \bar{B}' + \bar{C}')$

14) Which of the following grouping sizes is invalid when combining cells in a K-map?

a) 2 b) 4
c) 6 d) 8

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - I) (CBCS) Examination: March/April – 2026
Digital Techniques (BTN06304)

Day & Date: Wednesday, 20-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Create Gray code from the following binary numbers:
i) (1111)
ii) (1011)

b) Using the logic diagram that goes with it, describe how a half adder works.

c) Use the truth table and logic diagram of a 4:1 multiplexer to demonstrate it.

d) Describe in detail how to use K-maps to solve and simplify Boolean equations.

e) Describe the logic function's standard representation.

Q.3 Attempt the following. (Any Two) **12**

a) Describe the Binary to Gray conversion in great detail.

b) Using a suitable diagram and truth table, describe the Full Adder.

c) Utilize the K Map to resolve
$F(A, B, C, D) = \sum(0, 2, 3, 4, 5, 10, 13, 14, 15)$

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Describe the SR Flip-Flop using logic gates.

b) Using a suitable diagram and truth table, explain T-Flip-Flop.

c) Describe the distinctions between sequential circuits that are synchronous and asynchronous.

d) Using a suitable graphic, explain the SIPO type shift register.

e) What is meant by the Race-Round condition? Explain the plan for resolving this situation.

Q.5 Attempt the following. (Any Two) **12**

a) Design the MOD-10 Counter.

b) Using a suitable truth table and diagram, describe the JK flip flop.

c) Using a suitable graphic, describe a 4-bit UP counter.

SLR-QH-124

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Signals and Systems (ENTPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Chose the correct alternatives from the options and rewrites the sentence. **14**

1) A system is defined as _____.
a) A mathematical model of input-output relationships
b) A collection of signals
c) A transformation of one signal to another
d) Both a and c

2) A periodic signal satisfies the condition _____.
a) $bx(t) = x(-t)x(t) = x(-t)x(t) = x(-t)$
b) $x(t+T) = x(t)x(t+T) = x(t)x(t+T) = x(t)$
c) $x(t) = -x(t)x(t) = -x(t)x(t) = -x(t)$
d) $x(t) = x(t+1\,)x(t) = x(t+1\,)x(t) = x(t+1)$

3) A system that depends only on the present and past inputs is known as _____.
a) Causal b) Non-causal
c) Time-invariant d) None of the above

4) The Laplace Transform is applicable for _____.
a) Continuous-time signals b) Discrete-time signals
c) Both a and b d) None of the above

5) A system is said to be dynamic if _____.
a) It has memory b) It is time-invariant
c) It is non-causal d) None of the above

6) A memory less system is one where _____.
   a) Output depends only on present input
   b) Output depends on past inputs
   c) Output depends on future inputs
   d) Output depends on past and future inputs

7) A difference equation represents _____.
   a) A recursive system
   b) A time-invariant system
   c) A causal system
   d) Both (a) and (c)

8) The Fourier series represents a periodic signal as a sum of _____.
   a) Exponential signals
   b) Sinusoids
   c) Polynomials
   d) Both (a) and (b)

9) If a signal $x(t)x(t)$ has half-wave symmetry, then its Fourier series contains _____.
   a) Only even harmonics
   b) Only odd harmonics
   c) Both even and odd harmonics
   d) No harmonics

10) An aperiodic (non-periodic) continuous-time signal possesses _____.
   a) A discrete frequency spectrum
   b) A continuous frequency spectrum
   c) Only DC component
   d) Only odd harmonics

11) The Fourier transform of a constant function is _____.
   a) A delta function
   b) A sine function
   c) A ramp function
   d) A cosine function

12) The Z-transform is used to analyze _____.
   a) Continuous-time systems
   b) Discrete-time systems
   c) Random systems
   d) Both continuous and discrete-time systems

13) If a system is stable, its ROC must _____.
   a) Include the unit circle
   b) Be inside the unit circle
   c) Be outside the unit circle
   d) Not exist

14) The Z-transform is most useful in solving _____.
   a) Ordinary differential equations
   b) Difference equations
   c) Partial differential equations
   d) Complex numbers

Seat No.	

Set | P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Signals and Systems (ENTPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed & mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define and differentiate between the following types of signals: Continuous-time and discrete time signals, Periodic and aperiodic signals, Energy and power signals.

b) Describe the transformations of independent variables in signals with examples. Perform time shifting and time-scaling on $x(t) = e - tu(t) =$ $e^{-t}u(t)x(t) = e - tu(t)$.

c) Analyze and derive the block diagram representation of LTI systems governed by differential equations.

d) Prove the time-scaling properly of the Fourier Transform and provide an example of its application.

e) Derive the Fourier series coefficients for $x(t) = \sin(2\pi t)$ $x(t) = \backslash \sin(2\backslash pi\ t)x(t) = \sin(2\pi t)$ and explain its significance in signal analysis.

Q.3 Attempt Any Two. **12**

a) Derive and prove the time-shifting and convolution properties of Fourier Transform.

b) Compute the convolution sum for:
$x[n] = \{\ 1,2,1\}$ $x[n] =\backslash\{1, 2, 1\backslash\}$ $x[n] = \{1,2,1\}$ and
$h[n] = \{1, -1\}$ $h[n] =\backslash\{1, -1\backslash\}$ $h[n] = \{1, -1\}$

c) Explain the properties of LTI systems using convolution integral. Verify whether the system
$y(t) = tx(t-1)$ $y(t) = t\ x(t-1)$ $y(t) = tx(t-1)$ is linear and time-invariant.

SECTION - II

Q.4 Attempt Any Four. **16**

a) Explain the characteristics of Linear Time-Invariant (LTI) systems.

b) Solve for the output of an LTI system given the input and impulse response using convolution integral.

c) Derive the Fourier series representation of a periodic signal.

d) Derive and explain the time-shifting property of the Z-Transform with an example.

e) Prove Parseval's theorem for the Fourier Transform. Provide an example demonstrating its application.

Q.5 Attempt Any Two. **12**

a) Discuss the effect of poles and zeros on the ROC of a Z-Transform.

b) Derive the modulation property of the Fourier Transform and explain its significance in communication systems.

c) Derive the convolution integral for a continuous-time system.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Signals and Systems (ENTPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Chose the correct alternatives from the options and rewrites the sentence. **14**

1) The Fourier series represents a periodic signal as a sum of _____.
a) Exponential signals b) Sinusoids
c) Polynomials d) Both (a) and (b)

2) If a signal $x(t)x(t)$ has half-wave symmetry, then its Fourier series contains _____.
a) Only even harmonics
b) Only odd harmonics
c) Both even and odd harmonics
d) No harmonics

3) An aperiodic (non-periodic) continuous-time signal possesses _____.
a) A discrete frequency spectrum
b) A continuous frequency spectrum
c) Only DC component
d) Only odd harmonics

4) The Fourier transform of a constant function is _____.
a) A delta function b) A sine function
c) A ramp function d) A cosine function

5) The Z-transform is used to analyze _____.
a) Continuous-time systems
b) Discrete-time systems
c) Random systems
d) Both continuous and discrete-time systems

6) If a system is stable, its ROC must _____.
   a) Include the unit circle
   b) Be inside the unit circle
   c) Be outside the unit circle
   d) Not exist

7) The Z-transform is most useful in solving _____.
   a) Ordinary differential equations
   b) Difference equations
   c) Partial differential equations
   d) Complex numbers

8) A system is defined as _____.
   a) A mathematical model of input-output relationships
   b) A collection of signals
   c) A transformation of one signal to another
   d) Both a and c

9) A periodic signal satisfies the condition _____.
   a) $bx(t) = x(-t)x(t) = x(-t)x(t) = x(-t)$
   b) $x(t+T) = x(t)x(t+T) = x(t)x(t+T) = x(t)$
   c) $x(t) = -x(t)x(t) = -x(t)x(t) = -x(t)$
   d) $x(t) = x(t+1\,)x(t) = x(t+1\,)x(t) = x(t+1)$

10) A system that depends only on the present and past inputs is known as _____.
   a) Causal
   b) Non-causal
   c) Time-invariant
   d) None of the above

11) The Laplace Transform is applicable for _____.
   a) Continuous-time signals
   b) Discrete-time signals
   c) Both a and b
   d) None of the above

12) A system is said to be dynamic if _____.
   a) It has memory
   b) It is time-invariant
   c) It is non-causal
   d) None of the above

13) A memory less system is one where _____.
   a) Output depends only on present input
   b) Output depends on past inputs
   c) Output depends on future inputs
   d) Output depends on past and future inputs

14) A difference equation represents _____.
   a) A recursive system
   b) A time-invariant system
   c) A causal system
   d) Both (a) and (c)

SLR-QH-124

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Signals and Systems (ENTPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed & mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define and differentiate between the following types of signals: Continuous-time and discrete time signals, Periodic and aperiodic signals, Energy and power signals.

b) Describe the transformations of independent variables in signals with examples. Perform time shifting and time-scaling on $x(t) = e - tu(t) =$ $e\text{^}\{-t\}u(t)x(t) = e - tu(t)$.

c) Analyze and derive the block diagram representation of LTI systems governed by differential equations.

d) Prove the time-scaling properly of the Fourier Transform and provide an example of its application.

e) Derive the Fourier series coefficients for $x(t) = \sin(2\pi t)$ $x(t) = \backslash\ \sin(2\backslash pi\ t)x(t) = \sin(2\pi t)$ and explain its significance in signal analysis.

Q.3 Attempt Any Two. **12**

a) Derive and prove the time-shifting and convolution properties of Fourier Transform.

b) Compute the convolution sum for:
$x[n] = \{\ 1,2,1\}$ $x[n] =\backslash\{1, 2, 1\backslash\}$ $x[n] = \{1,2,1\}$ and
$h[n] = \{1, -1\}$ $h[n] =\backslash\{1, -1\backslash\}$ $h[n] = \{1, -1\}$

c) Explain the properties of LTI systems using convolution integral. Verify whether the system
$y(t) = tx(t-1)$ $y(t) = t\ x(t-1)$ $y(t) = tx(t-1)$ is linear and time-invariant.

SECTION - II

Q.4 Attempt Any Four. **16**

a) Explain the characteristics of Linear Time-Invariant (LTI) systems.

b) Solve for the output of an LTI system given the input and impulse response using convolution integral.

c) Derive the Fourier series representation of a periodic signal.

d) Derive and explain the time-shifting property of the Z-Transform with an example.

e) Prove Parseval's theorem for the Fourier Transform. Provide an example demonstrating its application.

Q.5 Attempt Any Two. **12**

a) Discuss the effect of poles and zeros on the ROC of a Z-Transform.

b) Derive the modulation property of the Fourier Transform and explain its significance in communication systems.

c) Derive the convolution integral for a continuous-time system.

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Signals and Systems (ENTPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Chose the correct alternatives from the options and rewrites the sentence. **14**

1) The Fourier transform of a constant function is _____.
a) A delta function b) A sine function
c) A ramp function d) A cosine function

2) The Z-transform is used to analyze _____.
a) Continuous-time systems
b) Discrete-time systems
c) Random systems
d) Both continuous and discrete-time systems

3) If a system is stable, its ROC must _____.
a) Include the unit circle b) Be inside the unit circle
c) Be outside the unit circle d) Not exist

4) The Z-transform is most useful in solving _____.
a) Ordinary differential equations
b) Difference equations
c) Partial differential equations
d) Complex numbers

5) A system is defined as _____.
a) A mathematical model of input-output relationships
b) A collection of signals
c) A transformation of one signal to another
d) Both a and c

6) A periodic signal satisfies the condition _____.
   a) $bx(t) = x(-t)x(t) = x(-t)x(t) = x(-t)$
   b) $x(t+T) = x(t)x(t+T) = x(t)x(t+T) = x(t)$
   c) $x(t) = -x(t)x(t) = -x(t)x(t) = -x(t)$
   d) $x(t) = x(t+1\,)x(t) = x(t+1\,)x(t) = x(t+1)$

7) A system that depends only on the present and past inputs is known as _____.
   a) Causal
   b) Non-causal
   c) Time-invariant
   d) None of the above

8) The Laplace Transform is applicable for _____.
   a) Continuous-time signals
   b) Discrete-time signals
   c) Both a and b
   d) None of the above

9) A system is said to be dynamic if _____.
   a) It has memory
   b) It is time-invariant
   c) It is non-causal
   d) None of the above

10) A memory less system is one where _____.
   a) Output depends only on present input
   b) Output depends on past inputs
   c) Output depends on future inputs
   d) Output depends on past and future inputs

11) A difference equation represents _____.
   a) A recursive system
   b) A time-invariant system
   c) A causal system
   d) Both (a) and (c)

12) The Fourier series represents a periodic signal as a sum of _____.
   a) Exponential signals
   b) Sinusoids
   c) Polynomials
   d) Both (a) and (b)

13) If a signal $x(t)x(t)$ has half-wave symmetry, then its Fourier series contains _____.
   a) Only even harmonics
   b) Only odd harmonics
   c) Both even and odd harmonics
   d) No harmonics

14) An aperiodic (non-periodic) continuous-time signal possesses _____.
   a) A discrete frequency spectrum
   b) A continuous frequency spectrum
   c) Only DC component
   d) Only odd harmonics

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Signals and Systems (ENTPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Four. **16**

a) Define and differentiate between the following types of signals: Continuous-time and discrete time signals, Periodic and aperiodic signals, Energy and power signals.

b) Describe the transformations of independent variables in signals with examples. Perform time shifting and time-scaling on $x(t) = e - tu(t) =$ $e\text{^}\{-t\}u(t)x(t) = e - tu(t)$.

c) Analyze and derive the block diagram representation of LTI systems governed by differential equations.

d) Prove the time-scaling properly of the Fourier Transform and provide an example of its application.

e) Derive the Fourier series coefficients for $x(t) = \sin(2\pi t)$ $x(t) = \backslash\ \sin(2\backslash pi\ t)x(t) = \sin(2\pi t)$ and explain its significance in signal analysis.

Q.3 Attempt Any Two. **12**

a) Derive and prove the time-shifting and convolution properties of Fourier Transform.

b) Compute the convolution sum for:
$x[n] = \{\ 1,2,1\}$ $x[n] =\backslash\{1, 2, 1\backslash\}$ $x[n] = \{1,2,1\}$ and
$h[n] = \{1, -1\}$ $h[n] =\backslash\{1, -1\backslash\}$ $h[n] = \{1, -1\}$

c) Explain the properties of LTI systems using convolution integral. Verify whether the system
$y(t) = tx(t-1)$ $y(t) = t\ x(t-1)$ $y(t) = tx(t-1)$ is linear and time-invariant.

SECTION - II

Q.4 Attempt Any Four. **16**

a) Explain the characteristics of Linear Time-Invariant (LTI) systems.

b) Solve for the output of an LTI system given the input and impulse response using convolution integral.

c) Derive the Fourier series representation of a periodic signal.

d) Derive and explain the time-shifting property of the Z-Transform with an example.

e) Prove Parseval's theorem for the Fourier Transform. Provide an example demonstrating its application.

Q.5 Attempt Any Two. **12**

a) Discuss the effect of poles and zeros on the ROC of a Z-Transform.

b) Derive the modulation property of the Fourier Transform and explain its significance in communication systems.

c) Derive the convolution integral for a continuous-time system.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Signals and Systems (ENTPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Chose the correct alternatives from the options and rewrites the sentence. **14**

1) A memory less system is one where _____.
a) Output depends only on present input
b) Output depends on past inputs
c) Output depends on future inputs
d) Output depends on past and future inputs

2) A difference equation represents _____.
a) A recursive system b) A time-invariant system
c) A causal system d) Both (a) and (c)

3) The Fourier series represents a periodic signal as a sum of _____.
a) Exponential signals b) Sinusoids
c) Polynomials d) Both (a) and (b)

4) If a signal $x(t)x(t)$ has half-wave symmetry, then its Fourier series contains _____.
a) Only even harmonics
b) Only odd harmonics
c) Both even and odd harmonics
d) No harmonics

5) An aperiodic (non-periodic) continuous-time signal possesses _____.
a) A discrete frequency spectrum
b) A continuous frequency spectrum
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6) The Fourier transform of a constant function is _____.
   a) A delta function
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   c) Be outside the unit circle
   d) Not exist

9) The Z-transform is most useful in solving _____.
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   c) Partial differential equations
   d) Complex numbers

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   b) A collection of signals
   c) A transformation of one signal to another
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   b) $x(t+T) = x(t)x(t+T) = x(t)x(t+T) = x(t)$
   c) $x(t) = -x(t)x(t) = -x(t)x(t) = -x(t)$
   d) $x(t) = x(t+1\,)x(t) = x(t+1\,)x(t) = x(t+1)$

12) A system that depends only on the present and past inputs is known as _____.
   a) Causal
   b) Non-causal
   c) Time-invariant
   d) None of the above

13) The Laplace Transform is applicable for _____.
   a) Continuous-time signals
   b) Discrete-time signals
   c) Both a and b
   d) None of the above

14) A system is said to be dynamic if _____.
   a) It has memory
   b) It is time-invariant
   c) It is non-causal
   d) None of the above

SLR-QH-124

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Signals and Systems (ENTPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data wherever needed & mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define and differentiate between the following types of signals: Continuous-time and discrete time signals, Periodic and aperiodic signals, Energy and power signals.

b) Describe the transformations of independent variables in signals with examples. Perform time shifting and time-scaling on $x(t) = e - tu(t) =$ $e^{-t}u(t)x(t) = e - tu(t)$.

c) Analyze and derive the block diagram representation of LTI systems governed by differential equations.

d) Prove the time-scaling properly of the Fourier Transform and provide an example of its application.

e) Derive the Fourier series coefficients for $x(t) = \sin(2\pi t)$ $x(t) = \backslash \sin(2\backslash pi\ t)x(t) = \sin(2\pi t)$ and explain its significance in signal analysis.

Q.3 Attempt Any Two. **12**

a) Derive and prove the time-shifting and convolution properties of Fourier Transform.

b) Compute the convolution sum for:
$x[n] = \{\ 1,2,1\}$ $x[n] = \backslash\{1, 2, 1\backslash\}$ $x[n] = \{1,2,1\}$ and
$h[n] = \{1, -1\}$ $h[n] = \backslash\{1, -1\backslash\}$ $h[n] = \{1, -1\}$

c) Explain the properties of LTI systems using convolution integral. Verify whether the system
$y(t) = tx(t-1)$ $y(t) = t\ x(t-1)$ $y(t) = tx(t-1)$ is linear and time-invariant.

SECTION - II

Q.4 Attempt Any Four. **16**

a) Explain the characteristics of Linear Time-Invariant (LTI) systems.

b) Solve for the output of an LTI system given the input and impulse response using convolution integral.

c) Derive the Fourier series representation of a periodic signal.

d) Derive and explain the time-shifting property of the Z-Transform with an example.

e) Prove Parseval's theorem for the Fourier Transform. Provide an example demonstrating its application.

Q.5 Attempt Any Two. **12**

a) Discuss the effect of poles and zeros on the ROC of a Z-Transform.

b) Derive the modulation property of the Fourier Transform and explain its significance in communication systems.

c) Derive the convolution integral for a continuous-time system.

SLR-QH-125

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Control System (ENTPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

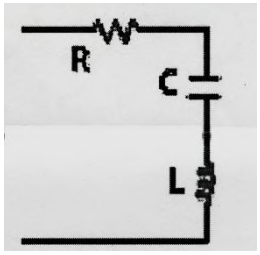
Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use Semilog paper when necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

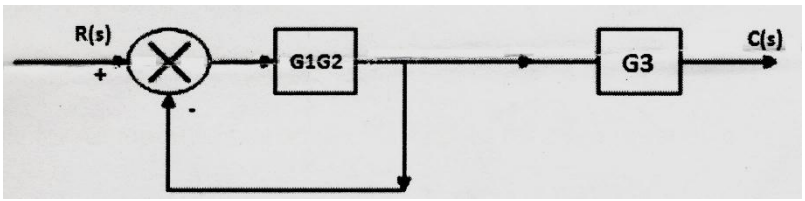
1) The output equation for given circuit is _____.



a) $Vo(S) = \frac{1}{cs} I(S) + LsI(S)$ b) $Vo(S) = \frac{1}{c} I(S) + LI(S)$

c) $Vo(S) = \frac{1}{s} I(S) + CSI(S)$ d) None

2) For Negative Feedback, the transfer function of closed loop control system as shown in figure below is _____.



a) $T(S) = \frac{G1G2G3}{1+G1G2}$ b) $T(S) = \frac{G1G2}{1-G1G2}$

c) $T(S) = \frac{G1G2G3}{1-G1G2}$ d) None

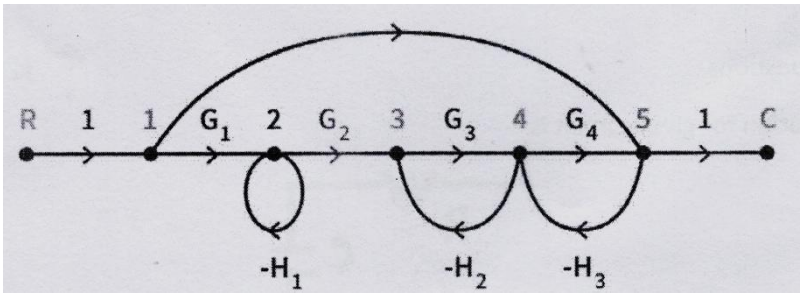
3) Transfer function is defined as _____.

a) ratio of Output to Input
b) ratio of Input to Output
c) ratio of Laplace Transform of Output to Laplace Transform of Input
d) ratio of Laplace Transform of Input to Laplace Transform of Output

4) Following is not the example of closed loop system _____.

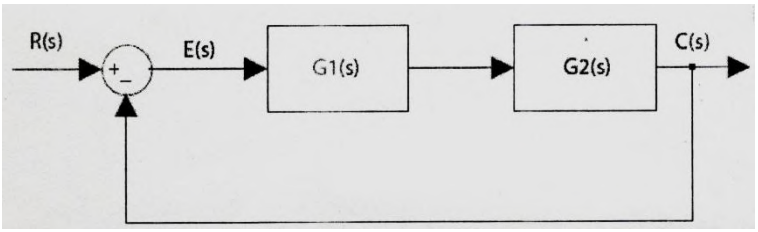
a) Liquid level control system
b) Missile Launching system
c) Electric Toaster
d) both a and b

5) The Signal Flow Graph shown below, has _____ Number of forward paths and _____ Number of Loops.



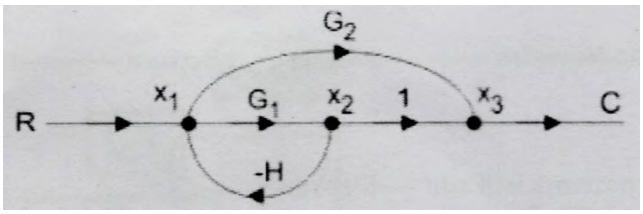
a) 2, 2
b) 2, 3
c) 3, 3
d) 3, 2

6) The Single block for given block diagram is _____.



a) $T(S) = \frac{G1(S)G2(S)}{1+G1(S).G2(S)}$
b) $T(S) = \frac{G1(S)G2(S)}{1-G1(S).G2(S)}$
c) $T(S) = \frac{G1(S)}{1+G1(S)}$
d) $T(S) = \frac{G2(S)}{1+G2(S)}$

7) Use Mason's Gain formula to calculate the transfer function of given figure.



a) $G_1/1 + G_2H$
b) $\frac{G1+G2}{1+G1H}$
c) $G_2/1 + G_1H$
d) None of the mentioned

8) If the open-loop transfer function of a system has a pole at S=0, what type of system is it?

a) Type 0 system
b) Type 1 system
c) Type 2 system
d) Type -1 system

9) For Type 2 System, the Error Constants are Position error = _____ Velocity error = _____ & Acceleration error = _____, where k is respective constant for system.

a) $0, 0, 1/\mathrm{k}$
b) $0, 1/\mathrm{k}, \infty$
c) $\infty, 0, 0$
d) $\infty, \infty, 0$

10) The given system is _____.

$$T(S) = \frac{(S+10)(S+3)}{S(S+20)(S+4)}$$

a) Type 0 System
b) Type 1 System
c) Type 2 System
d) None

11) Magnitude of Bode plot for constant (K) is a _____.

a) Line with a slope of -20dB/decade
b) Line with a slope of -6dB/decade
c) Line with a slope of -40dB/decade
d) Straight line parallel to frequency axis

12) The Phase Angle for Asymptotic Bode at $\omega = \infty$ rad/sec, for given equation is _____.

$$G(S)H(S) = \frac{(S+1)}{S(S+2)(S+5)}$$

a) $\theta = -180^0$
b) $\theta = 180^0$
c) $\theta = -270^0$
d) $\theta = 270^0$

13) If anybody wants to add pole in the system, we require to add _____ compensating network.

a) Lead Network
b) Lag Network
c) Lead-Lag Network
d) None of these

14) The Lead Compensation network will add _____ Pole and _____ Zero.

a) 1, 1 dominating
b) Dominating 1, 1
c) 1, 1
d) 0, 0

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Control System (ENTPCC-05)

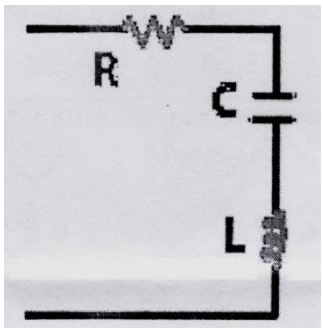
Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Use Semilog paper when necessary.

Section – I

Q.2 Attempt Any Four of the following. **16**

a) Calculate the Transfer function for following RLC circuit.



b) What is Signal flow graph? Give its terminologies.

c) Differentiate between Closed Loop and Open Loop system with suitable example.

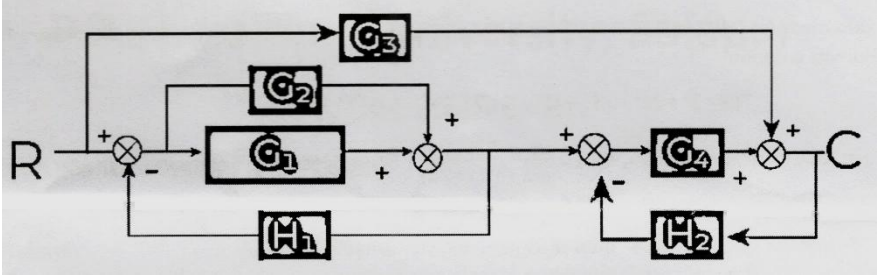
d) Explain Block Diagram reduction rules.

e) Define and explain the transfer function for closed loop control system.

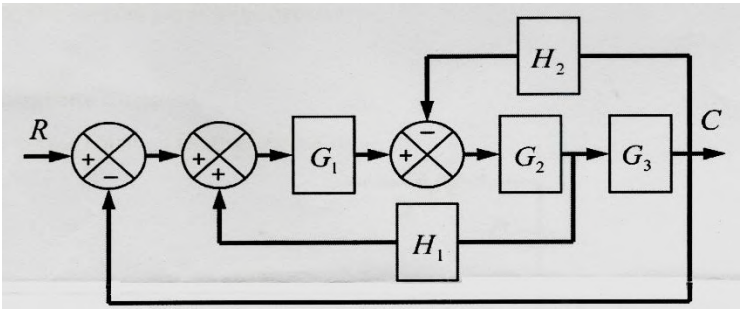
Q.3 Attempt Any Two of the following. **12**

a) Explain Liquid level control system with the suitable diagram.

b) Reduce following block diagram to single block using Block Diagram Reduction Rules.



c) Calculate the transfer function for following block diagram using Mason's Gain formula.



Section – II

Q.4 Attempt Any Four of the following. **16**

a) Explain Steady State Error with suitable diagram.

b) Explain Bode Plot with suitable diagram.

c) Explain Lead-Lag Compensation network.

d) Define the terms- conditional stability, marginally stability, relative stability of the system.

e) Test the stability of following characteristics equation using Routh - Hurwitz criterion.

$$S^4 + 5S^2 + 6S + 30 = 0$$

Q.5 Attempt Any Two of the following. **12**

a) How many roots lies in RHS, LHS plane and $j\omega$ axis for the following characteristics equation using Routh - Hurwitz criterion.

$$T(S) = S^5 + 2S^4 + 2S^3 + 4S^2 + S + 2$$

b) For unity feedback system, $G(S) = \frac{80}{S(S+4)(S+20)}$, Draw Bode Plot. Determine Gain Margin, Phase Margin, ω_{gc}, ω_{pc}. Also comment on stability.

c) Derive and explain Lead Compensation network with suitable diagram.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Control System (ENTPCC-05)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

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2) For Type 2 System, the Error Constants are Position error = _____ Velocity error = _____ & Acceleration error = _____, where k is respective constant for system.
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c) $\infty, 0, 0$ d) $\infty, \infty, 0$

3) The given system is _____.

$$T(S) = \frac{(S+10)(S+3)}{S(S+20)(S+4)}$$

a) Type 0 System b) Type 1 System
c) Type 2 System d) None

4) Magnitude of Bode plot for constant (K) is a _____.
a) Line with a slope of -20dB/decade
b) Line with a slope of -6dB/decade
c) Line with a slope of -40dB/decade
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5) The Phase Angle for Asymptotic Bode at $\omega = \infty$ rad/sec, for given equation is _____.

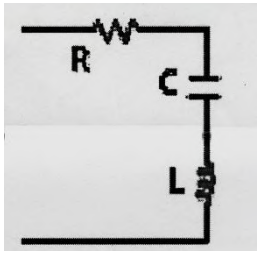
$$G(S)H(S) = \frac{(S+1)}{S(S+2)(S+5)}$$

a) $\theta = -180^0$ b) $\theta = 180^0$
c) $\theta = -270^0$ d) $\theta = 270^0$

6) If anybody wants to add pole in the system, we require to add _____ compensating network.
a) Lead Network b) Lag Network
c) Lead-Lag Network d) None of these

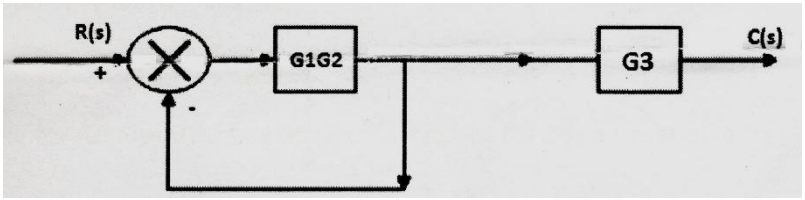
7) The Lead Compensation network will add _____ Pole and _____ Zero.
a) 1, 1 dominating b) Dominating 1, 1
c) 1, 1 d) 0, 0

8) The output equation for given circuit is _____.



a) $Vo(S) = \frac{1}{cs}I(S) + LsI(S)$ b) $Vo(S) = \frac{1}{c}I(S) + LI(S)$
c) $Vo(S) = \frac{1}{s}I(S) + CSI(S)$ d) None

9) For Negative Feedback, the transfer function of closed loop control system as shown in figure below is _____.

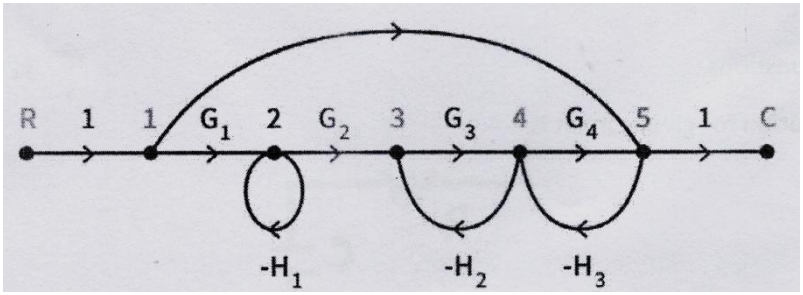


a) $T(S) = \frac{G1G2G3}{1+G1G2}$ b) $T(S) = \frac{G1G2}{1-G1G2}$
c) $T(S) = \frac{G1G2G3}{1-G1G2}$ d) None

10) Transfer function is defined as _____.
a) ratio of Output to Input
b) ratio of Input to Output
c) ratio of Laplace Transform of Output to Laplace Transform of Input
d) ratio of Laplace Transform of Input to Laplace Transform of Output

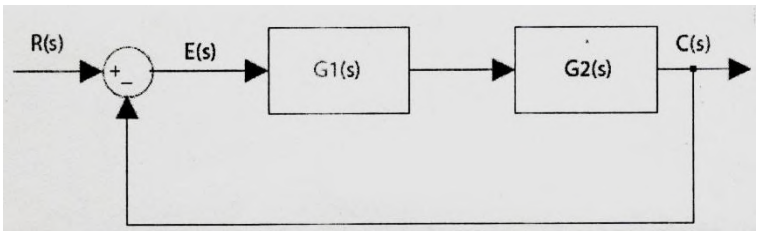
11) Following is not the example of closed loop system _____.
a) Liquid level control system b) Missile Launching system
c) Electric Toaster d) both a and b

12) The Signal Flow Graph shown below, has _____ Number of forward paths and _____ Number of Loops.



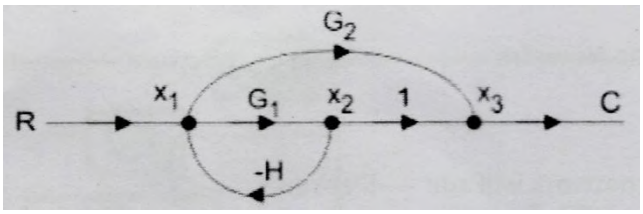
a) 2, 2
b) 2, 3
c) 3, 3
d) 3, 2

13) The Single block for given block diagram is _____.



a) $T(S) = \frac{G1(S)G2(S)}{1+G1(S).G2(S)}$
b) $T(S) = \frac{G1(S)G2(S)}{1-G1(S).G2(S)}$
c) $T(S) = \frac{G1(S)}{1+G1(S)}$
d) $T(S) = \frac{G2(S)}{1+G2(S)}$

14) Use Mason's Gain formula to calculate the transfer function of given figure.



a) $G_1/1 + G_2H$
b) $\frac{G1+G2}{1+G1H}$
c) $G_2/1 + G_1H$
d) None of the mentioned

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Control System (ENTPCC-05)

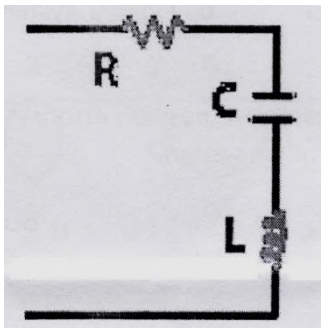
Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Use Semilog paper when necessary.

Section – I

Q.2 Attempt Any Four of the following. **16**

a) Calculate the Transfer function for following RLC circuit.



b) What is Signal flow graph? Give its terminologies.

c) Differentiate between Closed Loop and Open Loop system with suitable example.

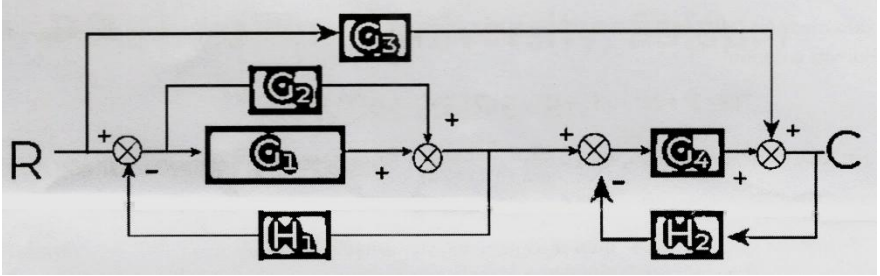
d) Explain Block Diagram reduction rules.

e) Define and explain the transfer function for closed loop control system.

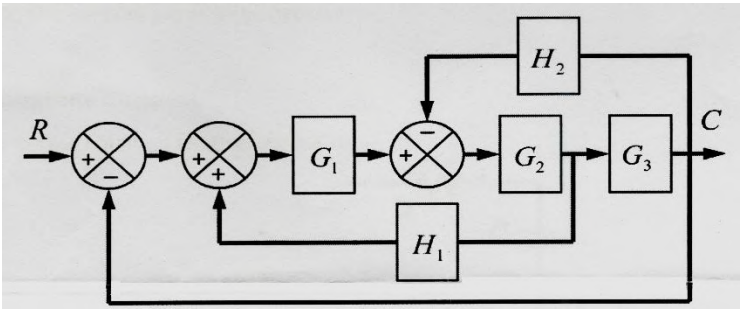
Q.3 Attempt Any Two of the following. **12**

a) Explain Liquid level control system with the suitable diagram.

b) Reduce following block diagram to single block using Block Diagram Reduction Rules.



c) Calculate the transfer function for following block diagram using Mason's Gain formula.



Section – II

Q.4 Attempt Any Four of the following. **16**

a) Explain Steady State Error with suitable diagram.

b) Explain Bode Plot with suitable diagram.

c) Explain Lead-Lag Compensation network.

d) Define the terms- conditional stability, marginally stability, relative stability of the system.

e) Test the stability of following characteristics equation using Routh - Hurwitz criterion.

$$S^4 + 5S^2 + 6S + 30 = 0$$

Q.5 Attempt Any Two of the following. **12**

a) How many roots lies in RHS, LHS plane and $j\omega$ axis for the following characteristics equation using Routh - Hurwitz criterion.

$$T(S) = S^5 + 2S^4 + 2S^3 + 4S^2 + S + 2$$

b) For unity feedback system, $G(S) = \frac{80}{S(S+4)(S+20)}$, Draw Bode Plot. Determine Gain Margin, Phase Margin, ω_{gc}, ω_{pc}. Also comment on stability.

c) Derive and explain Lead Compensation network with suitable diagram.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Control System (ENTPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use Semilog paper when necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Magnitude of Bode plot for constant (K) is a _____.
a) Line with a slope of -20dB/decade
b) Line with a slope of -6dB/decade
c) Line with a slope of -40dB/decade
d) Straight line parallel to frequency axis

2) The Phase Angle for Asymptotic Bode at $\omega = \infty$ rad/sec, for given equation is _____.

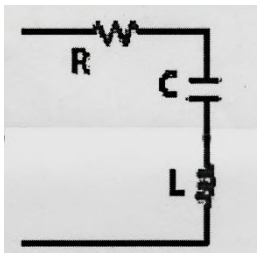
$$G(S)H(S) = \frac{(S+1)}{S(S+2)(S+5)}$$

a) $\theta = -180^0$ b) $\theta = 180^0$
c) $\theta = -270^0$ d) $\theta = 270^0$

3) If anybody wants to add pole in the system, we require to add _____ compensating network.
a) Lead Network b) Lag Network
c) Lead-Lag Network d) None of these

4) The Lead Compensation network will add _____ Pole and _____ Zero.
a) 1, 1 dominating b) Dominating 1, 1
c) 1, 1 d) 0, 0

5) The output equation for given circuit is _____.



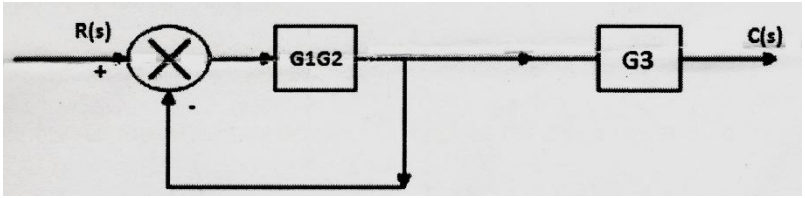
a) $Vo(S) = \frac{1}{cs} I(S) + LsI(S)$

b) $Vo(S) = \frac{1}{c} I(S) + LI(S)$

c) $Vo(S) = \frac{1}{s} I(S) + CSI(S)$

d) None

6) For Negative Feedback, the transfer function of closed loop control system as shown in figure below is _____.



a) $T(S) = \frac{G1G2G3}{1+G1G2}$

b) $T(S) = \frac{G1G2}{1-G1G2}$

c) $T(S) = \frac{G1G2G3}{1-G1G2}$

d) None

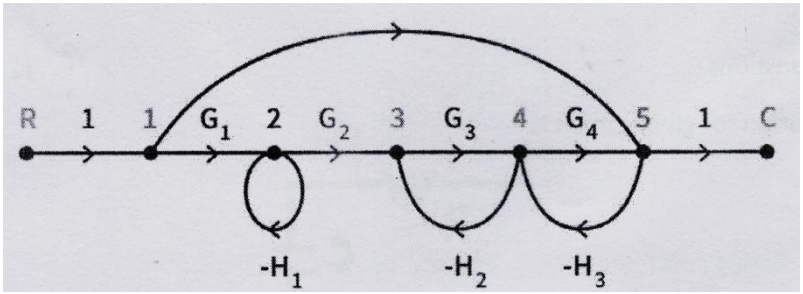
7) Transfer function is defined as _____.

a) ratio of Output to Input
b) ratio of Input to Output
c) ratio of Laplace Transform of Output to Laplace Transform of Input
d) ratio of Laplace Transform of Input to Laplace Transform of Output

8) Following is not the example of closed loop system _____.

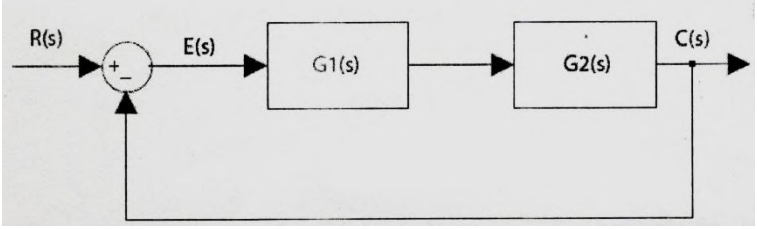
a) Liquid level control system
b) Missile Launching system
c) Electric Toaster
d) both a and b

9) The Signal Flow Graph shown below, has _____ Number of forward paths and _____ Number of Loops.



a) 2, 2
b) 2, 3
c) 3, 3
d) 3, 2

10) The Single block for given block diagram is _____.



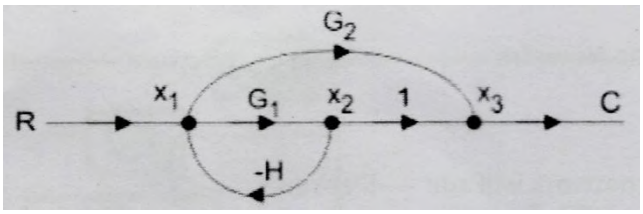
a) $T(S) = \frac{G1(S)G2(S)}{1+G1(S).G2(S)}$

b) $T(S) = \frac{G1(S)G2(S)}{1-G1(S).G2(S)}$

c) $T(S) = \frac{G1(S)}{1+G1(S)}$

d) $T(S) = \frac{G2(S)}{1+G2(S)}$

11) Use Mason's Gain formula to calculate the transfer function of given figure.



a) $G_1/1 + G_2H$

b) $\frac{G1+G2}{1+G1H}$

c) $G_2/1 + G_1H$

d) None of the mentioned

12) If the open-loop transfer function of a system has a pole at S=0, what type of system is it?

a) Type 0 system

b) Type 1 system

c) Type 2 system

d) Type -1 system

13) For Type 2 System, the Error Constants are Position error = _____ Velocity error = _____ & Acceleration error = _____, where k is respective constant for system.

a) $0, 0, 1/k$

b) $0, 1/k, \infty$

c) $\infty, 0, 0$

d) $\infty, \infty, 0$

14) The given system is _____.

$$T(S) = \frac{(S+10)(S+3)}{S(S+20)(S+4)}$$

a) Type 0 System

b) Type 1 System

c) Type 2 System

d) None

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Control System (ENTPCC-05)

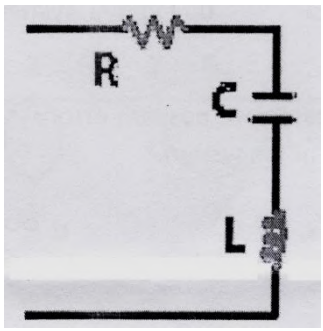
Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Use Semilog paper when necessary.

Section – I

Q.2 Attempt Any Four of the following. **16**

a) Calculate the Transfer function for following RLC circuit.



b) What is Signal flow graph? Give its terminologies.

c) Differentiate between Closed Loop and Open Loop system with suitable example.

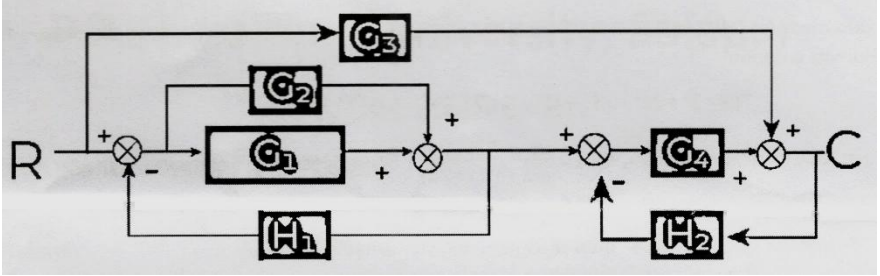
d) Explain Block Diagram reduction rules.

e) Define and explain the transfer function for closed loop control system.

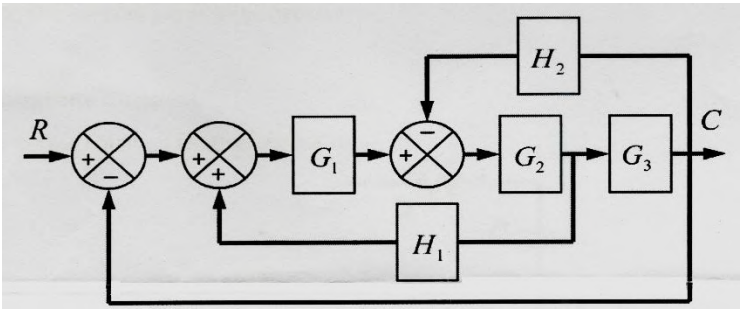
Q.3 Attempt Any Two of the following. **12**

a) Explain Liquid level control system with the suitable diagram.

b) Reduce following block diagram to single block using Block Diagram Reduction Rules.



c) Calculate the transfer function for following block diagram using Mason's Gain formula.



Section – II

Q.4 Attempt Any Four of the following. **16**

a) Explain Steady State Error with suitable diagram.

b) Explain Bode Plot with suitable diagram.

c) Explain Lead-Lag Compensation network.

d) Define the terms- conditional stability, marginally stability, relative stability of the system.

e) Test the stability of following characteristics equation using Routh - Hurwitz criterion.

$$S^4 + 5S^2 + 6S + 30 = 0$$

Q.5 Attempt Any Two of the following. **12**

a) How many roots lies in RHS, LHS plane and $j\omega$ axis for the following characteristics equation using Routh - Hurwitz criterion.

$$T(S) = S^5 + 2S^4 + 2S^3 + 4S^2 + S + 2$$

b) For unity feedback system, $G(S) = \frac{80}{S(S+4)(S+20)}$, Draw Bode Plot. Determine Gain Margin, Phase Margin, ω_{gc}, ω_{pc}. Also comment on stability.

c) Derive and explain Lead Compensation network with suitable diagram.

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Control System (ENTPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

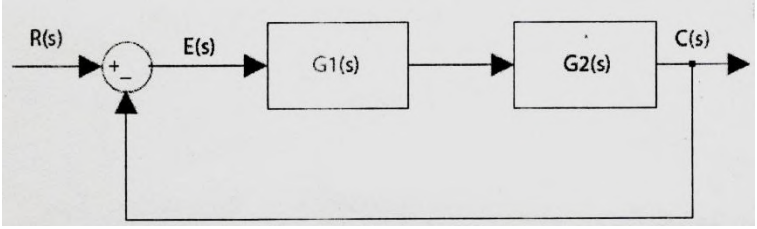
Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use Semilog paper when necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

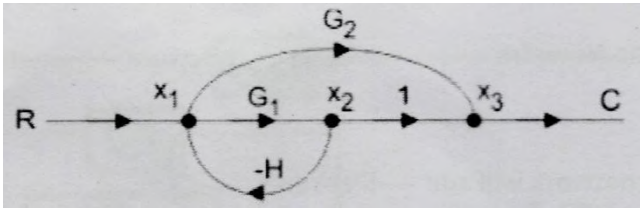
1) The Single block for given block diagram is _____.



a) $T(S) = \frac{G1(S)G2(S)}{1+G1(S).G2(S)}$ b) $T(S) = \frac{G1(S)G2(S)}{1-G1(S).G2(S)}$

c) $T(S) = \frac{G1(S)}{1+G1(S)}$ d) $T(S) = \frac{G2(S)}{1+G2(S)}$

2) Use Mason's Gain formula to calculate the transfer function of given figure.



a) $G_1/1 + G_2H$ b) $\frac{G1+G2}{1+G1H}$

c) $G_2/1 + G_1H$ d) None of the mentioned

3) If the open-loop transfer function of a system has a pole at S=0, what type of system is it?

a) Type 0 system b) Type 1 system
c) Type 2 system d) Type -1 system

4) For Type 2 System, the Error Constants are Position error = _____ Velocity error = _____ & Acceleration error = _____, where k is respective constant for system.

a) $0, 0, 1/\mathrm{k}$ b) $0, 1/\mathrm{k}, \infty$

c) $\infty, 0, 0$ d) $\infty, \infty, 0$

5) The given system is _____.

$$T(S) = \frac{(S+10)(S+3)}{S(S+20)(S+4)}$$

a) Type 0 System b) Type 1 System

c) Type 2 System d) None

6) Magnitude of Bode plot for constant (K) is a _____.

a) Line with a slope of -20dB/decade

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8) If anybody wants to add pole in the system, we require to add _____ compensating network.

a) Lead Network b) Lag Network

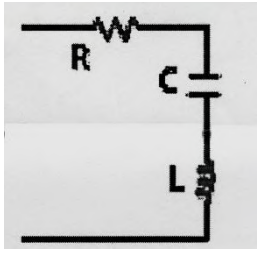
c) Lead-Lag Network d) None of these

9) The Lead Compensation network will add _____ Pole and _____ Zero.

a) 1, 1 dominating b) Dominating 1, 1

c) 1, 1 d) 0, 0

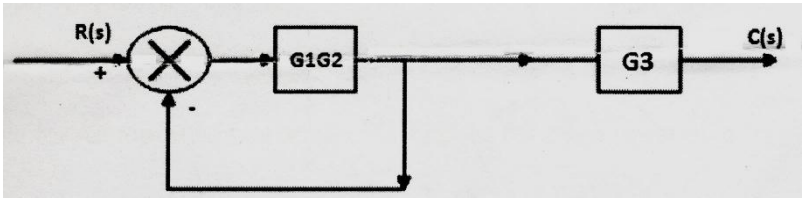
10) The output equation for given circuit is _____.



a) $Vo(S) = \frac{1}{cs} I(S) + LsI(S)$ b) $Vo(S) = \frac{1}{c} I(S) + LI(S)$

c) $Vo(S) = \frac{1}{s} I(S) + CSI(S)$ d) None

11) For Negative Feedback, the transfer function of closed loop control system as shown in figure below is _____.



a) $T(S) = \frac{G1G2G3}{1+G1G2}$

b) $T(S) = \frac{G1G2}{1-G1G2}$

c) $T(S) = \frac{G1G2G3}{1-G1G2}$

d) None

12) Transfer function is defined as _____.

a) ratio of Output to Input
b) ratio of Input to Output
c) ratio of Laplace Transform of Output to Laplace Transform of Input
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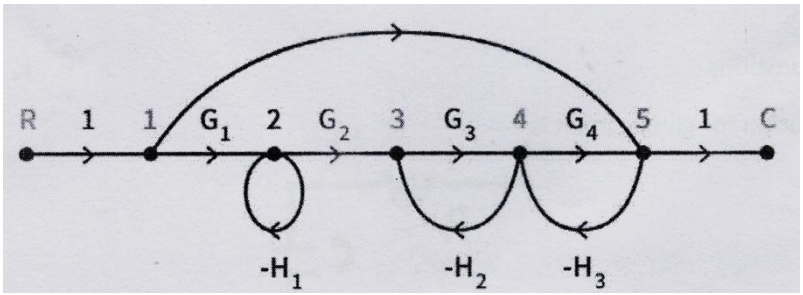
13) Following is not the example of closed loop system _____.

a) Liquid level control system
b) Missile Launching system
c) Electric Toaster
d) both a and b

14) The Signal Flow Graph shown below, has _____ Number of forward paths and _____ Number of Loops.



a) 2, 2
b) 2, 3
c) 3, 3
d) 3, 2

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Control System (ENTPCC-05)

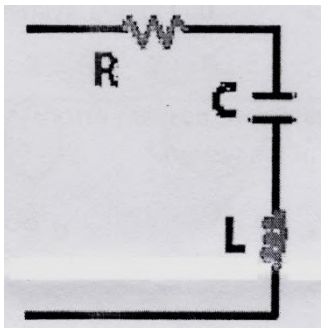
Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Use Semilog paper when necessary.

Section – I

Q.2 Attempt Any Four of the following. **16**

a) Calculate the Transfer function for following RLC circuit.



b) What is Signal flow graph? Give its terminologies.

c) Differentiate between Closed Loop and Open Loop system with suitable example.

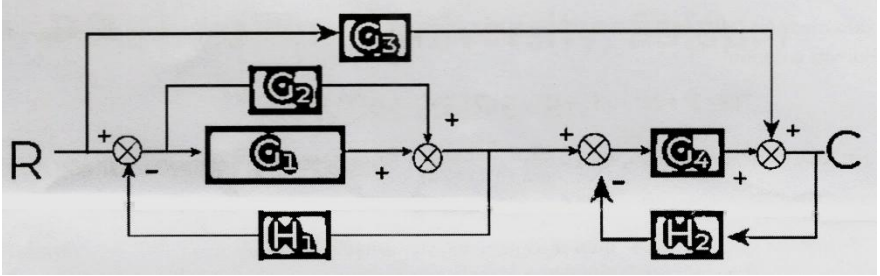
d) Explain Block Diagram reduction rules.

e) Define and explain the transfer function for closed loop control system.

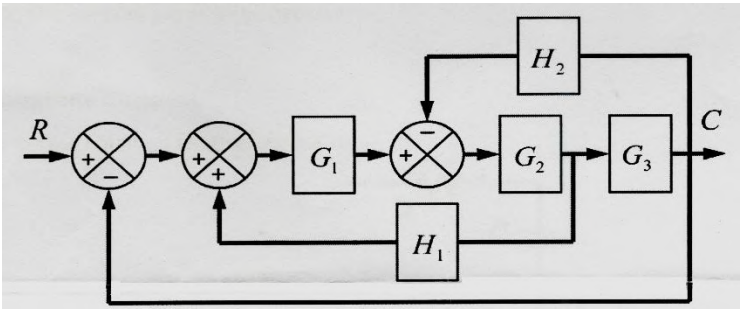
Q.3 Attempt Any Two of the following. **12**

a) Explain Liquid level control system with the suitable diagram.

b) Reduce following block diagram to single block using Block Diagram Reduction Rules.



c) Calculate the transfer function for following block diagram using Mason's Gain formula.



Section – II

Q.4 Attempt Any Four of the following. **16**

a) Explain Steady State Error with suitable diagram.

b) Explain Bode Plot with suitable diagram.

c) Explain Lead-Lag Compensation network.

d) Define the terms- conditional stability, marginally stability, relative stability of the system.

e) Test the stability of following characteristics equation using Routh - Hurwitz criterion.

$$S^4 + 5S^2 + 6S + 30 = 0$$

Q.5 Attempt Any Two of the following. **12**

a) How many roots lies in RHS, LHS plane and $j\omega$ axis for the following characteristics equation using Routh - Hurwitz criterion.

$$T(S) = S^5 + 2S^4 + 2S^3 + 4S^2 + S + 2$$

b) For unity feedback system, $G(S) = \frac{80}{S(S+4)(S+20)}$, Draw Bode Plot. Determine Gain Margin, Phase Margin, ω_{gc}, ω_{pc}. Also comment on stability.

c) Derive and explain Lead Compensation network with suitable diagram.

SLR-QH-126

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Analog Integrated Circuits (ENTPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Which of these is incorrect for an operational amplifier?
a) It has a high voltage gain
b) It is a direct coupled amplifier
c) It is only useful for amplifying AC signals
d) It was originally designed to perform mathematical operations

2) In an ideal op-amp, which is not true?
a) Open loop voltage gain is infinite
b) Input resistance is infinite
c) Slew rate is infinite
d) CMRR is zero

3) Voltage series feedback circuit is also called as _____.
a) Inverting amplifier with feedback
b) Closed loop noninverting amplifier
c) Open loop noninverting amplifier
d) Both a) and b)

4) Output Offset voltage is caused by _____.
a) Input Bias Current b) Input Offset Voltage
c) Both a) and b) d) None of above

5) Roll off of Op-amp gain after certain frequency is due to _____.
a) Inductive effect b) Capacitive effect
c) Feedback d) Gain

6) A summing amplifier can be realized with _____.
a) Inverting amplifier b) Non-Inverting amplifier
c) Differential amplifier d) All of above

7) V to I convertor can be designed with _____.
a) Floating load b) Grounded load
c) Both of a) and b) d) None of above

8) Window detector _____.
a) Has only one unstable threshold
b) Uses hysteresis to speed up response
c) Clamps input positively
d) Detects input voltage between two limits

9) In the sample and hold circuit, the period during which the voltage across capacitor is equal to input voltage _____.
a) Sampling period b) Hold period
c) Delay period d) Charging period

10) The use of diode or BJT in feedback path of amplifier is called as _____.
a) Log amplifier b) Antilog amplifier
c) Rectifier d) Sample and hold circuit

11) In saw tooth wave generator _____.
a) T rise < T fall b) T rise > T fall
c) T rise = T fall d) None of above

12) To change the high cutoff frequency of a filter. It is multiplied by R or C by a ratio of original cutoff frequency known as _____.
a) Gain scaling b) Frequency scaling
c) Magnitude scaling d) Phase scaling

13) The output voltage of the device LM337 adjustable negative voltage regulator is _____.
a) -1.2 to -37V b) -8 to -25V
c) -10.5 to -25V d) 1.2 to 37V

14) The monostable multivibrator circuit is not an oscillator because _____.
a) its output switches between two states
b) it requires a sine wave input signal
c) it requires a trigger to obtain an output signal
d) the circuit does not require a dc power supply

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Analog Integrated Circuits (ENTPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Draw neat diagram whenever necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Derive the expression for gain of Non-inverting amplifier with negative feedback.

b) Explain four Basic Building blocks of op-amp.

c) What is slew rate? Explain its importance.

d) Explain basic integrator with Input Output waveforms.

e) Explain the difference between the integrator and differentiator and give one application of each.

Q.3 Attempt Any Two. **12**

a) Derive the ICEQ and VCEQ for DIBO differential amplifier.

b) Define Common Mode Rejection Ratio (CMRR) and explain the significance of relatively large value of CMRR.

c) Design an Integrator circuit if low frequency gain is 20 dB and fa = 1KHz. Use capacitance as $0.01\mu f$

SECTION – II

Q.4 Attempt Any Four. **16**

a) With neat diagram, explain sample and hold circuit.

b) Explain with neat diagram operation of window detector using op-amp.

c) Explain square wave generator.

d) Design the Wien Bridge Oscillator so that fo = 965Hz with circuit of Wien Bridge Oscillator.

e) Explain PLL.

Q.5 Attempt Any Two. **12**

a) Draw and explain full wave precision rectifier.

b) Design a second order low pass Butterworth filter with higher cutoff frequency of 1.6 KHz. Draw the designed circuit and sketch its frequency response.

c) Explain monostable multivibrator using IC 555 with equation for output.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Analog Integrated Circuits (ENTPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Window detector _____.
a) Has only one unstable threshold
b) Uses hysteresis to speed up response
c) Clamps input positively
d) Detects input voltage between two limits

2) In the sample and hold circuit, the period during which the voltage across capacitor is equal to input voltage _____.
a) Sampling period b) Hold period
c) Delay period d) Charging period

3) The use of diode or BJT in feedback path of amplifier is called as _____.
a) Log amplifier b) Antilog amplifier
c) Rectifier d) Sample and hold circuit

4) In saw tooth wave generator _____.
a) T rise < T fall b) T rise > T fall
c) T rise = T fall d) None of above

5) To change the high cutoff frequency of a filter. It is multiplied by R or C by a ratio of original cutoff frequency known as _____.
a) Gain scaling b) Frequency scaling
c) Magnitude scaling d) Phase scaling

6) The output voltage of the device LM337 adjustable negative voltage regulator is _____.
a) -1.2 to -37V b) -8 to -25V
c) -10.5 to -25V d) 1.2 to 37V

7) The monostable multivibrator circuit is not an oscillator because _____.
a) its output switches between two states
b) it requires a sine wave input signal
c) it requires a trigger to obtain an output signal
d) the circuit does not require a dc power supply

8) Which of these is incorrect for an operational amplifier?
a) It has a high voltage gain
b) It is a direct coupled amplifier
c) It is only useful for amplifying AC signals
d) It was originally designed to perform mathematical operations

9) In an ideal op-amp, which is not true?
a) Open loop voltage gain is infinite
b) Input resistance is infinite
c) Slew rate is infinite
d) CMRR is zero

10) Voltage series feedback circuit is also called as _____.
a) Inverting amplifier with feedback
b) Closed loop noninverting amplifier
c) Open loop noninverting amplifier
d) Both a) and b)

11) Output Offset voltage is caused by _____.
a) Input Bias Current
b) Input Offset Voltage
c) Both a) and b)
d) None of above

12) Roll off of Op-amp gain after certain frequency is due to _____.
a) Inductive effect
b) Capacitive effect
c) Feedback
d) Gain

13) A summing amplifier can be realized with _____.
a) Inverting amplifier
b) Non-Inverting amplifier
c) Differential amplifier
d) All of above

14) V to I convertor can be designed with _____.
a) Floating load
b) Grounded load
c) Both of a) and b)
d) None of above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Analog Integrated Circuits (ENTPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Draw neat diagram whenever necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Derive the expression for gain of Non-inverting amplifier with negative feedback.

b) Explain four Basic Building blocks of op-amp.

c) What is slew rate? Explain its importance.

d) Explain basic integrator with Input Output waveforms.

e) Explain the difference between the integrator and differentiator and give one application of each.

Q.3 Attempt Any Two. **12**

a) Derive the ICEQ and VCEQ for DIBO differential amplifier.

b) Define Common Mode Rejection Ratio (CMRR) and explain the significance of relatively large value of CMRR.

c) Design an Integrator circuit if low frequency gain is 20 dB and fa = 1KHz. Use capacitance as $0.01\mu f$

SECTION – II

Q.4 Attempt Any Four. **16**

a) With neat diagram, explain sample and hold circuit.

b) Explain with neat diagram operation of window detector using op-amp.

c) Explain square wave generator.

d) Design the Wien Bridge Oscillator so that fo = 965Hz with circuit of Wien Bridge Oscillator.

e) Explain PLL.

Q.5 Attempt Any Two. **12**

a) Draw and explain full wave precision rectifier.

b) Design a second order low pass Butterworth filter with higher cutoff frequency of 1.6 KHz. Draw the designed circuit and sketch its frequency response.

c) Explain monostable multivibrator using IC 555 with equation for output.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Analog Integrated Circuits (ENTPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) In saw tooth wave generator _____.
a) T rise < T fall b) T rise > T fall
c) T rise = T fall d) None of above

2) To change the high cutoff frequency of a filter. It is multiplied by R or C by a ratio of original cutoff frequency known as _____.
a) Gain scaling b) Frequency scaling
c) Magnitude scaling d) Phase scaling

3) The output voltage of the device LM337 adjustable negative voltage regulator is _____.
a) -1.2 to -37V b) -8 to -25V
c) -10.5 to -25V d) 1.2 to 37V

4) The monostable multivibrator circuit is not an oscillator because _____.
a) its output switches between two states
b) it requires a sine wave input signal
c) it requires a trigger to obtain an output signal
d) the circuit does not require a dc power supply

5) Which of these is incorrect for an operational amplifier?
a) It has a high voltage gain
b) It is a direct coupled amplifier
c) It is only useful for amplifying AC signals
d) It was originally designed to perform mathematical operations

6) In an ideal op-amp, which is not true?
a) Open loop voltage gain is infinite
b) Input resistance is infinite
c) Slew rate is infinite
d) CMRR is zero

7) Voltage series feedback circuit is also called as _____.
a) Inverting amplifier with feedback
b) Closed loop noninverting amplifier
c) Open loop noninverting amplifier
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8) Output Offset voltage is caused by _____.
a) Input Bias Current b) Input Offset Voltage
c) Both a) and b) d) None of above

9) Roll off of Op-amp gain after certain frequency is due to _____.
a) Inductive effect b) Capacitive effect
c) Feedback d) Gain

10) A summing amplifier can be realized with _____.
a) Inverting amplifier b) Non-Inverting amplifier
c) Differential amplifier d) All of above

11) V to I convertor can be designed with _____.
a) Floating load b) Grounded load
c) Both of a) and b) d) None of above

12) Window detector _____.
a) Has only one unstable threshold
b) Uses hysteresis to speed up response
c) Clamps input positively
d) Detects input voltage between two limits

13) In the sample and hold circuit, the period during which the voltage across capacitor is equal to input voltage _____.
a) Sampling period b) Hold period
c) Delay period d) Charging period

14) The use of diode or BJT in feedback path of amplifier is called as _____.
a) Log amplifier b) Antilog amplifier
c) Rectifier d) Sample and hold circuit

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Analog Integrated Circuits (ENTPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Draw neat diagram whenever necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Derive the expression for gain of Non-inverting amplifier with negative feedback.

b) Explain four Basic Building blocks of op-amp.

c) What is slew rate? Explain its importance.

d) Explain basic integrator with Input Output waveforms.

e) Explain the difference between the integrator and differentiator and give one application of each.

Q.3 Attempt Any Two. **12**

a) Derive the ICEQ and VCEQ for DIBO differential amplifier.

b) Define Common Mode Rejection Ratio (CMRR) and explain the significance of relatively large value of CMRR.

c) Design an Integrator circuit if low frequency gain is 20 dB and fa = 1KHz. Use capacitance as $0.01\mu f$

SECTION – II

Q.4 Attempt Any Four. **16**

a) With neat diagram, explain sample and hold circuit.

b) Explain with neat diagram operation of window detector using op-amp.

c) Explain square wave generator.

d) Design the Wien Bridge Oscillator so that fo = 965Hz with circuit of Wien Bridge Oscillator.

e) Explain PLL.

Q.5 Attempt Any Two. **12**

a) Draw and explain full wave precision rectifier.

b) Design a second order low pass Butterworth filter with higher cutoff frequency of 1.6 KHz. Draw the designed circuit and sketch its frequency response.

c) Explain monostable multivibrator using IC 555 with equation for output.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Analog Integrated Circuits (ENTPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) A summing amplifier can be realized with _____.
a) Inverting amplifier b) Non-Inverting amplifier
c) Differential amplifier d) All of above

2) V to I convertor can be designed with _____.
a) Floating load b) Grounded load
c) Both of a) and b) d) None of above

3) Window detector _____.
a) Has only one unstable threshold
b) Uses hysteresis to speed up response
c) Clamps input positively
d) Detects input voltage between two limits

4) In the sample and hold circuit, the period during which the voltage across capacitor is equal to input voltage _____.
a) Sampling period b) Hold period
c) Delay period d) Charging period

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a) Log amplifier b) Antilog amplifier
c) Rectifier d) Sample and hold circuit

6) In saw tooth wave generator _____.
a) T rise < T fall b) T rise > T fall
c) T rise = T fall d) None of above

7) To change the high cutoff frequency of a filter. It is multiplied by R or C by a ratio of original cutoff frequency known as _____.
a) Gain scaling
b) Frequency scaling
c) Magnitude scaling
d) Phase scaling

8) The output voltage of the device LM337 adjustable negative voltage regulator is _____.
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c) -10.5 to -25V
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c) it requires a trigger to obtain an output signal
d) the circuit does not require a dc power supply

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b) It is a direct coupled amplifier
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d) It was originally designed to perform mathematical operations

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c) Slew rate is infinite
d) CMRR is zero

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a) Inverting amplifier with feedback
b) Closed loop noninverting amplifier
c) Open loop noninverting amplifier
d) Both a) and b)

13) Output Offset voltage is caused by _____.
a) Input Bias Current
b) Input Offset Voltage
c) Both a) and b)
d) None of above

14) Roll off of Op-amp gain after certain frequency is due to _____.
a) Inductive effect
b) Capacitive effect
c) Feedback
d) Gain

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Analog Integrated Circuits (ENTPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.
4) Draw neat diagram whenever necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Derive the expression for gain of Non-inverting amplifier with negative feedback.

b) Explain four Basic Building blocks of op-amp.

c) What is slew rate? Explain its importance.

d) Explain basic integrator with Input Output waveforms.

e) Explain the difference between the integrator and differentiator and give one application of each.

Q.3 Attempt Any Two. **12**

a) Derive the ICEQ and VCEQ for DIBO differential amplifier.

b) Define Common Mode Rejection Ratio (CMRR) and explain the significance of relatively large value of CMRR.

c) Design an Integrator circuit if low frequency gain is 20 dB and fa = 1KHz. Use capacitance as $0.01\mu f$

SECTION – II

Q.4 Attempt Any Four. **16**

a) With neat diagram, explain sample and hold circuit.

b) Explain with neat diagram operation of window detector using op-amp.

c) Explain square wave generator.

d) Design the Wien Bridge Oscillator so that fo = 965Hz with circuit of Wien Bridge Oscillator.

e) Explain PLL.

Q.5 Attempt Any Two. **12**

a) Draw and explain full wave precision rectifier.

b) Design a second order low pass Butterworth filter with higher cutoff frequency of 1.6 KHz. Draw the designed circuit and sketch its frequency response.

c) Explain monostable multivibrator using IC 555 with equation for output.

SLR-QH-127

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Innovation provides _____.
a) Stability b) Competitive advantage
c) Similarity d) Confusion

2) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

3) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

4) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

5) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

6) Six Thinking Hats tool was developed by _____.
a) Peter Drucker
b) Steve Jobs
c) Edward de Bono
d) Clayton Christensen

7) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

8) Which is not a type of innovation strategy?
a) Pioneering
b) Imitative
c) Disruptive
d) Delaying

9) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

10) Continuous learning is essential for _____.
a) Innovation growth
b) Routine operations
c) Cost reduction
d) Project closure

11) Failure in innovation can occur due to _____.
a) Over-regulation
b) Poor planning
c) Lack of feedback
d) All of these

12) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

13) Legal consideration in entrepreneurship includes _____.
a) Product packaging
b) Compliance and regulations
c) Floor layout
d) Office color

14) Entrepreneurial process starts with _____.
a) HR hiring
b) Opportunity identification
c) Revenue calculation
d) Market monopoly

SLR-QH-127

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026 Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-127

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
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a) Uncontested markets
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a) Innovation growth b) Routine operations
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a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

7) Entrepreneurial process starts with _____.
a) HR hiring
b) Opportunity identification
c) Revenue calculation
d) Market monopoly

8) Innovation provides _____.
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b) Competitive advantage
c) Similarity
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9) Managerial competency involves _____.
a) Fundraising only
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c) Imitation
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11) A corporate entrepreneur is _____.
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12) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
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13) Six Thinking Hats tool was developed by _____.
a) Peter Drucker
b) Steve Jobs
c) Edward de Bono
d) Clayton Christensen

14) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

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c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

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SECTION – II

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a) Explain the concept of innovation process. **06**

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Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

2) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

3) Legal consideration in entrepreneurship includes _____.
a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

4) Entrepreneurial process starts with _____.
a) HR hiring b) Opportunity identification
c) Revenue calculation d) Market monopoly

5) Innovation provides _____.
a) Stability b) Competitive advantage
c) Similarity d) Confusion

6) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

7) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

8) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

9) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

10) Six Thinking Hats tool was developed by _____.
a) Peter Drucker
b) Steve Jobs
c) Edward de Bono
d) Clayton Christensen

11) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

12) Which is not a type of innovation strategy?
a) Pioneering
b) Imitative
c) Disruptive
d) Delaying

13) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

14) Continuous learning is essential for _____.
a) Innovation growth
b) Routine operations
c) Cost reduction
d) Project closure

SLR-QH-127

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026 Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-127

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Six Thinking Hats tool was developed by _____.
a) Peter Drucker b) Steve Jobs
c) Edward de Bono d) Clayton Christensen

2) NUF test stands for _____.
a) Necessary, Useful, Feasible
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3) Which is not a type of innovation strategy?
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4) Red Ocean strategy is about _____.
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6) Failure in innovation can occur due to _____.
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7) Crafting a business model involves _____.
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8) Legal consideration in entrepreneurship includes _____.
   a) Product packaging
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   c) Floor layout
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   c) Revenue calculation
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10) Innovation provides _____.
   a) Stability
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11) Managerial competency involves _____.
   a) Fundraising only
   b) Communication, planning, and leadership
   c) Imitation
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13) A corporate entrepreneur is _____.
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   b) Government employee
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SLR-QH-127

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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4) Assume suitable data if necessary and mention it clearly.
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SECTION – I

Q.2 All questions are compulsory.

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b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-129

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

2) What is a key characteristic of solar energy?
a) Utilizes sunlight for power generation
b) Requires fossil fuels for operation
c) Has no environmental benefits
d) ls non-renewable

3) Which renewable energy is best suited for coastal areas?
a) Biomass energy b) Geothermal energy
c) Wave and tidal energy d) Oil shale energy

4) What is solar radiation?
a) Radiation from the Earth b) Radiation from the Moon
c) Radiation from the Sun d) None of the above

5) What is solar radiation measured in?
a) Kilograms
b) Liters
c) Watts per square meter (W/m^2)
d) Newtons

6) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

7) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

8) What happens when electricity demand is higher than generation?
   a) Energy storage can provide additional power
   b) Renewable energy sources produce more electricity
   c) Power plants automatically increase supply
   d) Transmission lines store energy

9) Which of the following sectors benefits the most from energy storage?
   a) Agriculture
   b) Construction
   c) Transport
   d) Power generation

10) What does the efficiency of an energy storage device indicate?
   a) The time taken to store energy
   b) The total cost of the device
   c) The percentage of stored energy that can be retrieved
   d) The size of the storage system

11) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
   a) Penstock
   b) Reservoir
   c) Fore bay
   d) Spillways

12) Tidal energy is caused primarily by the _____.
   a) Moon's gravity
   b) Sun's gravity
   c) Earth's rotation
   d) Ocean currents

13) Green hydrogen is produced by _____.
   a) Coal gasification
   b) Methane reforming
   c) Water electrolysis using renewable energy
   d) Nuclear fission

14) Which is the cleanest method of hydrogen production?
   a) Electrolysis using solar/wind energy
   b) Coal gasification
   c) Nuclear thermal splitting
   d) Steam methane reforming

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) What happens when electricity demand is higher than generation?
a) Energy storage can provide additional power
b) Renewable energy sources produce more electricity
c) Power plants automatically increase supply
d) Transmission lines store energy

2) Which of the following sectors benefits the most from energy storage?
a) Agriculture b) Construction
c) Transport d) Power generation

3) What does the efficiency of an energy storage device indicate?
a) The time taken to store energy
b) The total cost of the device
c) The percentage of stored energy that can be retrieved
d) The size of the storage system

4) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock b) Reservoir
c) Fore bay d) Spillways

5) Tidal energy is caused primarily by the _____.
a) Moon's gravity b) Sun's gravity
c) Earth's rotation d) Ocean currents

6) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

7) Which is the cleanest method of hydrogen production?
   a) Electrolysis using solar/wind energy
   b) Coal gasification
   c) Nuclear thermal splitting
   d) Steam methane reforming

8) Which of the following is a key goal of sustainable development?
   a) Increase in fossil fuel consumption
   b) Balanced use of resources
   c) Maximum economic growth only
   d) Eliminating renewable energy use

9) What is a key characteristic of solar energy?
   a) Utilizes sunlight for power generation
   b) Requires fossil fuels for operation
   c) Has no environmental benefits
   d) ls non-renewable

10) Which renewable energy is best suited for coastal areas?
   a) Biomass energy
   b) Geothermal energy
   c) Wave and tidal energy
   d) Oil shale energy

11) What is solar radiation?
   a) Radiation from the Earth
   b) Radiation from the Moon
   c) Radiation from the Sun
   d) None of the above

12) What is solar radiation measured in?
   a) Kilograms
   b) Liters
   c) Watts per square meter (W/m^2)
   d) Newtons

13) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

14) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

SLR-QH-129

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock b) Reservoir
c) Fore bay d) Spillways

2) Tidal energy is caused primarily by the _____.
a) Moon's gravity b) Sun's gravity
c) Earth's rotation d) Ocean currents

3) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

4) Which is the cleanest method of hydrogen production?
a) Electrolysis using solar/wind energy
b) Coal gasification
c) Nuclear thermal splitting
d) Steam methane reforming

5) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

6) What is a key characteristic of solar energy?
   a) Utilizes sunlight for power generation
   b) Requires fossil fuels for operation
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   d) ls non-renewable

7) Which renewable energy is best suited for coastal areas?
   a) Biomass energy
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8) What is solar radiation?
   a) Radiation from the Earth
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   c) Radiation from the Sun
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9) What is solar radiation measured in?
   a) Kilograms
   b) Liters
   c) Watts per square meter (W/m^2)
   d) Newtons

10) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

11) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

12) What happens when electricity demand is higher than generation?
   a) Energy storage can provide additional power
   b) Renewable energy sources produce more electricity
   c) Power plants automatically increase supply
   d) Transmission lines store energy

13) Which of the following sectors benefits the most from energy storage?
   a) Agriculture
   b) Construction
   c) Transport
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14) What does the efficiency of an energy storage device indicate?
   a) The time taken to store energy
   b) The total cost of the device
   c) The percentage of stored energy that can be retrieved
   d) The size of the storage system

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
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SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
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	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

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Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

SLR-QH-129

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) What is the primary difference between pyrolysis and gasification?
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b) Requires fossil fuels for operation
c) Has no environmental benefits
d) ls non-renewable

12) Which renewable energy is best suited for coastal areas?
a) Biomass energy
b) Geothermal energy
c) Wave and tidal energy
d) Oil shale energy

13) What is solar radiation?
a) Radiation from the Earth
b) Radiation from the Moon
c) Radiation from the Sun
d) None of the above

14) What is solar radiation measured in?
a) Kilograms
b) Liters
c) Watts per square meter (W/m^2)
d) Newtons

SLR-QH-129

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

2) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

3) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

4) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

5) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

6) In a DSO, the input signals are _____.
   a) directly applied to oscilloscope
   b) multiplexed, converted to digital form and stored and applied to oscilloscope
   c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
   d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

7) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
   a) n wattmeters
   b) (n + 1) wattmeters
   c) (n - 2) wattmeters
   d) (n - 1) wattmeters

8) Which transducer does not require any external power supply for working?
   a) Strain gauge transducer
   b) Piezoelectric Crystals
   c) Hydraulic transducer
   d) Pneumatic transducer

9) Piezoelectric accelerometer converts _____ energy to _____ energy.
   a) mechanical, sound
   b) mechanical, electrical
   c) sound, electrical
   d) None of these

10) Which factor affects the least while selection of sensor?
   a) Size
   b) Accuracy
   c) Colour
   d) Durability

11) Which sensor should be used for calculating pressure?
   a) DHT11
   b) LM335Z/NOPB
   c) HC-SR04
   d) MPX10DP

12) Which of the following represents range of frequency measured by ADC?
   a) Bandwidth
   b) Threshold frequency
   c) Peak frequency
   d) None of the mentioned

13) Thermistor is a _____.
   a) sensor
   b) ADC
   c) transducer
   d) micro controller

14) Which of the following type output is provided by ADC?
   a) Serial type
   b) Parallel type
   c) Both serial and parallel type
   d) None of the mentioned

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) Which transducer does not require any external power supply for working?
a) Strain gauge transducer b) Piezoelectric Crystals
c) Hydraulic transducer d) Pneumatic transducer

2) Piezoelectric accelerometer converts _____ energy to _____ energy.
a) mechanical, sound b) mechanical, electrical
c) sound, electrical d) None of these

3) Which factor affects the least while selection of sensor?
a) Size b) Accuracy
c) Colour d) Durability

4) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

5) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

6) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

7) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

8) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

9) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

10) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

11) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

12) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

13) In a DSO, the input signals are _____.
a) directly applied to oscilloscope
b) multiplexed, converted to digital form and stored and applied to oscilloscope
c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

14) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
a) n wattmeters b) (n + 1) wattmeters
c) (n - 2) wattmeters d) (n - 1) wattmeters

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

2) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

3) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

4) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

5) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

6) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

7) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

8) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.

a) Substitution
b) Loss of charge
c) Wheatstone bridge
d) Kelvin's double bridge

9) Instrument transformers are _____.

a) Potential transformers
b) Current transformers
c) Both (a) and (b)
d) Power transformers

10) In a DSO, the input signals are _____.

a) directly applied to oscilloscope
b) multiplexed, converted to digital form and stored and applied to oscilloscope
c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

11) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.

a) n wattmeters
b) (n + 1) wattmeters
c) (n - 2) wattmeters
d) (n - 1) wattmeters

12) Which transducer does not require any external power supply for working?

a) Strain gauge transducer
b) Piezoelectric Crystals
c) Hydraulic transducer
d) Pneumatic transducer

13) Piezoelectric accelerometer converts _____ energy to _____ energy.

a) mechanical, sound
b) mechanical, electrical
c) sound, electrical
d) None of these

14) Which factor affects the least while selection of sensor?

a) Size
b) Accuracy
c) Colour
d) Durability

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) In a DSO, the input signals are _____.
a) directly applied to oscilloscope
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d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

2) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
a) n wattmeters b) (n + 1) wattmeters
c) (n - 2) wattmeters d) (n - 1) wattmeters

3) Which transducer does not require any external power supply for working?
a) Strain gauge transducer b) Piezoelectric Crystals
c) Hydraulic transducer d) Pneumatic transducer

4) Piezoelectric accelerometer converts _____ energy to _____ energy.
a) mechanical, sound b) mechanical, electrical
c) sound, electrical d) None of these

5) Which factor affects the least while selection of sensor?
a) Size b) Accuracy
c) Colour d) Durability

6) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

7) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

8) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

9) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
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10) Which of the following is not a type of systematic error?
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c) Recording d) Integrating

12) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

13) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

14) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

SLR-QH-131

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

2) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
c) Simplex Method d) Integer Programming

3) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

4) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (-1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

5) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
c) Faster Solution d) Slower Solution

6) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

7) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

8) At the Break-Even Point _____.
a) Profit > Loss
b) Profit < Loss
c) Profit = Loss
d) None of these

9) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource
b) Reconciliation
c) Reconsideration
d) Review

10) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum
b) Average
c) Safety
d) Standard

11) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

12) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

13) In a project network, the critical path _____.
a) may be the shortest path
b) is the longest path
c) may be the longest path
d) is the shortest path

14) The inventory carrying costs are also called as _____.
a) Procurement costs
b) Set-up costs
c) Storage costs
d) None of the above

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026 Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
	to	tm	tp
$1-2$	1	1	7
$1-3$	1	4	7
$1-4$	2	2	8
$2-5$	1	1	1
$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) At the Break-Even Point _____.
a) Profit > Loss b) Profit < Loss
c) Profit = Loss d) None of these

2) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

3) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

4) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

5) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

6) In a project network, the critical path _____.
a) may be the shortest path b) is the longest path
c) may be the longest path d) is the shortest path

7) The inventory carrying costs are also called as _____.
a) Procurement costs b) Set-up costs
c) Storage costs d) None of the above

8) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

9) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
c) Simplex Method d) Integer Programming

10) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

11) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (−1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

12) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
c) Faster Solution d) Slower Solution

13) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

14) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
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b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
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$3-5$	2	5	14
$4-6$	2	5	8
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Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

2) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

3) In a project network, the critical path _____.
a) may be the shortest path b) is the longest path
c) may be the longest path d) is the shortest path

4) The inventory carrying costs are also called as _____.
a) Procurement costs b) Set-up costs
c) Storage costs d) None of the above

5) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

6) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
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7) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
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10) Transportation Models are also called as _____.
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11) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

12) At the Break-Even Point _____.
a) Profit $>$ Loss b) Profit $<$ Loss
c) Profit $=$ Loss d) None of these

13) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

14) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
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SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

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Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
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Probability Factor	Probability
0	50%
1	84.13 %
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3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

2) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
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a) Maximization
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b) Graphical Method
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a) Stone Cells
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14) Advantage of VAM of transportation is _____.
a) Near to optimal Solution
b) Least Cost
c) Faster Solution
d) Slower Solution

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
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b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

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2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
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S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
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$3-5$	2	5	14
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$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
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Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

SLR-QH-132

Seat No.	

Set | **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026 Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

2) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

3) The Gauss-Seidel method is used for solving _____.
a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

4) Which of the following is a disadvantage of the Gauss-Jacobi method?
a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

5) The use of Romberg's method is _____.
a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

6) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

7) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

8) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

9) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

10) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

11) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

12) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

13) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

14) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026 Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

2) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

3) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

4) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

5) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

6) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

7) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

8) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

9) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

10) The Gauss-Seidel method is used for solving _____.
a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

11) Which of the following is a disadvantage of the Gauss-Jacobi method?
a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

12) The use of Romberg's method is _____.
a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

13) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

14) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026 Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

2) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

3) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

4) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

5) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

6) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.

a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

7) The Gauss-Seidel method is used for solving _____.

a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

8) Which of the following is a disadvantage of the Gauss-Jacobi method?

a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

9) The use of Romberg's method is _____.

a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

10) The order of convergence of Newton-Raphson method is _____.

a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

11) Power Method is used to find _____.

a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

12) To find the numerically largest Eigen value using iterative method we use the equation _____.

a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

13) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.

a) 0.905 b) 1.905
c) 2.905 d) None

14) Runge-Kutta method is self-starting method _____.

a) True b) False
c) We can't say d) None

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026 Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
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$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

2) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

3) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
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4) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
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5) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

6) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

7) In the power method, the vector is normalized in each iteration mainly to _____.
   a) increase the determinant
   b) prevent values from becoming too large
   c) eliminate eigen values
   d) make the matrix symmetric

8) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
   a) multiple of 2
   b) multiple of 3
   c) multiple of 4
   d) odd only

9) Picard's method is mainly used to solve _____.
   a) linear programming problems
   b) differential equations
   c) eigen value problems
   d) interpolation problems

10) A transcendental equation is an equation that involves _____.
   a) Only algebraic terms
   b) Only transcendental functions
   c) Both algebraic and transcendental functions
   d) Linear terms only

11) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
   a) $(1, 2)$
   b) $(0, 1)$
   c) $(2, 3)$
   d) $(3, 4)$

12) The Gauss-Seidel method is used for solving _____.
   a) Nonlinear equations
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   c) Ordinary differential equations
   d) Partial differential equations

13) Which of the following is a disadvantage of the Gauss-Jacobi method?
   a) It converges faster than most direct methods
   b) It requires a large number of iterations for a good approximation
   c) It cannot be used for systems with more than two equations
   d) It works only for symmetric systems

14) The use of Romberg's method is _____.
   a) To solve simultaneous linear equation
   b) To find root of linear equation
   c) To evaluate definite integration
   d) To find the Eigen values

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
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c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
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e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

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d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

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Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

SLR-QH-133

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.
a) Decoding b) Encoding
c) Feedback d) Channeling

2) A message sent without words using facial expressions or gestures is called _____.
a) Written communication b) Verbal communication
c) Non-verbal communication d) Grapevine communication

3) Which channel characteristic most reduces chances of immediate feedback?
a) Face-to-face conversation b) Telephone call
c) Email d) Video conference

4) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.
a) Noise b) Semantic barrier
c) Perceptual barrier d) Channel barrier

5) Body language, eye contact and posture are examples of ____.
a) Verbal codes b) Non-verbal codes
c) Written codes d) Graphic communication

6) Upward communication flows from _____.
a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

7) An advantage of face-to-face communication over written communication is _____.
a) Permanent record
b) Easier legal reference
c) Immediate feedback
d) More formal tone

8) Which element is essential for an effective welcome speech?
a) Detailed technical data
b) Acknowledgement of guests
c) Long biographical note
d) Complex statistics

9) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
b) Summarize research findings
c) Express gratitude to contributors and audience
d) Present the event budget

10) Which is a best practice when delivering a professional presentation?
a) Reading every slide verbatim
b) Using too many small fonts
c) Maintaining eye contact and varying tone
d) Using no structure or flow

11) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
a) Enquiry letter
b) Complaint letter
c) Order letter
d) Quotation letter

12) A purchase order is principally used to _____.
a) Complain about defects
b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

13) Which part of a business letter contains the main message or details the writer wants to communicate?
a) Heading
b) Salutation
c) Body
d) Signature block

14) Which report type is typically written to describe a workplace accident and recommend corrective actions?
a) Progress report
b) Accident report
c) Sales report
d) Quotation report

Seat No.	

Set | P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

SLR-QH-133

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Which element is essential for an effective welcome speech?
a) Detailed technical data b) Acknowledgement of guests
c) Long biographical note d) Complex statistics

2) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
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c) Express gratitude to contributors and audience
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3) Which is a best practice when delivering a professional presentation?
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4) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
a) Enquiry letter b) Complaint letter
c) Order letter d) Quotation letter

5) A purchase order is principally used to _____.
a) Complain about defects
b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

6) Which part of a business letter contains the main message or details the writer wants to communicate?

a) Heading
b) Salutation
c) Body
d) Signature block

7) Which report type is typically written to describe a workplace accident and recommend corrective actions?

a) Progress report
b) Accident report
c) Sales report
d) Quotation report

8) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.

a) Decoding
b) Encoding
c) Feedback
d) Channeling

9) A message sent without words using facial expressions or gestures is called _____.

a) Written communication
b) Verbal communication
c) Non-verbal communication
d) Grapevine communication

10) Which channel characteristic most reduces chances of immediate feedback?

a) Face-to-face conversation
b) Telephone call
c) Email
d) Video conference

11) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.

a) Noise
b) Semantic barrier
c) Perceptual barrier
d) Channel barrier

12) Body language, eye contact and posture are examples of ____.

a) Verbal codes
b) Non-verbal codes
c) Written codes
d) Graphic communication

13) Upward communication flows from _____.

a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

14) An advantage of face-to-face communication over written communication is _____.

a) Permanent record
b) Easier legal reference
c) Immediate feedback
d) More formal tone

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

SLR-QH-133

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
a) Enquiry letter b) Complaint letter
c) Order letter d) Quotation letter

2) A purchase order is principally used to _____.
a) Complain about defects
b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

3) Which part of a business letter contains the main message or details the writer wants to communicate?
a) Heading b) Salutation
c) Body d) Signature block

4) Which report type is typically written to describe a workplace accident and recommend corrective actions?
a) Progress report b) Accident report
c) Sales report d) Quotation report

5) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.
a) Decoding b) Encoding
c) Feedback d) Channeling

6) A message sent without words using facial expressions or gestures is called _____.
a) Written communication b) Verbal communication
c) Non-verbal communication d) Grapevine communication

7) Which channel characteristic most reduces chances of immediate feedback?
a) Face-to-face conversation b) Telephone call
c) Email d) Video conference

8) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.
a) Noise b) Semantic barrier
c) Perceptual barrier d) Channel barrier

9) Body language, eye contact and posture are examples of ____.
a) Verbal codes b) Non-verbal codes
c) Written codes d) Graphic communication

10) Upward communication flows from _____.
a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

11) An advantage of face-to-face communication over written communication is _____.
a) Permanent record b) Easier legal reference
c) Immediate feedback d) More formal tone

12) Which element is essential for an effective welcome speech?
a) Detailed technical data b) Acknowledgement of guests
c) Long biographical note d) Complex statistics

13) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
b) Summarize research findings
c) Express gratitude to contributors and audience
d) Present the event budget

14) Which is a best practice when delivering a professional presentation?
a) Reading every slide verbatim
b) Using too many small fonts
c) Maintaining eye contact and varying tone
d) Using no structure or flow

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P’s of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

SLR-QH-133

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Upward communication flows from _____.
a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

2) An advantage of face-to-face communication over written communication is _____.
a) Permanent record b) Easier legal reference
c) Immediate feedback d) More formal tone

3) Which element is essential for an effective welcome speech?
a) Detailed technical data b) Acknowledgement of guests
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4) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
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6) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.

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9) Which report type is typically written to describe a workplace accident and recommend corrective actions?

a) Progress report b) Accident report
c) Sales report d) Quotation report

10) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.

a) Decoding b) Encoding
c) Feedback d) Channeling

11) A message sent without words using facial expressions or gestures is called _____.

a) Written communication b) Verbal communication
c) Non-verbal communication d) Grapevine communication

12) Which channel characteristic most reduces chances of immediate feedback?

a) Face-to-face conversation b) Telephone call
c) Email d) Video conference

13) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.

a) Noise b) Semantic barrier
c) Perceptual barrier d) Channel barrier

14) Body language, eye contact and posture are examples of ____.

a) Verbal codes b) Non-verbal codes
c) Written codes d) Graphic communication

SLR-QH-133

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

SLR-QH-134

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Artificial Intelligence (ENTHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The correct ways to solve a problem of state-space search are?
a) Forward from the initial state b) Backward from the goal
c) Both a) and b) d) None of the above

2) Which of these is the best learning model suitable for an observable environment?
a) Supervised b) Unsupervised
c) Both a) and b) d) None of the above

3) A* algorithm is based on _____.
a) Breadth-First-Search b) Depth-First-Search
c) Best-First-Search d) Hill climbing

4) Which is not a property of representation of knowledge?
a) Representational Verification b) Representational Adequacy
c) Inferential Adequacy d) Inferential Efficiency

5) Which of the following search technique has AND/OR graph theory?
a) Greedy Best First Search b) A*
c) AO* d) None of these

6) Propositional Logic has _____ output.
a) Either True or False b) Both True and False
c) Quantitative Value d) None

7) How an Al agent does interact with its environment?
   a) Using sensors and perceivers
   b) Using only sensors
   c) Using only perceivers
   d) None of the above

8) If a machine can change its course of action based on the external environment on its own, the machine is called?
   a) Mobile
   b) Intelligent
   c) Both a) and b)
   d) None of the above

9) What is Artificial intelligence?
   a) Putting your intelligence into Computer
   b) Programming with your own intelligence
   c) Making a Machine intelligent
   d) Playing a Game

10) A production rule consists of _____.
   a) A set of Rule
   b) A sequence of steps
   c) Both a) and b)
   d) Arbitrary representation to problem

11) Probability always lies between?
   a) 0 and 1
   b) 0 and 100
   c) 0 and infinity
   d) −infinity to +infinity

12) Which if the following most advanced form of Al?
   a) Neural Network
   b) Machine Learning
   c) Data Science
   d) Deep Learning

13) Which search method takes less memory?
   a) Depth-First Search
   b) Breadth-First search
   c) Both a) and b)
   d) Linear Search

14) Decisions of Victory/Defeat are made in Game trees using which algorithm?
   a) DFS
   b) BFS
   c) Heuristic Search
   d) Min/Max Algorithm

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Artificial Intelligence (ENTHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain the minimax algorithm with example.

b) Explain any four applications of Al.

c) Explain any two types Al agents with diagram.

d) Explain AO* Algorithm with example.

e) What is constraint Satisfaction Problems? Explain with map colouring example.

Q.3 Solve Any Two **12**

a) Explain FOL (First Order Logic) in detail.

b) Write short note on knowledge representation and reasoning.

c) Write a note BFS and DFS with example.

SECTION – II

Q.4 Solve Any Four **16**

a) Explain Bayes Rule with suitable example.

b) Explain Bayesian networks.

c) What are the scalability issues concerned with learning and knowledge acquisition?

d) Explain utility theory.

e) Explain in brief the streaming scenario in learning and Knowledge acquisition.

Q.5 Solve Any Two **12**

a) Justify the application of machine learning in Artificial Intelligence.

b) Write a short note on:
i) Sequential Decision Problems
ii) Streaming Scenario

c) Explain about description logics.

SLR-QH-134

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Artificial Intelligence (ENTHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) If a machine can change its course of action based on the external environment on its own, the machine is called?
a) Mobile
b) Intelligent
c) Both a) and b)
d) None of the above

2) What is Artificial intelligence?
a) Putting your intelligence into Computer
b) Programming with your own intelligence
c) Making a Machine intelligent
d) Playing a Game

3) A production rule consists of _____.
a) A set of Rule
b) A sequence of steps
c) Both a) and b)
d) Arbitrary representation to problem

4) Probability always lies between?
a) 0 and 1
b) 0 and 100
c) 0 and infinity
d) −infinity to +infinity

5) Which if the following most advanced form of Al?
a) Neural Network
b) Machine Learning
c) Data Science
d) Deep Learning

6) Which search method takes less memory?
a) Depth-First Search
b) Breadth-First search
c) Both a) and b)
d) Linear Search

7) Decisions of Victory/Defeat are made in Game trees using which algorithm?
a) DFS
b) BFS
c) Heuristic Search
d) Min/Max Algorithm

8) The correct ways to solve a problem of state-space search are?
a) Forward from the initial state
b) Backward from the goal
c) Both a) and b)
d) None of the above

9) Which of these is the best learning model suitable for an observable environment?
a) Supervised
b) Unsupervised
c) Both a) and b)
d) None of the above

10) A* algorithm is based on _____.
a) Breadth-First-Search
b) Depth-First-Search
c) Best-First-Search
d) Hill climbing

11) Which is not a property of representation of knowledge?
a) Representational Verification
b) Representational Adequacy
c) Inferential Adequacy
d) Inferential Efficiency

12) Which of the following search technique has AND/OR graph theory?
a) Greedy Best First Search
b) A*
c) AO*
d) None of these

13) Propositional Logic has _____ output.
a) Either True or False
b) Both True and False
c) Quantitative Value
d) None

14) How an Al agent does interact with its environment?
a) Using sensors and perceivers
b) Using only sensors
c) Using only perceivers
d) None of the above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Artificial Intelligence (ENTHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain the minimax algorithm with example.

b) Explain any four applications of Al.

c) Explain any two types Al agents with diagram.

d) Explain AO* Algorithm with example.

e) What is constraint Satisfaction Problems? Explain with map colouring example.

Q.3 Solve Any Two **12**

a) Explain FOL (First Order Logic) in detail.

b) Write short note on knowledge representation and reasoning.

c) Write a note BFS and DFS with example.

SECTION – II

Q.4 Solve Any Four **16**

a) Explain Bayes Rule with suitable example.

b) Explain Bayesian networks.

c) What are the scalability issues concerned with learning and knowledge acquisition?

d) Explain utility theory.

e) Explain in brief the streaming scenario in learning and Knowledge acquisition.

Q.5 Solve Any Two **12**

a) Justify the application of machine learning in Artificial Intelligence.

b) Write a short note on:
i) Sequential Decision Problems
ii) Streaming Scenario

c) Explain about description logics.

SLR-QH-134

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Artificial Intelligence (ENTHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Probability always lies between?
a) 0 and 1 b) 0 and 100
c) 0 and infinity d) −infinity to +infinity

2) Which if the following most advanced form of Al?
a) Neural Network b) Machine Learning
c) Data Science d) Deep Learning

3) Which search method takes less memory?
a) Depth-First Search b) Breadth-First search
c) Both a) and b) d) Linear Search

4) Decisions of Victory/Defeat are made in Game trees using which algorithm?
a) DFS b) BFS
c) Heuristic Search d) Min/Max Algorithm

5) The correct ways to solve a problem of state-space search are?
a) Forward from the initial state b) Backward from the goal
c) Both a) and b) d) None of the above

6) Which of these is the best learning model suitable for an observable environment?
a) Supervised b) Unsupervised
c) Both a) and b) d) None of the above

7) A* algorithm is based on _____.
a) Breadth-First-Search b) Depth-First-Search
c) Best-First-Search d) Hill climbing

8) Which is not a property of representation of knowledge?
a) Representational Verification
b) Representational Adequacy
c) Inferential Adequacy
d) Inferential Efficiency

9) Which of the following search technique has AND/OR graph theory?
a) Greedy Best First Search
b) A*
c) AO*
d) None of these

10) Propositional Logic has _____ output.
a) Either True or False
b) Both True and False
c) Quantitative Value
d) None

11) How an Al agent does interact with its environment?
a) Using sensors and perceivers
b) Using only sensors
c) Using only perceivers
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12) If a machine can change its course of action based on the external environment on its own, the machine is called?
a) Mobile
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d) None of the above

13) What is Artificial intelligence?
a) Putting your intelligence into Computer
b) Programming with your own intelligence
c) Making a Machine intelligent
d) Playing a Game

14) A production rule consists of _____.
a) A set of Rule
b) A sequence of steps
c) Both a) and b)
d) Arbitrary representation to problem

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Artificial Intelligence (ENTHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain the minimax algorithm with example.

b) Explain any four applications of Al.

c) Explain any two types Al agents with diagram.

d) Explain AO* Algorithm with example.

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a) Explain FOL (First Order Logic) in detail.

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a) Explain Bayes Rule with suitable example.

b) Explain Bayesian networks.

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b) Write a short note on:
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ii) Streaming Scenario

c) Explain about description logics.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Artificial Intelligence (ENTHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Propositional Logic has _____ output.
a) Either True or False b) Both True and False
c) Quantitative Value d) None

2) How an Al agent does interact with its environment?
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13) Which is not a property of representation of knowledge?
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14) Which of the following search technique has AND/OR graph theory?
a) Greedy Best First Search b) A*
c) AO* d) None of these

SLR-QH-134

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Artificial Intelligence (ENTHON-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain the minimax algorithm with example.

b) Explain any four applications of Al.

c) Explain any two types Al agents with diagram.

d) Explain AO* Algorithm with example.

e) What is constraint Satisfaction Problems? Explain with map colouring example.

Q.3 Solve Any Two **12**

a) Explain FOL (First Order Logic) in detail.

b) Write short note on knowledge representation and reasoning.

c) Write a note BFS and DFS with example.

SECTION – II

Q.4 Solve Any Four **16**

a) Explain Bayes Rule with suitable example.

b) Explain Bayesian networks.

c) What are the scalability issues concerned with learning and knowledge acquisition?

d) Explain utility theory.

e) Explain in brief the streaming scenario in learning and Knowledge acquisition.

Q.5 Solve Any Two **12**

a) Justify the application of machine learning in Artificial Intelligence.

b) Write a short note on:
i) Sequential Decision Problems
ii) Streaming Scenario

c) Explain about description logics.

SLR-QH-137

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Communication and Signaling in Railway (ENTHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the option. **14**

1) The World Wide Web (WWW) was invented by _____.
a) Steve Jobs b) Tim Berners Lee
c) Ray Tom Liners d) All of these

2) The purpose of using flux in soldering is to _____.
a) Increase fluidity of solder metal
b) Feel up gaps left in a bad joint
c) Carbon steel
d) Prevent oxides forming

3) State the reason for thermal shutdown of IC regulator?
a) Spikes in temperature b) Decrease in temperature
c) Fluctuation in temperature d) Increase in temperature

4) On which of the following effects of electric current a fuse operates?
a) Photoelectric effect b) Electrostatic effect
c) Heating effect d) Magnetic effect

5) The bridge rectifier is an alternative for _____.
a) Full wave rectifier b) Peak rectifier
c) Half wave rectifier d) None of the mentioned

6) Which of these is not a guided medium?
a) Fiber optical cable b) Coaxial cable
c) Wireless LAN d) Copper wire

7) Which transmission media provides the highest transmission speed in a network?
a) Coaxial cable b) twisted pair cable
c) Optical fiber d) Electrical cable

8) Which of these are web browsers?
a) Google Chrome
b) Internet Explorer
c) Brave
d) All of these

9) In a shunting signal, if the red band is inclined at 45°, it indicates _____.
a) Proceed cautiously
b) Stop
c) Do not stop
d) None of these

10) The height of a semaphore signal above the ground is _____.
a) 6.5 m
b) 5.5 m
c) 8.5 m
d) 7.5 m

11) Which of the following does not change in an ordinary transformer?
a) Current
b) Frequency
c) Voltage
d) All of the above

12) A soldering iron 'bit' is made of _____.
a) Brass
b) Tin
c) Steel
d) Copper

13) What is the max data transfer rate for optical fiber cable?
a) 10 Mbps
b) 100 Mbps
c) 1000 Mbps
d) 10000 Mbps

14) Fiber optics possess the following properties _____.
a) Immune electromagnetic interference
b) Very less signal attenuation
c) Very hard to tap
d) All of the mentioned

SLR-QH-137

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Communication and Signaling in Railway (ENTHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What do you mean by Rectifiers? Give classification.

b) Draw and Explain Block diagram of DC Regulated Power supply.

c) Write a note on WWW (World Wide Web).

d) Explain Soldering & Desoldering techniques.

e) Explain & compare Internet & Intranet.

Q.3 Attempt Any Two. **12**

a) Give Classification of Transmission media. Compare wired transmission media and Wireless transmission media.

b) Explain the necessity of Fuses & classification of Fuses.

c) Write a short note on IC Regulators.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Give & explain the classification of Railway signals according to functions.

b) Write a short note on FTP (File Transfer Protocol).

c) Explain different networking devices.

d) Explain Equipment used in Railnet.

e) What are the special signals used in Railway signaling.

Q.5 Attempt Any Two. **12**

a) Explain the client Server communication model.

b) Write a note on DHCP (Dynamic Host Configuration Protocol).

c) Explain in Detail Domain Name System (DNS).

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Communication and Signaling in Railway (ENTHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the option. **14**

1) Which of these are web browsers?
a) Google Chrome b) Internet Explorer
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a) Proceed cautiously b) Stop
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a) Current b) Frequency
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9) The purpose of using flux in soldering is to _____.
a) Increase fluidity of solder metal
b) Feel up gaps left in a bad joint
c) Carbon steel
d) Prevent oxides forming

10) State the reason for thermal shutdown of IC regulator?
a) Spikes in temperature
b) Decrease in temperature
c) Fluctuation in temperature
d) Increase in temperature

11) On which of the following effects of electric current a fuse operates?
a) Photoelectric effect
b) Electrostatic effect
c) Heating effect
d) Magnetic effect

12) The bridge rectifier is an alternative for _____.
a) Full wave rectifier
b) Peak rectifier
c) Half wave rectifier
d) None of the mentioned

13) Which of these is not a guided medium?
a) Fiber optical cable
b) Coaxial cable
c) Wireless LAN
d) Copper wire

14) Which transmission media provides the highest transmission speed in a network?
a) Coaxial cable
b) twisted pair cable
c) Optical fiber
d) Electrical cable

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Communication and Signaling in Railway (ENTHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What do you mean by Rectifiers? Give classification.

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c) Write a note on WWW (World Wide Web).

d) Explain Soldering & Desoldering techniques.

e) Explain & compare Internet & Intranet.

Q.3 Attempt Any Two. **12**

a) Give Classification of Transmission media. Compare wired transmission media and Wireless transmission media.

b) Explain the necessity of Fuses & classification of Fuses.

c) Write a short note on IC Regulators.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Give & explain the classification of Railway signals according to functions.

b) Write a short note on FTP (File Transfer Protocol).

c) Explain different networking devices.

d) Explain Equipment used in Railnet.

e) What are the special signals used in Railway signaling.

Q.5 Attempt Any Two. **12**

a) Explain the client Server communication model.

b) Write a note on DHCP (Dynamic Host Configuration Protocol).

c) Explain in Detail Domain Name System (DNS).

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Communication and Signaling in Railway (ENTHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the option. **14**

1) Which of the following does not change in an ordinary transformer?
a) Current b) Frequency
c) Voltage d) All of the above

2) A soldering iron 'bit' is made of _____.
a) Brass b) Tin
c) Steel d) Copper

3) What is the max data transfer rate for optical fiber cable?
a) 10 Mbps b) 100 Mbps
c) 1000 Mbps d) 10000 Mbps

4) Fiber optics possess the following properties _____.
a) Immune electromagnetic interference
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b) Feel up gaps left in a bad joint
c) Carbon steel
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7) State the reason for thermal shutdown of IC regulator?
a) Spikes in temperature b) Decrease in temperature
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a) Proceed cautiously
b) Stop
c) Do not stop
d) None of these

14) The height of a semaphore signal above the ground is _____.
a) 6.5 m
b) 5.5 m
c) 8.5 m
d) 7.5 m

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Communication and Signaling in Railway (ENTHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What do you mean by Rectifiers? Give classification.

b) Draw and Explain Block diagram of DC Regulated Power supply.

c) Write a note on WWW (World Wide Web).

d) Explain Soldering & Desoldering techniques.

e) Explain & compare Internet & Intranet.

Q.3 Attempt Any Two. **12**

a) Give Classification of Transmission media. Compare wired transmission media and Wireless transmission media.

b) Explain the necessity of Fuses & classification of Fuses.

c) Write a short note on IC Regulators.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Give & explain the classification of Railway signals according to functions.

b) Write a short note on FTP (File Transfer Protocol).

c) Explain different networking devices.

d) Explain Equipment used in Railnet.

e) What are the special signals used in Railway signaling.

Q.5 Attempt Any Two. **12**

a) Explain the client Server communication model.

b) Write a note on DHCP (Dynamic Host Configuration Protocol).

c) Explain in Detail Domain Name System (DNS).

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Communication and Signaling in Railway (ENTHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the option. **14**

1) Which of these is not a guided medium?
a) Fiber optical cable b) Coaxial cable
c) Wireless LAN d) Copper wire

2) Which transmission media provides the highest transmission speed in a network?
a) Coaxial cable b) twisted pair cable
c) Optical fiber d) Electrical cable

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a) 6.5 m b) 5.5 m
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c) Voltage d) All of the above

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c) Steel d) Copper

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   b) Very less signal attenuation
   c) Very hard to tap
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   a) Steve Jobs
   b) Tim Berners Lee
   c) Ray Tom Liners
   d) All of these

11) The purpose of using flux in soldering is to _____.
   a) Increase fluidity of solder metal
   b) Feel up gaps left in a bad joint
   c) Carbon steel
   d) Prevent oxides forming

12) State the reason for thermal shutdown of IC regulator?
   a) Spikes in temperature
   b) Decrease in temperature
   c) Fluctuation in temperature
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13) On which of the following effects of electric current a fuse operates?
   a) Photoelectric effect
   b) Electrostatic effect
   c) Heating effect
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14) The bridge rectifier is an alternative for _____.
   a) Full wave rectifier
   b) Peak rectifier
   c) Half wave rectifier
   d) None of the mentioned

SLR-QH-137

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Communication and Signaling in Railway (ENTHON-02D)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What do you mean by Rectifiers? Give classification.

b) Draw and Explain Block diagram of DC Regulated Power supply.

c) Write a note on WWW (World Wide Web).

d) Explain Soldering & Desoldering techniques.

e) Explain & compare Internet & Intranet.

Q.3 Attempt Any Two. **12**

a) Give Classification of Transmission media. Compare wired transmission media and Wireless transmission media.

b) Explain the necessity of Fuses & classification of Fuses.

c) Write a short note on IC Regulators.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Give & explain the classification of Railway signals according to functions.

b) Write a short note on FTP (File Transfer Protocol).

c) Explain different networking devices.

d) Explain Equipment used in Railnet.

e) What are the special signals used in Railway signaling.

Q.5 Attempt Any Two. **12**

a) Explain the client Server communication model.

b) Write a note on DHCP (Dynamic Host Configuration Protocol).

c) Explain in Detail Domain Name System (DNS).

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Honors in Cyber Security (Stage - I) – Cryptography (BTN04410)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) Which OSI layer is responsible for secure key exchange mechanisms?
a) Data Link Layer b) Network Layer
c) Application Layer d) Transport Layer

2) An attempt to gain unauthorized access to a system is called _____.
a) Passive Attack b) Active Attack
c) Intrusion d) Masquerading

3) Which of the following algorithms is NOT an example of a symmetric cipher?
a) AES b) DES
c) RSA d) Blowfish

4) In a transposition cipher, encryption is performed by _____.
a) Replacing each character with another
b) Rearranging the order of characters in the plaintext
c) Swapping letters based on a predefined key
d) Adding extra characters to the text

5) Least Significant Bit (LSB) steganography hides data by _____.
a) Modifying the least significant bits of image/audio files
b) Encrypting data using XOR operations
c) Substituting letters in a text message
d) Creating fake network packets

6) The block size of DES is _____.
a) 32 bits b) 48 bits
c) 56 bits d) 64 bits

7) The final permutation (FP) in DES _____.
   a) Increases encryption strength
   b) Provides diffusion
   c) Is the inverse of the initial permutation
   d) Increases the key length

8) Which mathematical problem is the basis of RSA encryption?
   a) Discrete logarithm problem
   b) Factoring large prime numbers
   c) Symmetric key transformations
   d) Random number generation

9) Public-key cryptography is not commonly used for _____.
   a) Key exchange
   b) Digital signatures
   c) Encrypting large amounts of data directly
   d) Authenticating websites

10) Hash functions are commonly used in _____.
   a) Digital signatures
   b) Image processing
   c) Video compression
   d) Data redundancy checks

11) Collision resistance ensures that _____.
   a) No two inputs produce the same hash
   b) The hash function is always reversible
   c) The function is faster than symmetric encryption
   d) It requires a secret key to work

12) The most secure version of SHA currently recommended for cryptographic use is _____.
   a) SHA-1
   b) SHA-256
   c) SHA-3
   d) MD5

13) Which authentication protocol relies on symmetric encryption?
   a) RSA
   b) Kerberos
   c) Diffie-Hellman
   d) Digital signatures

14) Personal Identity Verification (PIV) is primarily used in _____.
   a) Banking transactions
   b) Government and enterprise security
   c) Password management systems
   d) Cryptanalysis

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026 Honors in Cyber Security (Stage - I) – Cryptography (BTN04410)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Briefly describe confidentiality, integrity, and availability with example.

b) Briefly discuss denial-of-service (DoS) attacks.

c) Discuss the strengths and weaknesses of symmetric encryption systems.

d) What are the advantages and disadvantages of transposition techniques?

e) Define brute-force attack and how it applies to DES.

Q.3 Attempt the following. (Any Two) **12**

a) Describe the role of specific security mechanisms as defined in the OSI Security Architecture.

b) Discuss the strengths and weaknesses of symmetric encryption systems.

c) Describe the AES structure and the steps involved in one round of AES.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain how public-key cryptosystems provide authentication and confidentiality.

b) Define impersonation and substitution attacks in the context of MACs.

c) What is the avalanche effect in cryptographic hash functions? Explain.

d) Mention drawbacks of using symmetric encryption for authentication.

e) What is the avalanche effect in cryptographic hash functions? Explain.

Q.5 Attempt the following. (Any Two) **12**

a) Describe the Diffie-Hellman key exchange algorithm in detail with an example.

b) Compare MACs with digital signatures in terms of functionality.

c) Explain the threats associated with remote user authentication and how they can be addressed.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Honors in Cyber Security (Stage - I) – Cryptography (BTN04410)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) Which mathematical problem is the basis of RSA encryption?
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3) Hash functions are commonly used in _____.
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4) Collision resistance ensures that _____.
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7) Personal Identity Verification (PIV) is primarily used in _____.
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a) AES b) DES
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12) Least Significant Bit (LSB) steganography hides data by _____.
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c) Is the inverse of the initial permutation
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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Honors in Cyber Security (Stage - I) – Cryptography (BTN04410)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

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b) Briefly discuss denial-of-service (DoS) attacks.

c) Discuss the strengths and weaknesses of symmetric encryption systems.

d) What are the advantages and disadvantages of transposition techniques?

e) Define brute-force attack and how it applies to DES.

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a) Describe the role of specific security mechanisms as defined in the OSI Security Architecture.

b) Discuss the strengths and weaknesses of symmetric encryption systems.

c) Describe the AES structure and the steps involved in one round of AES.

Section – II

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c) What is the avalanche effect in cryptographic hash functions? Explain.

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Q.5 Attempt the following. (Any Two) **12**

a) Describe the Diffie-Hellman key exchange algorithm in detail with an example.

b) Compare MACs with digital signatures in terms of functionality.

c) Explain the threats associated with remote user authentication and how they can be addressed.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Honors in Cyber Security (Stage - I) – Cryptography (BTN04410)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) Collision resistance ensures that _____.
a) No two inputs produce the same hash
b) The hash function is always reversible
c) The function is faster than symmetric encryption
d) It requires a secret key to work

2) The most secure version of SHA currently recommended for cryptographic use is _____.
a) SHA-1 b) SHA-256
c) SHA-3 d) MD5

3) Which authentication protocol relies on symmetric encryption?
a) RSA b) Kerberos
c) Diffie-Hellman d) Digital signatures

4) Personal Identity Verification (PIV) is primarily used in _____.
a) Banking transactions
b) Government and enterprise security
c) Password management systems
d) Cryptanalysis

5) Which OSI layer is responsible for secure key exchange mechanisms?
a) Data Link Layer b) Network Layer
c) Application Layer d) Transport Layer

6) An attempt to gain unauthorized access to a system is called _____.
a) Passive Attack b) Active Attack
c) Intrusion d) Masquerading

7) Which of the following algorithms is NOT an example of a symmetric cipher?

a) AES
b) DES
c) RSA
d) Blowfish

8) In a transposition cipher, encryption is performed by _____.

a) Replacing each character with another
b) Rearranging the order of characters in the plaintext
c) Swapping letters based on a predefined key
d) Adding extra characters to the text

9) Least Significant Bit (LSB) steganography hides data by _____.

a) Modifying the least significant bits of image/audio files
b) Encrypting data using XOR operations
c) Substituting letters in a text message
d) Creating fake network packets

10) The block size of DES is _____.

a) 32 bits
b) 48 bits
c) 56 bits
d) 64 bits

11) The final permutation (FP) in DES _____.

a) Increases encryption strength
b) Provides diffusion
c) Is the inverse of the initial permutation
d) Increases the key length

12) Which mathematical problem is the basis of RSA encryption?

a) Discrete logarithm problem
b) Factoring large prime numbers
c) Symmetric key transformations
d) Random number generation

13) Public-key cryptography is not commonly used for _____.

a) Key exchange
b) Digital signatures
c) Encrypting large amounts of data directly
d) Authenticating websites

14) Hash functions are commonly used in _____.

a) Digital signatures
b) Image processing
c) Video compression
d) Data redundancy checks

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Honors in Cyber Security (Stage - I) – Cryptography (BTN04410)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Briefly describe confidentiality, integrity, and availability with example.

b) Briefly discuss denial-of-service (DoS) attacks.

c) Discuss the strengths and weaknesses of symmetric encryption systems.

d) What are the advantages and disadvantages of transposition techniques?

e) Define brute-force attack and how it applies to DES.

Q.3 Attempt the following. (Any Two) **12**

a) Describe the role of specific security mechanisms as defined in the OSI Security Architecture.

b) Discuss the strengths and weaknesses of symmetric encryption systems.

c) Describe the AES structure and the steps involved in one round of AES.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain how public-key cryptosystems provide authentication and confidentiality.

b) Define impersonation and substitution attacks in the context of MACs.

c) What is the avalanche effect in cryptographic hash functions? Explain.

d) Mention drawbacks of using symmetric encryption for authentication.

e) What is the avalanche effect in cryptographic hash functions? Explain.

Q.5 Attempt the following. (Any Two) **12**

a) Describe the Diffie-Hellman key exchange algorithm in detail with an example.

b) Compare MACs with digital signatures in terms of functionality.

c) Explain the threats associated with remote user authentication and how they can be addressed.

SLR-QH-138

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026 Honors in Cyber Security (Stage - I) – Cryptography (BTN04410)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicate full marks

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct option from the following. **14**

1) The block size of DES is _____.
a) 32 bits b) 48 bits
c) 56 bits d) 64 bits

2) The final permutation (FP) in DES _____.
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b) Provides diffusion
c) Is the inverse of the initial permutation
d) Increases the key length

3) Which mathematical problem is the basis of RSA encryption?
a) Discrete logarithm problem
b) Factoring large prime numbers
c) Symmetric key transformations
d) Random number generation

4) Public-key cryptography is not commonly used for _____.
a) Key exchange
b) Digital signatures
c) Encrypting large amounts of data directly
d) Authenticating websites

5) Hash functions are commonly used in _____.
a) Digital signatures b) Image processing
c) Video compression d) Data redundancy checks

6) Collision resistance ensures that _____.
   a) No two inputs produce the same hash
   b) The hash function is always reversible
   c) The function is faster than symmetric encryption
   d) It requires a secret key to work

7) The most secure version of SHA currently recommended for cryptographic use is _____.
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   c) SHA-3 d) MD5

8) Which authentication protocol relies on symmetric encryption?
   a) RSA b) Kerberos
   c) Diffie-Hellman d) Digital signatures

9) Personal Identity Verification (PIV) is primarily used in _____.
   a) Banking transactions
   b) Government and enterprise security
   c) Password management systems
   d) Cryptanalysis

10) Which OSI layer is responsible for secure key exchange mechanisms?
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   c) Application Layer d) Transport Layer

11) An attempt to gain unauthorized access to a system is called _____.
   a) Passive Attack b) Active Attack
   c) Intrusion d) Masquerading

12) Which of the following algorithms is NOT an example of a symmetric cipher?
   a) AES b) DES
   c) RSA d) Blowfish

13) In a transposition cipher, encryption is performed by _____.
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14) Least Significant Bit (LSB) steganography hides data by _____.
   a) Modifying the least significant bits of image/audio files
   b) Encrypting data using XOR operations
   c) Substituting letters in a text message
   d) Creating fake network packets

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Honors in Cyber Security (Stage - I) – Cryptography (BTN04410)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Briefly describe confidentiality, integrity, and availability with example.

b) Briefly discuss denial-of-service (DoS) attacks.

c) Discuss the strengths and weaknesses of symmetric encryption systems.

d) What are the advantages and disadvantages of transposition techniques?

e) Define brute-force attack and how it applies to DES.

Q.3 Attempt the following. (Any Two) **12**

a) Describe the role of specific security mechanisms as defined in the OSI Security Architecture.

b) Discuss the strengths and weaknesses of symmetric encryption systems.

c) Describe the AES structure and the steps involved in one round of AES.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain how public-key cryptosystems provide authentication and confidentiality.

b) Define impersonation and substitution attacks in the context of MACs.

c) What is the avalanche effect in cryptographic hash functions? Explain.

d) Mention drawbacks of using symmetric encryption for authentication.

e) What is the avalanche effect in cryptographic hash functions? Explain.

Q.5 Attempt the following. (Any Two) **12**

a) Describe the Diffie-Hellman key exchange algorithm in detail with an example.

b) Compare MACs with digital signatures in terms of functionality.

c) Explain the threats associated with remote user authentication and how they can be addressed.

SLR-QH-139

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures (BTN06405)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) Which of the following is an application of stack data structure?
a) Backtracking b) Expression evaluation
c) Expression Conversion d) All of these

2) Radix sort is also known as _____.
a) Counting sort b) Bucket sort
c) Card sort d) Shell sort

3) Which data structure for a priority queue be implemented?
a) Array b) Linked List
c) Tree d) All of these

4) In a queue, insertion and deletion takes place at _____.
a) only at rear end b) only at front end
c) rear and front end d) any position

5) Collision in hashing occurs when _____.
a) Two different keys produce same hash value
b) The table is full
c) The key is not found
d) None of these

6) What is worst case time complexity of binary search?
a) $O(\log n)$ b) $O(n \log n)$
c) $O(n)$ d) $O(1)$

7) When given array elements are in sorted order then which searching algorithm is used?
a) Binary
b) Linear
c) Non-sequential
d) Sequential

8) A circular linked list has _____.
a) No last node
b) NULL pointer at end
c) Last node pointing to first node
d) None

9) The time complexity of insertion in a singly linked list at beginning is _____.
a) $O(n)$
b) $O(\log n)$
c) $O(1)$
d) $O(n^2)$

10) Postfix expression for $A + B^*C$ is _____.
a) $ABC^* +$
b) $A + BC^*$
c) $+A^*BC$
d) $ABC+^*$

11) In a $B +$ tree, all actual data records are stored _____.
a) In root
b) In internal nodes
c) In leaf nodes
d) Randomly

12) Which rotation is applied in AVL tree when a node is inserted in right subtree of right child?
a) LL rotation
b) RR rotation
c) LR rotation
d) RL rotation

13) The degree of a node in a graph is _____.
a) Number of edges incident to it
b) Number of nodes connected
c) Level of the node
d) None

14) What does BFS use to keep track of visited nodes?
a) Stack
b) Queue
c) Array only
d) Linked list

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures (BTN06405)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve the following. (Any Two) **10**

a) Define Data Structure. Explain classification in detail.

b) Explain applications of stack. (Any 6)

c) What is priority queue? Explain enqueue and dequeue operations in detail.

Q.3 Attempt the following. (Any Three) **18**

a) What is Asymptotic notation? Explain in detail.

b) Write C program to implement following operations on Linear Queue:
i) Enqueue
ii) Dequeue
iii) Display

c) Explain algorithm for Binary search. Solve Given $10, 12, 24, 29, 39, 40, 51, 56, 69$ Search item $k = 56$ using Binary search.

d) What is stack? Explain with a neat diagram. Write different operations performed on stack.

SECTION – II

Q.4 Solve the following (Any Two). **10**

a) Explain adjacency matrix and adjacency list representation of graphs.

b) Define linked list. Explain types of linked list in detail.

c) Explain $\mathrm{B}-$ tree and $\mathrm{B}+$ tree with comparison. Give example of each.

d) Explain Quick Sort with example. Sort: $\{18, 16, 4, 15, 9, 7, 8, 3\}$

Q.5 Attempt the following. (Any Three) **18**

a) Construct BST for: $30, 100, 90, 15, 2, 25, 36, 72, 78, 10$ – show each step.

b) Define hashing. Explain quadratic probing with example.

c) Define graph terminologies:

i) Neighbours
ii) Degree of node
iii) Regular graph
iv) Path
v) Cycle
vi) Complete graph

d) Create a B – tree of order 5 by inserting: $3, 14, 7, 1, 8, 5, 11, 17, 13, 6$ – show each step.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures (BTN06405)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) A circular linked list has _____.
a) No last node
b) NULL pointer at end
c) Last node pointing to first node
d) None

2) The time complexity of insertion in a singly linked list at beginning is _____.
a) $O(n)$ b) $O(\log n)$
c) $O(1)$ d) $O(n^2)$

3) Postfix expression for $A + B^*C$ is _____.
a) $ABC^* +$ b) $A + BC^*$
c) $+A^*BC$ d) $ABC+^*$

4) In a $B+$ tree, all actual data records are stored _____.
a) In root b) In internal nodes
c) In leaf nodes d) Randomly

5) Which rotation is applied in AVL tree when a node is inserted in right subtree of right child?
a) LL rotation b) RR rotation
c) LR rotation d) RL rotation

6) The degree of a node in a graph is _____.
a) Number of edges incident to it
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c) Level of the node
d) None

7) What does BFS use to keep track of visited nodes?
a) Stack b) Queue
c) Array only d) Linked list

8) Which of the following is an application of stack data structure?
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10) Which data structure for a priority queue be implemented?
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12) Collision in hashing occurs when _____.
a) Two different keys produce same hash value
b) The table is full
c) The key is not found
d) None of these

13) What is worst case time complexity of binary search?
a) $O(\log n)$ b) $O(n \log n)$
c) $O(n)$ d) $O(1)$

14) When given array elements are in sorted order then which searching algorithm is used?
a) Binary b) Linear
c) Non-sequential d) Sequential

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures (BTN06405)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve the following. (Any Two) **10**

a) Define Data Structure. Explain classification in detail.

b) Explain applications of stack. (Any 6)

c) What is priority queue? Explain enqueue and dequeue operations in detail.

Q.3 Attempt the following. (Any Three) **18**

a) What is Asymptotic notation? Explain in detail.

b) Write C program to implement following operations on Linear Queue:
i) Enqueue
ii) Dequeue
iii) Display

c) Explain algorithm for Binary search. Solve Given $10, 12, 24, 29, 39, 40, 51, 56, 69$ Search item $k = 56$ using Binary search.

d) What is stack? Explain with a neat diagram. Write different operations performed on stack.

SECTION – II

Q.4 Solve the following (Any Two). **10**

a) Explain adjacency matrix and adjacency list representation of graphs.

b) Define linked list. Explain types of linked list in detail.

c) Explain $\mathrm{B}-$ tree and $\mathrm{B}+$ tree with comparison. Give example of each.

d) Explain Quick Sort with example. Sort: $\{18, 16, 4, 15, 9, 7, 8, 3\}$

Q.5 Attempt the following. (Any Three) **18**

a) Construct BST for: $30, 100, 90, 15, 2, 25, 36, 72, 78, 10$ – show each step.

b) Define hashing. Explain quadratic probing with example.

c) Define graph terminologies:

i) Neighbours
ii) Degree of node
iii) Regular graph
iv) Path
v) Cycle
vi) Complete graph

d) Create a B – tree of order 5 by inserting: $3, 14, 7, 1, 8, 5, 11, 17, 13, 6$ – show each step.

SLR-QH-139

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures (BTN06405)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

1) In a $B+$ tree, all actual data records are stored _____.
a) In root b) In internal nodes
c) In leaf nodes d) Randomly

2) Which rotation is applied in AVL tree when a node is inserted in right subtree of right child?
a) LL rotation b) RR rotation
c) LR rotation d) RL rotation

3) The degree of a node in a graph is _____.
a) Number of edges incident to it
b) Number of nodes connected
c) Level of the node
d) None

4) What does BFS use to keep track of visited nodes?
a) Stack b) Queue
c) Array only d) Linked list

5) Which of the following is an application of stack data structure?
a) Backtracking b) Expression evaluation
c) Expression Conversion d) All of these

6) Radix sort is also known as _____.
a) Counting sort b) Bucket sort
c) Card sort d) Shell sort

7) Which data structure for a priority queue be implemented?
a) Array
b) Linked List
c) Tree
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8) In a queue, insertion and deletion takes place at _____.
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a) $ABC^* +$
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Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures (BTN06405)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve the following. (Any Two) **10**

a) Define Data Structure. Explain classification in detail.

b) Explain applications of stack. (Any 6)

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Q.3 Attempt the following. (Any Three) **18**

a) What is Asymptotic notation? Explain in detail.

b) Write C program to implement following operations on Linear Queue:
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c) Explain algorithm for Binary search. Solve Given $10, 12, 24, 29, 39, 40, 51, 56, 69$ Search item $k = 56$ using Binary search.

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SECTION – II

Q.4 Solve the following (Any Two). **10**

a) Explain adjacency matrix and adjacency list representation of graphs.

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Seat No.	

Set | S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures (BTN06405)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options. 14

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d) any position

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b) The table is full
c) The key is not found
d) None of these

SLR-QH-139

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures (BTN06405)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve the following. (Any Two) **10**

a) Define Data Structure. Explain classification in detail.

b) Explain applications of stack. (Any 6)

c) What is priority queue? Explain enqueue and dequeue operations in detail.

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b) Write C program to implement following operations on Linear Queue:
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c) Explain algorithm for Binary search. Solve Given $10, 12, 24, 29, 39, 40, 51, 56, 69$ Search item $k = 56$ using Binary search.

d) What is stack? Explain with a neat diagram. Write different operations performed on stack.

SECTION – II

Q.4 Solve the following (Any Two). **10**

a) Explain adjacency matrix and adjacency list representation of graphs.

b) Define linked list. Explain types of linked list in detail.

c) Explain $\mathrm{B}-$ tree and $\mathrm{B}+$ tree with comparison. Give example of each.

d) Explain Quick Sort with example. Sort: $\{18, 16, 4, 15, 9, 7, 8, 3\}$

Q.5 Attempt the following. (Any Three) **18**

a) Construct BST for: $30, 100, 90, 15, 2, 25, 36, 72, 78, 10$ – show each step.

b) Define hashing. Explain quadratic probing with example.

c) Define graph terminologies:

i) Neighbours
ii) Degree of node
iii) Regular graph
iv) Path
v) Cycle
vi) Complete graph

d) Create a B – tree of order 5 by inserting: $3, 14, 7, 1, 8, 5, 11, 17, 13, 6$ – show each step.

SLR-QH-140

Seat No.		Set	P

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
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3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

2) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

3) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

4) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

5) The value of respect entails _____.
a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

6) Which value involves being accountable for one's decisions and actions?
a) Responsibility b) Flexibility
c) Confidence d) Arrogance

7) The value of integrity entails _____.
a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

8) Which value involves being considerate and thoughtful towards others?
a) Kindness
b) Determination
c) Independence
d) Indifference

9) The value of wisdom involves _____.
a) Making sound and informed judgments based on knowledge and experience
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b) To ensure engineers work efficiently
c) To protect public safety and welfare
d) To follow industry standards

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c) Disregarding laws and regulations
d) Making decisions based on personal interests

13) Ethical engineering practices promote _____.
a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
d) The minimization of safety regulations

14) Ethical engineers should consider which of the following when making decisions?
a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

15) Which of the following is NOT part of an engineer's ethical responsibility?
a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

16) Ethical engineering involves making decisions based on _____.
a) Personal opinions and values
b) Financial incentives and company pressure
c) Objective analysis, codes of ethics, and consideration for the public good
d) Trends in the field of engineering

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d) Allow the behavior to continue if it does not affect the project

18) Ethical engineering practices include _____.
a) Following industry standards and regulations
b) Ensuring profitability is the main priority
c) Cutting costs by any means necessary
d) Avoiding the reporting of safety hazards

19) What is the primary focus of Kohlberg's theory?
a) Cognitive development b) Social development
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a) Conflict b) Consensus
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23) What is the difference between a hazard and a risk?
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c) A hazard is a physical danger, while a risk is a financial danger
d) A hazard is a financial danger, while a risk is a physical danger

24) What should you do if you identify a potential risk in the workplace?
a) Ignore it and hope it goes away
b) Report it to your supervisor or HR
c) Try to mitigate it on your own
d) Transfer the risk to someone else

25) According to the theory of ethical egoism, what should guide an individual's moral actions?
a) The well-being of others
b) The individual's own self-interest
c) Social norms and conventions
d) Universal moral principles

26) Collegiality in a professional setting refers to _____.
a) Loyalty to your employer
b) Cooperation and mutual respect among colleagues
c) Competing for individual success
d) Avoiding work conflicts

27) Professional loyalty involves _____.
a) Reporting colleagues' mistakes publicly
b) Protecting the interests of the team or organization
c) Ignoring safety violations to avoid
d) Disclosing confidential information for personal conflict gain

28) Employee rights include _____.
a) The right to work without discrimination
b) The right to disregard company policies
c) The right to personal opinion but not affecting work
d) The right to ignore workplace safety standards

29) Intellectual Property Rights (IPR) protect _____.
a) The financial interests of corporations
b) The ownership and use of creative ideas and inventions
c) The physical assets of a company
d) Workplace performance evaluations

30) *Risk assessment* is important because it helps in _____.
a) Evaluating the potential impact of hazards on health and safety
b) Minimizing workplace productivity
c) Defining job roles
d) Ignoring environmental issues

31) In risk management, mitigation strategies aim to _____.
a) Accept all risks in the workplace
b) Reduce or eliminate identified risks
c) Increase the likelihood of hazards
d) Focus only on maximizing profits

32) Which of the following is a potential consequence of *occupational crime?*
a) Increased workplace productivity
b) Legal consequences and loss of reputation
c) Improvement in company safety standards
d) Higher employee satisfaction

33) Risk reduction in engineering refers to _____.
a) Implementing measures to lower the work chances of accidents
b) Increasing the number of hazards in the work environment
c) Ignoring potential risks
d) Cutting costs by removing safety measures

34) Public safety regulations are primarily designed to _____.
a) Ensure the safety of the company's assets
b) Protect the general public from potential harm
c) Increase revenue for the government
d) Focus only on preventing natural disasters

35) Multinational corporations (MNCs) are characterized by _____.
a) Operations in multiple countries with a centralized headquarters
b) Operating only in their home country
c) Limited influence on global markets
d) No responsibility toward environmental concerns

36) Environmental ethics primarily deals with _____.
a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
d) Treating employees equally

37) Which of the following is NOT an example of environmental ethics?
a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

38) Computer ethics involves _____.
   a) Programming and coding without considering social consequences
   b) Understanding the moral implications of computing technologies
   c) Focusing only on technological innovation
   d) Ignoring privacy issues

39) Weapons development ethics deals with _____.
   a) The development of new technologies to enhance military capabilities
   b) Restricting the use of all technological advancements
   c) Focusing only on civilian safety
   d) Only addressing the legal aspects of weapon development

40) Engineers as managers are expected to _____.
   a) Focus solely on technical tasks
   b) Lead teams, make strategic decisions, and manage projects
   c) Ignore the business aspects of their work
   d) Avoid taking responsibility for team outcomes

41) Consulting engineers are hired to _____.
   a) Work on projects within the company they are employed
   b) Provide expert advice on technical and engineering problems
   c) Manage public relations for a company
   d) Conduct legal investigations

42) Engineers acting as expert witnesses typically _____.
   a) Present evidence and offer testimony in legal cases
   b) Focus on public relations during a case
   c) Manage engineering projects for legal firms
   d) Directly represent the interests of a company court

43) Sample Code of Ethics of professional organizations typically includes _____.
   a) Guidelines for acceptable behavior and decision-making
   b) Rules for maximizing profits at any cost
   c) Detailed technical specifications for projects
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44) ASME stands for _____.
   a) American Society of Mechanical Engineers
   b) American Society of Management Engineers
   c) Association of Safety and Mechanical Engineers
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45) The ASCE Code of Ethics emphasizes _____.
- a) Following only local regulations
- b) Maintaining professional integrity and responsibility
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46) The IEEE Code of Ethics is primarily concerned with _____.
- a) Fostering professional competence and integrity
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- d) Developing weapons for defense purposes

47) Global issues in engineering ethics include _____.
- a) Cultural differences in engineering practices
- b) Lack of understanding between technical and ethical concerns
- c) Addressing both local and international engineering challenges
- d) All of the above

48) A key challenge faced by multinational corporations is _____.
- a) Balancing profits with social and environmental
- b) Competing only within their home country responsibilities
- c) Focusing solely on domestic issues
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49) Empathy is the ability to _____.
- a) Solve problems logically
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50) The quality of "caring" includes _____.
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SLR-QH-140

Seat No.		Set	Q

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SLR-QH-140

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38) Employee rights include _____.
a) The right to work without discrimination
b) The right to disregard company policies
c) The right to personal opinion but not affecting work
d) The right to ignore workplace safety standards

39) Intellectual Property Rights (IPR) protect _____.
- a) The financial interests of corporations
- b) The ownership and use of creative ideas and inventions
- c) The physical assets of a company
- d) Workplace performance evaluations

40) *Risk assessment* is important because it helps in _____.
- a) Evaluating the potential impact of hazards on health and safety
- b) Minimizing workplace productivity
- c) Defining job roles
- d) Ignoring environmental issues

41) In risk management, mitigation strategies aim to _____.
- a) Accept all risks in the workplace
- b) Reduce or eliminate identified risks
- c) Increase the likelihood of hazards
- d) Focus only on maximizing profits

42) Which of the following is a potential consequence of *occupational crime?*
- a) Increased workplace productivity
- b) Legal consequences and loss of reputation
- c) Improvement in company safety standards
- d) Higher employee satisfaction

43) Risk reduction in engineering refers to _____.
- a) Implementing measures to lower the work chances of accidents
- b) Increasing the number of hazards in the work environment
- c) Ignoring potential risks
- d) Cutting costs by removing safety measures

44) Public safety regulations are primarily designed to _____.
- a) Ensure the safety of the company's assets
- b) Protect the general public from potential harm
- c) Increase revenue for the government
- d) Focus only on preventing natural disasters

45) Multinational corporations (MNCs) are characterized by _____.
- a) Operations in multiple countries with a centralized headquarters
- b) Operating only in their home country
- c) Limited influence on global markets
- d) No responsibility toward environmental concerns

46) Environmental ethics primarily deals with _____.
a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
d) Treating employees equally

47) Which of the following is NOT an example of environmental ethics?
a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

48) Computer ethics involves _____.
a) Programming and coding without considering social consequences
b) Understanding the moral implications of computing technologies
c) Focusing only on technological innovation
d) Ignoring privacy issues

49) Weapons development ethics deals with _____.
a) The development of new technologies to enhance military capabilities
b) Restricting the use of all technological advancements
c) Focusing only on civilian safety
d) Only addressing the legal aspects of weapon development

50) Engineers as managers are expected to _____.
a) Focus solely on technical tasks
b) Lead teams, make strategic decisions, and manage projects
c) Ignore the business aspects of their work
d) Avoid taking responsibility for team outcomes

SLR-QH-140

Seat No.		Set	S

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) What is the primary goal of engineering ethics?
a) To maximize profits for companies
b) To ensure engineers work efficiently
c) To protect public safety and welfare
d) To follow industry standards

2) Which of the following is considered an ethical responsibility of an engineer?
a) Ignoring environmental concerns to meet deadlines
b) Ensuring the safety of the public
c) Disregarding laws and regulations
d) Making decisions based on personal interests

3) Ethical engineering practices promote _____.
a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
d) The minimization of safety regulations

4) Ethical engineers should consider which of the following when making decisions?
a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

5) Which of the following is NOT part of an engineer's ethical responsibility?
a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

6) Ethical engineering involves making decisions based on _____.
   a) Personal opinions and values
   b) Financial incentives and company pressure
   c) Objective analysis, codes of ethics, and consideration for the public good
   d) Trends in the field of engineering

7) What should an engineer do if they discover a colleague is involved in unethical practices?
   a) Ignore the situation to avoid conflict
   b) Report the unethical behavior to management or relevant authorities
   c) Cover up the situation to protect the colleague
   d) Allow the behavior to continue if it does not affect the project

8) Ethical engineering practices include _____.
   a) Following industry standards and regulations
   b) Ensuring profitability is the main priority
   c) Cutting costs by any means necessary
   d) Avoiding the reporting of safety hazards

9) What is the primary focus of Kohlberg's theory?
   a) Cognitive development b) Social development
   c) Moral development d) Emotional development

10) Which term refers to an agreement that is made through discussions and compromises among parties?
   a) Conflict b) Consensus
   c) Dispute d) Isolation

11) What is the primary goal of risk assessment?
   a) To eliminate all risks
   b) To identify and mitigate potential risks
   c) To ignore potential risks
   d) To transfer risks to others

12) What is the primary goal of safety protocols?
   a) To increase productivity
   b) To reduce costs
   c) To prevent injuries and illnesses
   d) To improve employee morale

13) What is the difference between a hazard and a risk?
   a) A hazard is a potential risk, while a risk is a real danger
   b) A hazard is a real danger, while a risk is a potential danger
   c) A hazard is a physical danger, while a risk is a financial danger
   d) A hazard is a financial danger, while a risk is a physical danger

14) What should you do if you identify a potential risk in the workplace?
a) Ignore it and hope it goes away
b) Report it to your supervisor or HR
c) Try to mitigate it on your own
d) Transfer the risk to someone else

15) According to the theory of ethical egoism, what should guide an individual's moral actions?
a) The well-being of others
b) The individual's own self-interest
c) Social norms and conventions
d) Universal moral principles

16) Collegiality in a professional setting refers to _____.
a) Loyalty to your employer
b) Cooperation and mutual respect among colleagues
c) Competing for individual success
d) Avoiding work conflicts

17) Professional loyalty involves _____.
a) Reporting colleagues' mistakes publicly
b) Protecting the interests of the team or organization
c) Ignoring safety violations to avoid
d) Disclosing confidential information for personal conflict gain

18) Employee rights include _____.
a) The right to work without discrimination
b) The right to disregard company policies
c) The right to personal opinion but not affecting work
d) The right to ignore workplace safety standards

19) Intellectual Property Rights (IPR) protect _____.
a) The financial interests of corporations
b) The ownership and use of creative ideas and inventions
c) The physical assets of a company
d) Workplace performance evaluations

20) *Risk assessment* is important because it helps in _____.
a) Evaluating the potential impact of hazards on health and safety
b) Minimizing workplace productivity
c) Defining job roles
d) Ignoring environmental issues

21) In risk management, mitigation strategies aim to _____.
a) Accept all risks in the workplace
b) Reduce or eliminate identified risks
c) Increase the likelihood of hazards
d) Focus only on maximizing profits

22) Which of the following is a potential consequence of *occupational crime?*

a) Increased workplace productivity
b) Legal consequences and loss of reputation
c) Improvement in company safety standards
d) Higher employee satisfaction

23) Risk reduction in engineering refers to _____.

a) Implementing measures to lower the work chances of accidents
b) Increasing the number of hazards in the work environment
c) Ignoring potential risks
d) Cutting costs by removing safety measures

24) Public safety regulations are primarily designed to _____.

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b) Protect the general public from potential harm
c) Increase revenue for the government
d) Focus only on preventing natural disasters

25) Multinational corporations (MNCs) are characterized by _____.

a) Operations in multiple countries with a centralized headquarters
b) Operating only in their home country
c) Limited influence on global markets
d) No responsibility toward environmental concerns

26) Environmental ethics primarily deals with _____.

a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
d) Treating employees equally

27) Which of the following is NOT an example of environmental ethics?

a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

28) Computer ethics involves _____.

a) Programming and coding without considering social consequences
b) Understanding the moral implications of computing technologies
c) Focusing only on technological innovation
d) Ignoring privacy issues

29) Weapons development ethics deals with _____.
a) The development of new technologies to enhance military capabilities
b) Restricting the use of all technological advancements
c) Focusing only on civilian safety
d) Only addressing the legal aspects of weapon development

30) Engineers as managers are expected to _____.
a) Focus solely on technical tasks
b) Lead teams, make strategic decisions, and manage projects
c) Ignore the business aspects of their work
d) Avoid taking responsibility for team outcomes

31) Consulting engineers are hired to _____.
a) Work on projects within the company they are employed
b) Provide expert advice on technical and engineering problems
c) Manage public relations for a company
d) Conduct legal investigations

32) Engineers acting as expert witnesses typically _____.
a) Present evidence and offer testimony in legal cases
b) Focus on public relations during a case
c) Manage engineering projects for legal firms
d) Directly represent the interests of a company court

33) Sample Code of Ethics of professional organizations typically includes _____.
a) Guidelines for acceptable behavior and decision-making
b) Rules for maximizing profits at any cost
c) Detailed technical specifications for projects
d) Guidelines for political involvement in engineering

34) ASME stands for _____.
a) American Society of Mechanical Engineers
b) American Society of Management Engineers
c) Association of Safety and Mechanical Engineers
d) Association of Scientific and Mechanical Engineers

35) The ASCE Code of Ethics emphasizes _____.
a) Following only local regulations
b) Maintaining professional integrity and responsibility
c) Focusing on personal financial gain
d) Ignoring environmental impacts

36) The IEEE Code of Ethics is primarily concerned with _____.
a) Fostering professional competence and integrity
b) Protecting corporate secrets
c) Maximizing technological advancements at any cost
d) Developing weapons for defense purposes

37) Global issues in engineering ethics include _____.
a) Cultural differences in engineering practices
b) Lack of understanding between technical and ethical concerns
c) Addressing both local and international engineering challenges
d) All of the above

38) A key challenge faced by multinational corporations is _____.
a) Balancing profits with social and environmental
b) Competing only within their home country responsibilities
c) Focusing solely on domestic issues
d) Ignoring corporate social responsibility

39) Empathy is the ability to _____.
a) Solve problems logically
b) Understand and share the feelings of others
c) Be indifferent to others' emotions
d) Only care about your own well-being

40) The quality of "caring" includes _____.
a) Showing concern for others' well-being
b) Ignoring the needs of others
c) Only helping family and friends
d) Seeking praise for helping others

41) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

42) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

43) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

44) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

45) The value of respect entails _____.

a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

46) Which value involves being accountable for one's decisions and actions?

a) Responsibility b) Flexibility
c) Confidence d) Arrogance

47) The value of integrity entails _____.

a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

48) Which value involves being considerate and thoughtful towards others?

a) Kindness b) Determination
c) Independence d) Indifference

49) The value of wisdom involves _____.

a) Making sound and informed judgments based on knowledge and experience
b) Pursuing personal interests at the expense of others
c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

50) Which value involves being truthful and sincere in one's actions and words?

a) Honesty b) Tolerance
c) Flexibility d) Arrogance

SLR-QH-141

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Principles of Digital Communication (BTN06403)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Coherent detection at the receiver side requires _____.
a) Phase Synchronization b) Timing Synchronization
c) Both a) & b) d) Amplitude Synchronization

2) In QAM, both identities are varied _____.
a) Amplitude and phase b) Frequency and phase
c) Bit rate and phase d) Baud rate and phase

3) The error probability of QPSK is _____.
a) Better than BPSK b) Inferior to BPSK
c) Same as BPSK d) None of the above

4) Minimum shift keying is similar to _____.
a) Continuous phase frequency shift keying
b) BPSK
c) BFSK
d) QPSK

5) A correlation receiver consists of _____.
a) Multiplier and integrator b) An integrator only
c) Multiplier only d) Adder and integrator

6) Equalizer is used for _____.
a) Frame synchronization b) Symbol synchronization
c) Carrier synchronization d) Minimizing ISI

7) The order of _____ matrix is $(n-k) \times n$.
a) Generator matrix
b) Parity check matrix
c) Transpose of H
d) None of above

8) Code rate is the ratio of _____.
a) k/n
b) n/k
c) q/k
d) None of above

9) The weight of the code 1010100 is _____.
a) 2
b) 3
c) 4
d) 5

10) Average information per message is called _____.
a) Mutual information
b) Joint information
c) Uncertainty
d) Entropy

11) Information content in the universally true event is _____.
a) Infinite Constant
b) Zero
c) Positive
d) Negative Constant

12) In _____ encoding, we use three levels: positive, zero and negative.
a) Unipolar
b) Bipolar
c) Polar
d) None of the above

13) In PCM quantization noise depends on _____.
a) Sampling rate
b) Number of quantization levels
c) Signal power
d) None of the above

14) The minimum distance in two symbols in case of BPSK is _____.
a) $\sqrt{}$Eb
b) 2 $\sqrt{}$Eb
c) EB
d) None of these

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Principles of Digital Communication (BTN06403)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programable calculator is allowed.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2 Solve any four. **16**

a) Define entropy. Derive the expression for entropy of a discrete memoryless source.

b) Explain mutual information and its significance in information theory.

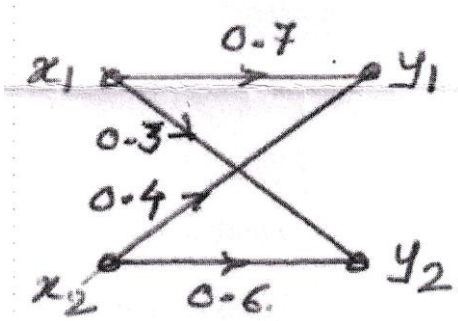
c) Explain Inter Symbol Interference (ISI). What causes ISI in digital systems?

d) List different line coding techniques and mention their characteristics.

e) What is Binary Frequency Shift Keying (BFSK)? Give its signal representation and waveform.

Q.3 Solve any two. **12**

a) Find the mutual information or trans information for channel shown below.



b) Describe the working of a PCM system with a neat block diagram. Discuss its advantages and limitations.

c) Compare BASK, BFSK, BPSK, and DPSK based on: Bandwidth requirement, Power efficiency, Probability of error & Equipment complexity.

SECTION – II

Q.4 Solve any four. **16**

a) Write a short note on integrate and dump receiver.

b) Write a note on QAM modulation.

c) Write any one method of frame synchronization.

d) For the (6,3) block code the parity check matrix is given as

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 & 0 & 1 \end{bmatrix}$$

If received vector is 100101, find whether it is erroneous.

e) Explain any one carrier recovery technique.

Q.5 Solve any two. **12**

a) For (7,3) block code the generator matrix is given by.

$$G = \begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 1 \end{bmatrix}$$

i) Find parity check matrix

ii) Find all the code vectors of this code.

iii) Comment on error detection and correction capability of this code.

b) Explain the working of M_{ary} FSK transmitter.

c) Explain in detail QPSK transmitter and receiver.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Principles of Digital Communication (BTN06403)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Code rate is the ratio of _____.
a) k/n b) n/k
c) q/k d) None of above

2) The weight of the code 1010100 is _____.
a) 2 b) 3
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3) Average information per message is called _____.
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6) In PCM quantization noise depends on _____.
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7) The minimum distance in two symbols in case of BPSK is _____.
a) $\sqrt{Eb}$ b) $2\sqrt{Eb}$
c) EB d) None of these

8) Coherent detection at the receiver side requires _____.
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13) Equalizer is used for _____.
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14) The order of _____ matrix is $(n-k) \times n$.
a) Generator matrix b) Parity check matrix
c) Transpose of H d) None of above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Principles of Digital Communication (BTN06403)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programable calculator is allowed.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2 Solve any four. **16**

a) Define entropy. Derive the expression for entropy of a discrete memoryless source.

b) Explain mutual information and its significance in information theory.

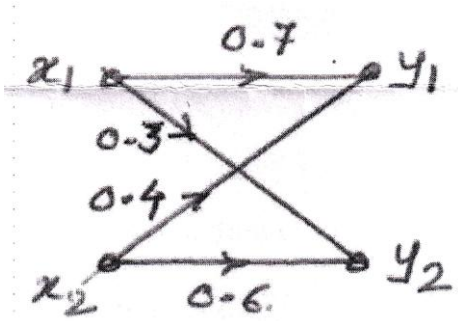
c) Explain Inter Symbol Interference (ISI). What causes ISI in digital systems?

d) List different line coding techniques and mention their characteristics.

e) What is Binary Frequency Shift Keying (BFSK)? Give its signal representation and waveform.

Q.3 Solve any two. **12**

a) Find the mutual information or trans information for channel shown below.



b) Describe the working of a PCM system with a neat block diagram. Discuss its advantages and limitations.

c) Compare BASK, BFSK, BPSK, and DPSK based on: Bandwidth requirement, Power efficiency, Probability of error & Equipment complexity.

SECTION – II

Q.4 Solve any four. **16**

a) Write a short note on integrate and dump receiver.

b) Write a note on QAM modulation.

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d) For the (6,3) block code the parity check matrix is given as

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 & 0 & 1 \end{bmatrix}$$

If received vector is 100101, find whether it is erroneous.

e) Explain any one carrier recovery technique.

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i) Find parity check matrix

ii) Find all the code vectors of this code.

iii) Comment on error detection and correction capability of this code.

b) Explain the working of M_{ary} FSK transmitter.

c) Explain in detail QPSK transmitter and receiver.

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Principles of Digital Communication (BTN06403)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Information content in the universally true event is _____.
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b) BPSK
c) BFSK
d) QPSK

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c) Carrier synchronization
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b) 3
c) 4
d) 5

14) Average information per message is called _____.
a) Mutual information
b) Joint information
c) Uncertainty
d) Entropy

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Principles of Digital Communication (BTN06403)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programable calculator is allowed.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2 Solve any four. **16**

a) Define entropy. Derive the expression for entropy of a discrete memoryless source.

b) Explain mutual information and its significance in information theory.

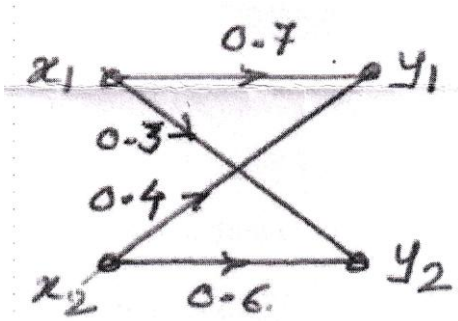
c) Explain Inter Symbol Interference (ISI). What causes ISI in digital systems?

d) List different line coding techniques and mention their characteristics.

e) What is Binary Frequency Shift Keying (BFSK)? Give its signal representation and waveform.

Q.3 Solve any two. **12**

a) Find the mutual information or trans information for channel shown below.



b) Describe the working of a PCM system with a neat block diagram. Discuss its advantages and limitations.

c) Compare BASK, BFSK, BPSK, and DPSK based on: Bandwidth requirement, Power efficiency, Probability of error & Equipment complexity.

SECTION – II

Q.4 Solve any four. **16**

a) Write a short note on integrate and dump receiver.

b) Write a note on QAM modulation.

c) Write any one method of frame synchronization.

d) For the (6,3) block code the parity check matrix is given as

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 & 0 & 1 \end{bmatrix}$$

If received vector is 100101, find whether it is erroneous.

e) Explain any one carrier recovery technique.

Q.5 Solve any two. **12**

a) For (7,3) block code the generator matrix is given by.

$$G = \begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 1 \end{bmatrix}$$

i) Find parity check matrix

ii) Find all the code vectors of this code.

iii) Comment on error detection and correction capability of this code.

b) Explain the working of M_{ary} FSK transmitter.

c) Explain in detail QPSK transmitter and receiver.

SLR-QH-141

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Principles of Digital Communication (BTN06403)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Equalizer is used for _____.
a) Frame synchronization b) Symbol synchronization
c) Carrier synchronization d) Minimizing ISI

2) The order of _____ matrix is $(n-k) \times n$.
a) Generator matrix b) Parity check matrix
c) Transpose of H d) None of above

3) Code rate is the ratio of _____.
a) k/n b) n/k
c) q/k d) None of above

4) The weight of the code 1010100 is _____.
a) 2 b) 3
c) 4 d) 5

5) Average information per message is called _____.
a) Mutual information b) Joint information
c) Uncertainty d) Entropy

6) Information content in the universally true event is _____.
a) Infinite Constant b) Zero
c) Positive d) Negative Constant

7) In _____ encoding, we use three levels: positive, zero and negative.
a) Unipolar b) Bipolar
c) Polar d) None of the above

8) In PCM quantization noise depends on _____.
   a) Sampling rate
   b) Number of quantization levels
   c) Signal power
   d) None of the above

9) The minimum distance in two symbols in case of BPSK is _____.
   a) $\sqrt{Eb}$ b) $2\sqrt{Eb}$
   c) EB d) None of these

10) Coherent detection at the receiver side requires _____.
   a) Phase Synchronization b) Timing Synchronization
   c) Both a) & b) d) Amplitude Synchronization

11) In QAM, both identities are varied _____.
   a) Amplitude and phase b) Frequency and phase
   c) Bit rate and phase d) Baud rate and phase

12) The error probability of QPSK is _____.
   a) Better than BPSK b) Inferior to BPSK
   c) Same as BPSK d) None of the above

13) Minimum shift keying is similar to _____.
   a) Continuous phase frequency shift keying
   b) BPSK
   c) BFSK
   d) QPSK

14) A correlation receiver consists of _____.
   a) Multiplier and integrator b) An integrator only
   c) Multiplier only d) Adder and integrator

Seat No.	

Set | S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Principles of Digital Communication (BTN06403)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programable calculator is allowed.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2 Solve any four. **16**

a) Define entropy. Derive the expression for entropy of a discrete memoryless source.

b) Explain mutual information and its significance in information theory.

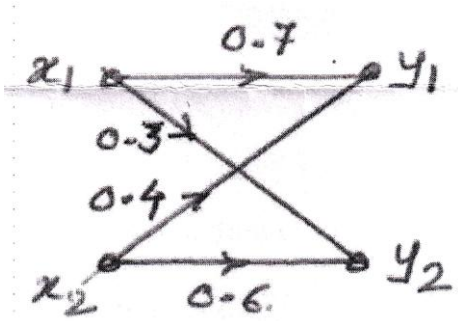
c) Explain Inter Symbol Interference (ISI). What causes ISI in digital systems?

d) List different line coding techniques and mention their characteristics.

e) What is Binary Frequency Shift Keying (BFSK)? Give its signal representation and waveform.

Q.3 Solve any two. **12**

a) Find the mutual information or trans information for channel shown below.



b) Describe the working of a PCM system with a neat block diagram. Discuss its advantages and limitations.

c) Compare BASK, BFSK, BPSK, and DPSK based on: Bandwidth requirement, Power efficiency, Probability of error & Equipment complexity.

SECTION – II

Q.4 Solve any four. **16**

a) Write a short note on integrate and dump receiver.

b) Write a note on QAM modulation.

c) Write any one method of frame synchronization.

d) For the (6,3) block code the parity check matrix is given as

$$H = \begin{bmatrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 & 0 & 1 \end{bmatrix}$$

If received vector is 100101, find whether it is erroneous.

e) Explain any one carrier recovery technique.

Q.5 Solve any two. **12**

a) For (7,3) block code the generator matrix is given by.

$$G = \begin{bmatrix} 1 & 0 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 & 0 & 1 & 1 \end{bmatrix}$$

i) Find parity check matrix

ii) Find all the code vectors of this code.

iii) Comment on error detection and correction capability of this code.

b) Explain the working of M_{ary} FSK transmitter.

c) Explain in detail QPSK transmitter and receiver.

SLR-QH-142

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog Electronics (EEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) The main purpose of a Zener diode is _____.
a) Rectification b) Voltage regulation
c) Amplification d) Switching

2) Clampers are used to _____.
a) Shift waveform without changing shape
b) Rectify AC signal
c) Clip waveform
d) Increase amplitude

3) In CE configuration, output is _____.
a) In phase with input
b) 180° out of phase with input
c) Zero
d) Same as CB

4) Enhancement-type MOSFET _____.
a) Has channel at zero VGS
b) Requires VGS to form channel
c) Works in depletion mode
d) Has low input impedance

5) DC load line is used to _____.
a) Determine Q-point b) Determine AC gain
c) Measure temperature d) Find input impedance

6) MOSFET is _____.
a) Current-controlled b) Voltage-controlled
c) Both d) None

7) Open-loop inverting amplifier output _____.
   a) In phase
   b) 180^0 out of phase
   c) Same as input
   d) Zero

8) For inverting amplifier, if $\mathrm{Rf} = 100\mathrm{k}\Omega$ and $\mathrm{Ri} = 1\mathrm{k}\Omega$ then closed loop gain is _____.
   a) 1,00,000
   b) 1,000
   c) 101
   d) -100

9) Closed-loop feedback reduces _____.
   a) Input resistance
   b) Output resistance
   c) Gain instability
   d) Both b) & c)

10) Virtual ground occurs at _____.
   a) Non-inverting terminal
   b) Inverting terminal in closed-loop
   c) Output terminal
   d) Ground only

11) Slew rate of op-amp _____.
   a) Rate of change of input voltage
   b) Rate of change of output voltage
   c) Maximum current
   d) Maximum gain

12) Instrumentation amplifier is used for _____.
   a) High input impedance, high CMRR
   b) Low input impedance
   c) Unity gain only
   d) Voltage follower

13) Summing amplifier can be _____.
   a) Inverting only
   b) Non-inverting only
   c) Both inverting and non-inverting
   d) None

14) Integrator and differentiator are examples of _____.
   a) Linear circuits
   b) Non-linear circuits
   c) Digital circuits
   d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog Electronics (EEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four questions. **16**

a) Explain the construction and working of a Zener diode with its V-I characteristics.

b) Explain the concept thermal runaway in detail.

c) Draw and explain the frequency response curve of an RC coupled CE amplifier.

d) Describe the effect of coupling and bypass capacitors on frequency response of CE amplifier.

e) Draw and explain the construction and working of an n-channel JFET.

f) Explain the operation of depletion type MOSFET.

Q.3 Attempt Any Two questions. **12**

a) Explain in detail the working of diode circuits as
i) Clipper and
ii) Clamper with necessary diagrams.

b) Explain small signal JFET Parameters.
i) Input Resistance
ii) DC Drain Resistance
iii) Transconductance
iv) Amplification Factors

c) Explain construction and operation of enhancement-type MOSFET. Draw and explain its transfer characteristics.

SECTION – II

Q.4 Attempt Any Four questions. **16**

a) Draw and explain the block diagram of an operational amplifier and describe each stage.

b) Discuss ideal and practical characteristics of an op-amp. Explain each term briefly.

c) Describe the four basic feedback configurations of op-amp.

d) Draw and explain the block diagram of a voltage series feedback amplifier.

e) Explain the working of a voltage follower with neat circuit diagram.

f) With neat circuit diagram explain working of a differentiator.

Q.5 Attempt Any Two questions. **12**

a) Draw and explain the equivalent circuit and ideal voltage transfer curve of an op-amp.

b) Derive expressions for input resistance, output resistance, bandwidth, and total output offset voltage for a voltage series feedback op-amp.

c) Describe voltage-to-current converter with floating and grounded load.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog Electronics (EEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) For inverting amplifier, if $\mathrm{Rf} = 100\mathrm{k}\Omega$ and $\mathrm{Ri} = 1\mathrm{k}\Omega$ then closed loop gain is _____.
a) 1,00,000 b) 1,000
c) 101 d) -100

2) Closed-loop feedback reduces _____.
a) Input resistance b) Output resistance
c) Gain instability d) Both b) & c)

3) Virtual ground occurs at _____.
a) Non-inverting terminal
b) Inverting terminal in closed-loop
c) Output terminal
d) Ground only

4) Slew rate of op-amp _____.
a) Rate of change of input voltage
b) Rate of change of output voltage
c) Maximum current
d) Maximum gain

5) Instrumentation amplifier is used for _____.
a) High input impedance, high CMRR
b) Low input impedance
c) Unity gain only
d) Voltage follower

6) Summing amplifier can be _____.
   a) Inverting only
   b) Non-inverting only
   c) Both inverting and non-inverting
   d) None

7) Integrator and differentiator are examples of _____.
   a) Linear circuits
   b) Non-linear circuits
   c) Digital circuits
   d) None

8) The main purpose of a Zener diode is _____.
   a) Rectification
   b) Voltage regulation
   c) Amplification
   d) Switching

9) Clampers are used to _____.
   a) Shift waveform without changing shape
   b) Rectify AC signal
   c) Clip waveform
   d) Increase amplitude

10) In CE configuration, output is _____.
   a) In phase with input
   b) 180° out of phase with input
   c) Zero
   d) Same as CB

11) Enhancement-type MOSFET _____.
   a) Has channel at zero VGS
   b) Requires VGS to form channel
   c) Works in depletion mode
   d) Has low input impedance

12) DC load line is used to _____.
   a) Determine Q-point
   b) Determine AC gain
   c) Measure temperature
   d) Find input impedance

13) MOSFET is _____.
   a) Current-controlled
   b) Voltage-controlled
   c) Both
   d) None

14) Open-loop inverting amplifier output _____.
   a) In phase
   b) 180^0 out of phase
   c) Same as input
   d) Zero

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog Electronics (EEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four questions. **16**

a) Explain the construction and working of a Zener diode with its V-I characteristics.

b) Explain the concept thermal runaway in detail.

c) Draw and explain the frequency response curve of an RC coupled CE amplifier.

d) Describe the effect of coupling and bypass capacitors on frequency response of CE amplifier.

e) Draw and explain the construction and working of an n-channel JFET.

f) Explain the operation of depletion type MOSFET.

Q.3 Attempt Any Two questions. **12**

a) Explain in detail the working of diode circuits as
i) Clipper and
ii) Clamper with necessary diagrams.

b) Explain small signal JFET Parameters.
i) Input Resistance
ii) DC Drain Resistance
iii) Transconductance
iv) Amplification Factors

c) Explain construction and operation of enhancement-type MOSFET. Draw and explain its transfer characteristics.

SECTION – II

Q.4 Attempt Any Four questions. **16**

a) Draw and explain the block diagram of an operational amplifier and describe each stage.

b) Discuss ideal and practical characteristics of an op-amp. Explain each term briefly.

c) Describe the four basic feedback configurations of op-amp.

d) Draw and explain the block diagram of a voltage series feedback amplifier.

e) Explain the working of a voltage follower with neat circuit diagram.

f) With neat circuit diagram explain working of a differentiator.

Q.5 Attempt Any Two questions. **12**

a) Draw and explain the equivalent circuit and ideal voltage transfer curve of an op-amp.

b) Derive expressions for input resistance, output resistance, bandwidth, and total output offset voltage for a voltage series feedback op-amp.

c) Describe voltage-to-current converter with floating and grounded load.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog Electronics (EEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) Slew rate of op-amp _____.
a) Rate of change of input voltage
b) Rate of change of output voltage
c) Maximum current
d) Maximum gain

2) Instrumentation amplifier is used for _____.
a) High input impedance, high CMRR
b) Low input impedance
c) Unity gain only
d) Voltage follower

3) Summing amplifier can be _____.
a) Inverting only
b) Non-inverting only
c) Both inverting and non-inverting
d) None

4) Integrator and differentiator are examples of _____.
a) Linear circuits b) Non-linear circuits
c) Digital circuits d) None

5) The main purpose of a Zener diode is _____.
a) Rectification b) Voltage regulation
c) Amplification d) Switching

6) Clampers are used to _____.
   a) Shift waveform without changing shape
   b) Rectify AC signal
   c) Clip waveform
   d) Increase amplitude

7) In CE configuration, output is _____.
   a) In phase with input
   b) 180° out of phase with input
   c) Zero
   d) Same as CB

8) Enhancement-type MOSFET _____.
   a) Has channel at zero VGS
   b) Requires VGS to form channel
   c) Works in depletion mode
   d) Has low input impedance

9) DC load line is used to _____.
   a) Determine Q-point
   b) Determine AC gain
   c) Measure temperature
   d) Find input impedance

10) MOSFET is _____.
   a) Current-controlled
   b) Voltage-controlled
   c) Both
   d) None

11) Open-loop inverting amplifier output _____.
   a) In phase
   b) 180^0 out of phase
   c) Same as input
   d) Zero

12) For inverting amplifier, if $\mathrm{Rf} = 100\mathrm{k}\Omega$ and $\mathrm{Ri} = 1\mathrm{k}\Omega$ then closed loop gain is _____.
   a) 1,00,000
   b) 1,000
   c) 101
   d) -100

13) Closed-loop feedback reduces _____.
   a) Input resistance
   b) Output resistance
   c) Gain instability
   d) Both b) & c)

14) Virtual ground occurs at _____.
   a) Non-inverting terminal
   b) Inverting terminal in closed-loop
   c) Output terminal
   d) Ground only

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog Electronics (EEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four questions. **16**

a) Explain the construction and working of a Zener diode with its V-I characteristics.

b) Explain the concept thermal runaway in detail.

c) Draw and explain the frequency response curve of an RC coupled CE amplifier.

d) Describe the effect of coupling and bypass capacitors on frequency response of CE amplifier.

e) Draw and explain the construction and working of an n-channel JFET.

f) Explain the operation of depletion type MOSFET.

Q.3 Attempt Any Two questions. **12**

a) Explain in detail the working of diode circuits as
i) Clipper and
ii) Clamper with necessary diagrams.

b) Explain small signal JFET Parameters.
i) Input Resistance
ii) DC Drain Resistance
iii) Transconductance
iv) Amplification Factors

c) Explain construction and operation of enhancement-type MOSFET. Draw and explain its transfer characteristics.

SECTION – II

Q.4 Attempt Any Four questions. **16**

a) Draw and explain the block diagram of an operational amplifier and describe each stage.

b) Discuss ideal and practical characteristics of an op-amp. Explain each term briefly.

c) Describe the four basic feedback configurations of op-amp.

d) Draw and explain the block diagram of a voltage series feedback amplifier.

e) Explain the working of a voltage follower with neat circuit diagram.

f) With neat circuit diagram explain working of a differentiator.

Q.5 Attempt Any Two questions. **12**

a) Draw and explain the equivalent circuit and ideal voltage transfer curve of an op-amp.

b) Derive expressions for input resistance, output resistance, bandwidth, and total output offset voltage for a voltage series feedback op-amp.

c) Describe voltage-to-current converter with floating and grounded load.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog Electronics (EEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) MOSFET is _____.
a) Current-controlled b) Voltage-controlled
c) Both d) None

2) Open-loop inverting amplifier output _____.
a) In phase b) 180^0 out of phase
c) Same as input d) Zero

3) For inverting amplifier, if $\mathrm{Rf} = 100\mathrm{k}\Omega$ and $\mathrm{Ri} = 1\mathrm{k}\Omega$ then closed loop gain is _____.
a) 1,00,000 b) 1,000
c) 101 d) -100

4) Closed-loop feedback reduces _____.
a) Input resistance b) Output resistance
c) Gain instability d) Both b) & c)

5) Virtual ground occurs at _____.
a) Non-inverting terminal
b) Inverting terminal in closed-loop
c) Output terminal
d) Ground only

6) Slew rate of op-amp _____.
a) Rate of change of input voltage
b) Rate of change of output voltage
c) Maximum current
d) Maximum gain

7) Instrumentation amplifier is used for _____.
   a) High input impedance, high CMRR
   b) Low input impedance
   c) Unity gain only
   d) Voltage follower

8) Summing amplifier can be _____.
   a) Inverting only
   b) Non-inverting only
   c) Both inverting and non-inverting
   d) None

9) Integrator and differentiator are examples of _____.
   a) Linear circuits
   b) Non-linear circuits
   c) Digital circuits
   d) None

10) The main purpose of a Zener diode is _____.
   a) Rectification
   b) Voltage regulation
   c) Amplification
   d) Switching

11) Clampers are used to _____.
   a) Shift waveform without changing shape
   b) Rectify AC signal
   c) Clip waveform
   d) Increase amplitude

12) In CE configuration, output is _____.
   a) In phase with input
   b) 180° out of phase with input
   c) Zero
   d) Same as CB

13) Enhancement-type MOSFET _____.
   a) Has channel at zero VGS
   b) Requires VGS to form channel
   c) Works in depletion mode
   d) Has low input impedance

14) DC load line is used to _____.
   a) Determine Q-point
   b) Determine AC gain
   c) Measure temperature
   d) Find input impedance

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Analog Electronics (EEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four questions. **16**

a) Explain the construction and working of a Zener diode with its V-I characteristics.

b) Explain the concept thermal runaway in detail.

c) Draw and explain the frequency response curve of an RC coupled CE amplifier.

d) Describe the effect of coupling and bypass capacitors on frequency response of CE amplifier.

e) Draw and explain the construction and working of an n-channel JFET.

f) Explain the operation of depletion type MOSFET.

Q.3 Attempt Any Two questions. **12**

a) Explain in detail the working of diode circuits as
i) Clipper and
ii) Clamper with necessary diagrams.

b) Explain small signal JFET Parameters.
i) Input Resistance
ii) DC Drain Resistance
iii) Transconductance
iv) Amplification Factors

c) Explain construction and operation of enhancement-type MOSFET. Draw and explain its transfer characteristics.

SECTION – II

Q.4 Attempt Any Four questions. **16**

a) Draw and explain the block diagram of an operational amplifier and describe each stage.

b) Discuss ideal and practical characteristics of an op-amp. Explain each term briefly.

c) Describe the four basic feedback configurations of op-amp.

d) Draw and explain the block diagram of a voltage series feedback amplifier.

e) Explain the working of a voltage follower with neat circuit diagram.

f) With neat circuit diagram explain working of a differentiator.

Q.5 Attempt Any Two questions. **12**

a) Draw and explain the equivalent circuit and ideal voltage transfer curve of an op-amp.

b) Derive expressions for input resistance, output resistance, bandwidth, and total output offset voltage for a voltage series feedback op-amp.

c) Describe voltage-to-current converter with floating and grounded load.

SLR-QH-143

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Power Plant Engineering and Elements of Power System (EEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Electric power supply system means _____.
a) Generation b) Transmission
c) Distribution d) All of above

2) In interconnected grid systems plants are connected in _____.
a) series b) parallel
c) both type d) None of the above

3) A load curve is a plot of _____.
a) Load versus generation capacity
b) Load versus time
c) Load versus current
d) Load versus cost of power

4) Which tariff is most ideal tariff for the consumer?
a) Three-part tariff b) Two-part tariff
c) Both (a) and (b) d) None of the above

5) The load of a consumer is generally measured in terms of _____.
a) Volts b) KW
c) Amperes d) Ampere hour

6) What is the major problem in nuclear plants?
a) Drawing out energy b) Disposal of nuclear waste
c) Fusion of particles d) Handling of fuel

7) Which of the following Power Plant is Medium head hydro plant?
a) Head 0m to 15m b) Head 15m to 30m
c) Head 30m to 100m d) Head 30m to 300m

8) In a hydro-electric plant which of the following part helps to reduce water hammering Effect.

a) Dam
b) Reservoir
c) Penstock
d) Surge tank

9) Most of the high voltage transmission lines in India are _____.

a) underground
b) overhead
c) either of the above
d) None of the above

10) Which type of insulator is used on 132 KV line _____.

a) Pin type
b) Disc type
c) Shackle type
d) Pin and shackle type

11) Which following tower is known as the Tangent Tower?

a) A type
b) B type
c) C type
d) D type

12) Feeder is designed mainly from the point view of _____.

a) Its current carrying capacity
b) Voltage drops in it
c) Operating Voltage
d) Operating Frequency

13) Which of the following is the desirable Property of insulator?

a) Less Permittivity
b) High Permittivity
c) Porcelain
d) Epoxy resin

14) Higher string Efficiency _____.

a) More Uniform Voltage Distribution across string
b) More Non Uniform Voltage Distribution across string
c) Both a & b
d) None of the above

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Power Plant Engineering and Elements of Power System (EEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define the load curve, what information obtained from load curve?

b) Describe the Interconnected Grid System. Discuss the advantages of interconnected grid system.

c) Define the Electrical tariff, enlist various types of it, Describe Three Part Tariff.

d) The annual load duration curve of a certain power station can be considered as a straight line from 20 MW to 4 MW. To meet this load, three turbine-generator units, two rated at 10 MW each and one rated at 5 MW are installed. Determine:
i) installed capacity
ii) plant factor
iii) units generated per annum
iv) load factor

e) Describe the Boiling Water Reactor (BWR) with neat schematic diagram.

f) Write the advantages and disadvantages of Hydro power plant.

Q.3 Attempt Any Two. **12**

a) Draw the schematic diagram of a steam power station and explain its operation.

b) Draw the flow diagram of a Nuclear power station and discuss its operation.

c) Define Depreciation cost. Explain the different method to determine the Depreciation cost.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the typical layout of Electrical Supply System.

b) Define the string efficiency, Explain the different factors affecting the string efficiency.

c) In a 33 kV overhead line, there are three units in the string of insulators. If the capacitance between each insulator pin and earth(C1) is 11% of self-capacitance of each insulator(C), find

i) The distribution of voltage over 3 insulators and

ii) String efficiency.

d) Write the advantages and disadvantages suspension type insulators.

e) Enlist methods of string Efficiency improvement and explain Guard Ring.

f) Derive an Expression for volume of conductor material required in case Single Phase two wire AC System with one conductor earthed.

Q.5 Attempt Any Two. **12**

a) State and explain Kelvins Law with neat cure.

b) Draw a schematic layout of substation. Give the names of that equipment and also explain the use with the symbols.

c) A 50 km long transmission line supplies a load of 5 MVA at 0.8 p.f. lagging at 33 kV. The efficiency of transmission is 90%. Calculate the volume of aluminium conductor required for the line when

i) single phase, 2-wire system is used

ii) 3-phase, 3-wire system is used. The specific resistance of aluminium is $2.85 \times 10^{-8}\ \Omega\,\mathrm{m}$.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Power Plant Engineering and Elements of Power System (EEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) In a hydro-electric plant which of the following part helps to reduce water hammering Effect.
a) Dam b) Reservoir
c) Penstock d) Surge tank

2) Most of the high voltage transmission lines in India are _____.
a) underground b) overhead
c) either of the above d) None of the above

3) Which type of insulator is used on 132 KV line _____.
a) Pin type b) Disc type
c) Shackle type d) Pin and shackle type

4) Which following tower is known as the Tangent Tower?
a) A type b) B type
c) C type d) D type

5) Feeder is designed mainly from the point view of _____.
a) Its current carrying capacity b) Voltage drops in it
c) Operating Voltage d) Operating Frequency

6) Which of the following is the desirable Property of insulator?
a) Less Permittivity b) High Permittivity
c) Porcelain d) Epoxy resin

7) Higher string Efficiency _____.
a) More Uniform Voltage Distribution across string
b) More Non Uniform Voltage Distribution across string
c) Both a & b
d) None of the above

8) Electric power supply system means _____.
a) Generation b) Transmission
c) Distribution d) All of above

9) In interconnected grid systems plants are connected in _____.
a) series b) parallel
c) both type d) None of the above

10) A load curve is a plot of _____.
a) Load versus generation capacity
b) Load versus time
c) Load versus current
d) Load versus cost of power

11) Which tariff is most ideal tariff for the consumer?
a) Three-part tariff b) Two-part tariff
c) Both (a) and (b) d) None of the above

12) The load of a consumer is generally measured in terms of _____.
a) Volts b) KW
c) Amperes d) Ampere hour

13) What is the major problem in nuclear plants?
a) Drawing out energy b) Disposal of nuclear waste
c) Fusion of particles d) Handling of fuel

14) Which of the following Power Plant is Medium head hydro plant?
a) Head 0m to 15m b) Head 15m to 30m
c) Head 30m to 100m d) Head 30m to 300m

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Power Plant Engineering and Elements of Power System (EEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define the load curve, what information obtained from load curve?

b) Describe the Interconnected Grid System. Discuss the advantages of interconnected grid system.

c) Define the Electrical tariff, enlist various types of it, Describe Three Part Tariff.

d) The annual load duration curve of a certain power station can be considered as a straight line from 20 MW to 4 MW. To meet this load, three turbine-generator units, two rated at 10 MW each and one rated at 5 MW are installed. Determine:
i) installed capacity
ii) plant factor
iii) units generated per annum
iv) load factor

e) Describe the Boiling Water Reactor (BWR) with neat schematic diagram.

f) Write the advantages and disadvantages of Hydro power plant.

Q.3 Attempt Any Two. **12**

a) Draw the schematic diagram of a steam power station and explain its operation.

b) Draw the flow diagram of a Nuclear power station and discuss its operation.

c) Define Depreciation cost. Explain the different method to determine the Depreciation cost.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the typical layout of Electrical Supply System.

b) Define the string efficiency, Explain the different factors affecting the string efficiency.

c) In a 33 kV overhead line, there are three units in the string of insulators. If the capacitance between each insulator pin and earth(C1) is 11% of self-capacitance of each insulator(C), find

i) The distribution of voltage over 3 insulators and

ii) String efficiency.

d) Write the advantages and disadvantages suspension type insulators.

e) Enlist methods of string Efficiency improvement and explain Guard Ring.

f) Derive an Expression for volume of conductor material required in case Single Phase two wire AC System with one conductor earthed.

Q.5 Attempt Any Two. **12**

a) State and explain Kelvins Law with neat cure.

b) Draw a schematic layout of substation. Give the names of that equipment and also explain the use with the symbols.

c) A 50 km long transmission line supplies a load of 5 MVA at 0.8 p.f. lagging at 33 kV. The efficiency of transmission is 90%. Calculate the volume of aluminium conductor required for the line when

i) single phase, 2-wire system is used

ii) 3-phase, 3-wire system is used. The specific resistance of aluminium is $2.85 \times 10^{-8}\ \Omega\,\mathrm{m}$.

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Power Plant Engineering and Elements of Power System (EEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Which following tower is known as the Tangent Tower?
a) A type b) B type
c) C type d) D type

2) Feeder is designed mainly from the point view of _____.
a) Its current carrying capacity b) Voltage drops in it
c) Operating Voltage d) Operating Frequency

3) Which of the following is the desirable Property of insulator?
a) Less Permittivity b) High Permittivity
c) Porcelain d) Epoxy resin

4) Higher string Efficiency _____.
a) More Uniform Voltage Distribution across string
b) More Non Uniform Voltage Distribution across string
c) Both a & b
d) None of the above

5) Electric power supply system means _____.
a) Generation b) Transmission
c) Distribution d) All of above

6) In interconnected grid systems plants are connected in _____.
a) series b) parallel
c) both type d) None of the above

7) A load curve is a plot of _____.
   a) Load versus generation capacity
   b) Load versus time
   c) Load versus current
   d) Load versus cost of power

8) Which tariff is most ideal tariff for the consumer?
   a) Three-part tariff
   b) Two-part tariff
   c) Both (a) and (b)
   d) None of the above

9) The load of a consumer is generally measured in terms of _____.
   a) Volts
   b) KW
   c) Amperes
   d) Ampere hour

10) What is the major problem in nuclear plants?
   a) Drawing out energy
   b) Disposal of nuclear waste
   c) Fusion of particles
   d) Handling of fuel

11) Which of the following Power Plant is Medium head hydro plant?
   a) Head 0m to 15m
   b) Head 15m to 30m
   c) Head 30m to 100m
   d) Head 30m to 300m

12) In a hydro-electric plant which of the following part helps to reduce water hammering Effect.
   a) Dam
   b) Reservoir
   c) Penstock
   d) Surge tank

13) Most of the high voltage transmission lines in India are _____.
   a) underground
   b) overhead
   c) either of the above
   d) None of the above

14) Which type of insulator is used on 132 KV line _____.
   a) Pin type
   b) Disc type
   c) Shackle type
   d) Pin and shackle type

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Power Plant Engineering and Elements of Power System (EEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define the load curve, what information obtained from load curve?

b) Describe the Interconnected Grid System. Discuss the advantages of interconnected grid system.

c) Define the Electrical tariff, enlist various types of it, Describe Three Part Tariff.

d) The annual load duration curve of a certain power station can be considered as a straight line from 20 MW to 4 MW. To meet this load, three turbine-generator units, two rated at 10 MW each and one rated at 5 MW are installed. Determine:
i) installed capacity
ii) plant factor
iii) units generated per annum
iv) load factor

e) Describe the Boiling Water Reactor (BWR) with neat schematic diagram.

f) Write the advantages and disadvantages of Hydro power plant.

Q.3 Attempt Any Two. **12**

a) Draw the schematic diagram of a steam power station and explain its operation.

b) Draw the flow diagram of a Nuclear power station and discuss its operation.

c) Define Depreciation cost. Explain the different method to determine the Depreciation cost.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the typical layout of Electrical Supply System.

b) Define the string efficiency, Explain the different factors affecting the string efficiency.

c) In a 33 kV overhead line, there are three units in the string of insulators. If the capacitance between each insulator pin and earth(C1) is 11% of self-capacitance of each insulator(C), find

i) The distribution of voltage over 3 insulators and

ii) String efficiency.

d) Write the advantages and disadvantages suspension type insulators.

e) Enlist methods of string Efficiency improvement and explain Guard Ring.

f) Derive an Expression for volume of conductor material required in case Single Phase two wire AC System with one conductor earthed.

Q.5 Attempt Any Two. **12**

a) State and explain Kelvins Law with neat cure.

b) Draw a schematic layout of substation. Give the names of that equipment and also explain the use with the symbols.

c) A 50 km long transmission line supplies a load of 5 MVA at 0.8 p.f. lagging at 33 kV. The efficiency of transmission is 90%. Calculate the volume of aluminium conductor required for the line when

i) single phase, 2-wire system is used

ii) 3-phase, 3-wire system is used. The specific resistance of aluminium is $2.85 \times 10^{-8}\ \Omega\,\mathrm{m}$.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Power Plant Engineering and Elements of Power System (EEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) What is the major problem in nuclear plants?
a) Drawing out energy b) Disposal of nuclear waste
c) Fusion of particles d) Handling of fuel

2) Which of the following Power Plant is Medium head hydro plant?
a) Head 0m to 15m b) Head 15m to 30m
c) Head 30m to 100m d) Head 30m to 300m

3) In a hydro-electric plant which of the following part helps to reduce water hammering Effect.
a) Dam b) Reservoir
c) Penstock d) Surge tank

4) Most of the high voltage transmission lines in India are _____.
a) underground b) overhead
c) either of the above d) None of the above

5) Which type of insulator is used on 132 KV line _____.
a) Pin type b) Disc type
c) Shackle type d) Pin and shackle type

6) Which following tower is known as the Tangent Tower?
a) A type b) B type
c) C type d) D type

7) Feeder is designed mainly from the point view of _____.
a) Its current carrying capacity b) Voltage drops in it
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8) Which of the following is the desirable Property of insulator?
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c) Porcelain d) Epoxy resin

9) Higher string Efficiency _____.
a) More Uniform Voltage Distribution across string
b) More Non Uniform Voltage Distribution across string
c) Both a & b
d) None of the above

10) Electric power supply system means _____.
a) Generation b) Transmission
c) Distribution d) All of above

11) In interconnected grid systems plants are connected in _____.
a) series b) parallel
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12) A load curve is a plot of _____.
a) Load versus generation capacity
b) Load versus time
c) Load versus current
d) Load versus cost of power

13) Which tariff is most ideal tariff for the consumer?
a) Three-part tariff b) Two-part tariff
c) Both (a) and (b) d) None of the above

14) The load of a consumer is generally measured in terms of _____.
a) Volts b) KW
c) Amperes d) Ampere hour

SLR-QH-143

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Power Plant Engineering and Elements of Power System (EEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define the load curve, what information obtained from load curve?

b) Describe the Interconnected Grid System. Discuss the advantages of interconnected grid system.

c) Define the Electrical tariff, enlist various types of it, Describe Three Part Tariff.

d) The annual load duration curve of a certain power station can be considered as a straight line from 20 MW to 4 MW. To meet this load, three turbine-generator units, two rated at 10 MW each and one rated at 5 MW are installed. Determine:
i) installed capacity
ii) plant factor
iii) units generated per annum
iv) load factor

e) Describe the Boiling Water Reactor (BWR) with neat schematic diagram.

f) Write the advantages and disadvantages of Hydro power plant.

Q.3 Attempt Any Two. **12**

a) Draw the schematic diagram of a steam power station and explain its operation.

b) Draw the flow diagram of a Nuclear power station and discuss its operation.

c) Define Depreciation cost. Explain the different method to determine the Depreciation cost.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the typical layout of Electrical Supply System.

b) Define the string efficiency, Explain the different factors affecting the string efficiency.

c) In a 33 kV overhead line, there are three units in the string of insulators. If the capacitance between each insulator pin and earth(C1) is 11% of self-capacitance of each insulator(C), find

i) The distribution of voltage over 3 insulators and

ii) String efficiency.

d) Write the advantages and disadvantages suspension type insulators.

e) Enlist methods of string Efficiency improvement and explain Guard Ring.

f) Derive an Expression for volume of conductor material required in case Single Phase two wire AC System with one conductor earthed.

Q.5 Attempt Any Two. **12**

a) State and explain Kelvins Law with neat cure.

b) Draw a schematic layout of substation. Give the names of that equipment and also explain the use with the symbols.

c) A 50 km long transmission line supplies a load of 5 MVA at 0.8 p.f. lagging at 33 kV. The efficiency of transmission is 90%. Calculate the volume of aluminium conductor required for the line when

i) single phase, 2-wire system is used

ii) 3-phase, 3-wire system is used. The specific resistance of aluminium is $2.85 \times 10^{-8}\ \Omega\,\mathrm{m}$.

SLR-QH-144

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
DC Machines and Transformer (EEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) In a DC machine, the rectification process is carried out in order to get a unidirectional output (DC). This rectification process is carried out by _____.
a) Half wave rectifier b) Full wave rectifier
c) Mechanical rectification d) Centre tapped rectifier

2) Separately excited DC generators are still used in _____.
a) Thermal power plants
b) Ward Leonard speed control system
c) Hydro power plant
d) In all fields

3) What is the number of brushes in the lap winding?
a) Double the number of poles b) Same as the number of poles
c) Half the number of poles d) Two

4) In the case of DC machine winding, the number of commutator segments is equal to _____.
a) Number of armature coils
b) Number of armature coil sides
c) Number of armature conductors
d) Number of armature turns

5) The speed of a DC shunt motor can be made more than full load speed by _____.
a) Increasing the excitation current
b) Decreasing the armature current
c) Increasing the armature current
d) Reducing the field current

6) No-load speed of which of the following DC motors will be highest?
a) Shunt motor b) Series motor
c) Cumulative compound motor d) Differential compound motor

7) Which losses can be identified from Swinburne's test?
a) No-load core loss
b) Windage and friction loss
c) No-load and windage and friction loss
d) Stray load loss

8) What are the following advantages of the BLDC motor?
I. Low cost II. Simplicity III. Reliability IV. Good performance
a) I, II, III, IV b) I, II
c) I, II, IV d) II, III, IV

9) The primary winding of a transformer _____.
a) Is always a low voltage winding
b) Is always a high voltage winding
c) Cannot be determined
d) Could either be a low voltage or high voltage winding

10) In a real transformer, the primary winding has _____.
a) Infinite resistance b) Zero resistance
c) Some finite resistance d) Cannot say

11) During open circuit test (OC) of a transformer _____.
a) primary is supplied rated kVA
b) primary is supplied full-load current
c) primary is supplied current at reduced voltage
d) primary is supplied rated voltage

12) The value of flux involved in the emf equation of a transformer is _____.
a) average value b) maximum value
c) rms value d) instantaneous value

13) A good voltage regulation of a transformer indicates _____.
a) output voltage fluctuation from no load to full load is least
b) output voltage fluctuation with power factor is least
c) difference between primary and secondary voltage is least
d) difference between primary and secondary voltage is maximum

14) Which of the following is the main advantage of an auto-transformer over a two-winding transformer?
a) Eddy losses are totally eliminated
b) Copper losses are negligible
c) Saving in winding material
d) Hysteresis losses are reduced

Seat No.	

Set | P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
DC Machines and Transformer (EEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams whenever necessary.
4) Assume suitable data if necessary.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) With a neat sketch, explain the Hopkinson's test for DC motor.

b) What is the necessity of a starter? Explain the 3-point starter with a neat diagram.

c) A 230 V DC shunt motor has an armature resistance of 0.5 Ω and a field resistance of Ω. The motor draws a line current of 13 A while running light at 1000 r.p.m. At a certain load, the field circuit resistance is increased by Ω. What is the new speed of the motor if the line current at this load is 42 A?

d) A 4-pole, long-shunt lap-wound generator supplies 25 KW at a terminal voltage of 500 V. The armature resistance is 0.03 Ω, the series field resistance is 0.04 Ω, and the shunt field resistance is 200Ω. The brush drop may be taken as 1.0 V. Determine the e.m.f. Generated. Calculate also the no. of conductors if speed is 1200 rpm, and flux per pole is 0.02 weber. Neglect the armature reaction.

e) The brake test on a DC shunt motor gave the following results: tensions on two sides of the brake were 10 kg and 35 kg, radius of the pulley 20 cm, speed 950 rpm, Input current was 30 A at 200V.
Find:
i) Output torque
ii) Output power
iii) Input power
iv) Efficiency

Q.3 Attempt the following. **12**

a) With a neat circuit diagram, explain Swinburne's test and how the efficiency of the generator and motor is computed with this test. Write the advantages of this test.

b) A 440 V, 4-pole, lap-connected shunt motor has a no-load input current of 15 A and a shunt field current of 10 A. At full load, it takes a current of 150 A. If armature resistance = 0.1 ohms, flux per pole on no-load = 0.05 weber, number of armature conductors = 750, and contact drop per brush = 1 V,
calculate:

i) No-load speed,
ii) Full-load speed,
iii) Speed regulation. Armature reaction weakens the field by 1.5% on full load.

OR

c) The open circuit characteristic (O.C.C.) of a separately excited generator, at 600 r.p.m., is as under:

Field Current, A:	1.6	3.2	4.8	6.4	8.0	9.6	11.2
E.m.f.:	148	285	390	460	520	560	590

Find:

i) The voltage to which the machine will excite as a shunt generator with a field circuit resistance of 60Ω.
ii) The critical resistance at this speed.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) With a neat sketch, explain the construction and working of a Variable Reluctance stepper motor.

b) A 100 kVA, 3300/200 volt, 50 Hz single-phase transformer has 40 turns on the secondary.
Calculate:

i) the values of primary and secondary currents
ii) the number of primary turns
iii) the maximum value of the flux.

c) With a neat sketch, explain $\Delta - \Delta$ connection of a $3 - \emptyset$ transformer.

d) Explain the necessity & Conditions for Parallel operation of a transformer.

e) Explain the constructional features of an auto-transformer. State the applications of autotransformers.

Q.5 Attempt the following. (Any Two) **12**

a) A 15 kVA, 440/230 V, 50 Hz, single phase transformer gave the following test results:
Open Circuit (LV side) 250 V, 1.8A, 95 W.
Short Circuit Test (HV side) 80 V, 12.0 A, 380 W.
Compute the parameters of the equivalent circuit referred to LV side.

b) Explain open delta and Scott connections for three-phase transformers.

c) Explain the behavior of a transformer on no load. Also explain that "The main flux in a transformer remains practically invariable under all conditions of load".

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
DC Machines and Transformer (EEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What are the following advantages of the BLDC motor?
I. Low cost II. Simplicity III. Reliability IV. Good performance
a) I, II, III, IV b) I, II
c) I, II, IV d) II, III, IV

2) The primary winding of a transformer _____.
a) Is always a low voltage winding
b) Is always a high voltage winding
c) Cannot be determined
d) Could either be a low voltage or high voltage winding

3) In a real transformer, the primary winding has _____.
a) Infinite resistance b) Zero resistance
c) Some finite resistance d) Cannot say

4) During open circuit test (OC) of a transformer _____.
a) primary is supplied rated kVA
b) primary is supplied full-load current
c) primary is supplied current at reduced voltage
d) primary is supplied rated voltage

5) The value of flux involved in the emf equation of a transformer is _____.
a) average value b) maximum value
c) rms value d) instantaneous value

6) A good voltage regulation of a transformer indicates _____.
a) output voltage fluctuation from no load to full load is least
b) output voltage fluctuation with power factor is least
c) difference between primary and secondary voltage is least
d) difference between primary and secondary voltage is maximum

7) Which of the following is the main advantage of an auto-transformer over a two-winding transformer?
a) Eddy losses are totally eliminated
b) Copper losses are negligible
c) Saving in winding material
d) Hysteresis losses are reduced

8) In a DC machine, the rectification process is carried out in order to get a unidirectional output (DC). This rectification process is carried out by _____.
a) Half wave rectifier
b) Full wave rectifier
c) Mechanical rectification
d) Centre tapped rectifier

9) Separately excited DC generators are still used in _____.
a) Thermal power plants
b) Ward Leonard speed control system
c) Hydro power plant
d) In all fields

10) What is the number of brushes in the lap winding?
a) Double the number of poles
b) Same as the number of poles
c) Half the number of poles
d) Two

11) In the case of DC machine winding, the number of commutator segments is equal to _____.
a) Number of armature coils
b) Number of armature coil sides
c) Number of armature conductors
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12) The speed of a DC shunt motor can be made more than full load speed by _____.
a) Increasing the excitation current
b) Decreasing the armature current
c) Increasing the armature current
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13) No-load speed of which of the following DC motors will be highest?
a) Shunt motor
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c) Cumulative compound motor
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14) Which losses can be identified from Swinburne's test?
a) No-load core loss
b) Windage and friction loss
c) No-load and windage and friction loss
d) Stray load loss

Seat No.	

Set | Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
DC Machines and Transformer (EEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams whenever necessary.
4) Assume suitable data if necessary.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) With a neat sketch, explain the Hopkinson's test for DC motor.

b) What is the necessity of a starter? Explain the 3-point starter with a neat diagram.

c) A 230 V DC shunt motor has an armature resistance of 0.5 Ω and a field resistance of Ω. The motor draws a line current of 13 A while running light at 1000 r.p.m. At a certain load, the field circuit resistance is increased by Ω. What is the new speed of the motor if the line current at this load is 42 A?

d) A 4-pole, long-shunt lap-wound generator supplies 25 KW at a terminal voltage of 500 V. The armature resistance is 0.03 Ω, the series field resistance is 0.04 Ω, and the shunt field resistance is 200Ω. The brush drop may be taken as 1.0 V. Determine the e.m.f. Generated. Calculate also the no. of conductors if speed is 1200 rpm, and flux per pole is 0.02 weber. Neglect the armature reaction.

e) The brake test on a DC shunt motor gave the following results: tensions on two sides of the brake were 10 kg and 35 kg, radius of the pulley 20 cm, speed 950 rpm, Input current was 30 A at 200V.
Find:
i) Output torque
ii) Output power
iii) Input power
iv) Efficiency

Q.3 Attempt the following. **12**

a) With a neat circuit diagram, explain Swinburne's test and how the efficiency of the generator and motor is computed with this test. Write the advantages of this test.

b) A 440 V, 4-pole, lap-connected shunt motor has a no-load input current of 15 A and a shunt field current of 10 A. At full load, it takes a current of 150 A. If armature resistance = 0.1 ohms, flux per pole on no-load = 0.05 weber, number of armature conductors = 750, and contact drop per brush = 1 V,
calculate:

i) No-load speed,
ii) Full-load speed,
iii) Speed regulation. Armature reaction weakens the field by 1.5% on full load.

OR

c) The open circuit characteristic (O.C.C.) of a separately excited generator, at 600 r.p.m., is as under:

Field Current, A:	1.6	3.2	4.8	6.4	8.0	9.6	11.2
E.m.f.:	148	285	390	460	520	560	590

Find:

i) The voltage to which the machine will excite as a shunt generator with a field circuit resistance of 60Ω.
ii) The critical resistance at this speed.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) With a neat sketch, explain the construction and working of a Variable Reluctance stepper motor.

b) A 100 kVA, 3300/200 volt, 50 Hz single-phase transformer has 40 turns on the secondary.
Calculate:

i) the values of primary and secondary currents
ii) the number of primary turns
iii) the maximum value of the flux.

c) With a neat sketch, explain $\Delta - \Delta$ connection of a $3 - \emptyset$ transformer.

d) Explain the necessity & Conditions for Parallel operation of a transformer.

e) Explain the constructional features of an auto-transformer. State the applications of autotransformers.

Q.5 Attempt the following. (Any Two) **12**

a) A 15 kVA, 440/230 V, 50 Hz, single phase transformer gave the following test results:
Open Circuit (LV side) 250 V, 1.8A, 95 W.
Short Circuit Test (HV side) 80 V, 12.0 A, 380 W.
Compute the parameters of the equivalent circuit referred to LV side.

b) Explain open delta and Scott connections for three-phase transformers.

c) Explain the behavior of a transformer on no load. Also explain that "The main flux in a transformer remains practically invariable under all conditions of load".

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
DC Machines and Transformer (EEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) During open circuit test (OC) of a transformer _____.
a) primary is supplied rated kVA
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2) The value of flux involved in the emf equation of a transformer is _____.
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3) A good voltage regulation of a transformer indicates _____.
a) output voltage fluctuation from no load to full load is least
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4) Which of the following is the main advantage of an auto-transformer over a two-winding transformer?
a) Eddy losses are totally eliminated
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a) Half wave rectifier b) Full wave rectifier
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6) Separately excited DC generators are still used in _____.
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7) What is the number of brushes in the lap winding?
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Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
DC Machines and Transformer (EEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt the following. (Any Four) **16**

a) With a neat sketch, explain the Hopkinson's test for DC motor.

b) What is the necessity of a starter? Explain the 3-point starter with a neat diagram.

c) A 230 V DC shunt motor has an armature resistance of 0.5 Ω and a field resistance of Ω. The motor draws a line current of 13 A while running light at 1000 r.p.m. At a certain load, the field circuit resistance is increased by Ω. What is the new speed of the motor if the line current at this load is 42 A?

d) A 4-pole, long-shunt lap-wound generator supplies 25 KW at a terminal voltage of 500 V. The armature resistance is 0.03 Ω, the series field resistance is 0.04 Ω, and the shunt field resistance is 200Ω. The brush drop may be taken as 1.0 V. Determine the e.m.f. Generated. Calculate also the no. of conductors if speed is 1200 rpm, and flux per pole is 0.02 weber. Neglect the armature reaction.

e) The brake test on a DC shunt motor gave the following results: tensions on two sides of the brake were 10 kg and 35 kg, radius of the pulley 20 cm, speed 950 rpm, Input current was 30 A at 200V.
Find:
i) Output torque
ii) Output power
iii) Input power
iv) Efficiency

Q.3 Attempt the following. **12**

a) With a neat circuit diagram, explain Swinburne's test and how the efficiency of the generator and motor is computed with this test. Write the advantages of this test.

b) A 440 V, 4-pole, lap-connected shunt motor has a no-load input current of 15 A and a shunt field current of 10 A. At full load, it takes a current of 150 A. If armature resistance = 0.1 ohms, flux per pole on no-load = 0.05 weber, number of armature conductors = 750, and contact drop per brush = 1 V,
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Field Current, A:	1.6	3.2	4.8	6.4	8.0	9.6	11.2
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Find:

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Section – II

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SLR-QH-144

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
DC Machines and Transformer (EEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Seat No.	

Set | S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
DC Machines and Transformer (EEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt the following. (Any Four) **16**

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Find:
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Find:
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Section – II

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Q.5 Attempt the following. (Any Two) **12**

a) A 15 kVA, 440/230 V, 50 Hz, single phase transformer gave the following test results:
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Short Circuit Test (HV side) 80 V, 12.0 A, 380 W.
Compute the parameters of the equivalent circuit referred to LV side.

b) Explain open delta and Scott connections for three-phase transformers.

c) Explain the behavior of a transformer on no load. Also explain that "The main flux in a transformer remains practically invariable under all conditions of load".

SLR-QH-145

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

2) $\frac{1}{D-a} X$ is equal to _____.

a) $\int Xe^{ax}dx$ b) $e^{ax}\int X.e^{-ax}dx$

c) $\int Xe^{-ax}dx$ d) $e^{-ax}\int Xe^{-ax}dx$

3) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

4) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

5) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

6) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

7) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

8) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

9) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

10) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

11) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78

c) 0.81 d) 0.95

12) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1

c) ± 1 d) 1

13) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$

b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2

d) μ, and $\frac{\sigma^2}{n}$

14) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$

b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$

d) $\sum \frac{(O-E)^2}{E}$

Seat No.	

Set | **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
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SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7
c) -1.2 d) -4

2) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6
c) 3 d) 5

3) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$
c) $3/2$ d) 0

4) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78
c) 0.81 d) 0.95

5) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1
c) ± 1 d) 1

6) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

7) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

8) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

9) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

10) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

11) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

12) The solution of $p + q = 1$ is _____.

a) $z = ax + (1-a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1-y) + c$ d) $z = a(1-x) + b(1-y) + c$

13) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

14) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$

b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$

d) $\frac{\mu_4}{\mu_2^3}$

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78
c) 0.81 d) 0.95

2) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1
c) ± 1 d) 1

3) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

4) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$
c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

5) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

6) $\frac{1}{D-a} X$ is equal to _____.

a) $\int Xe^{ax}dx$ b) $e^{ax}\int X.e^{-ax}dx$

c) $\int Xe^{-ax}dx$ d) $e^{-ax}\int Xe^{-ax}dx$

7) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

8) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

9) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

10) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

11) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

12) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

13) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

14) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

Seat No.	

Set | **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $\nu = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

2) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

3) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

4) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \le x \le 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

5) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

6) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78

c) 0.81 d) 0.95

7) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1

c) ± 1 d) 1

8) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

9) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

10) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

11) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

12) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

13) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

14) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

SLR-QH-146

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: 14

1) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com b) e-bay
c) Rentalic.com d) All of the above

2) Which type of E - Commerce is Amazon?
a) B2B b) B2C
c) G2B d) G2C

3) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model b) Business model
c) Business plan d) Revenue model

4) All of the following are major B2C business models except _____.
a) content provider b) industry consortium
c) transaction broker d) service provider

5) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

6) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling b) Connectivity
c) Communication d) Customer

7) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business
b) Business to Government
c) Consumer to Business
d) Business to Consumer

8) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo
b) regret
c) provide rating for
d) forget

9) Digital Cash has the following characteristics _____.
a) Anonymity
b) Security
c) Confidentiality
d) All of the Above

10) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

11) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack
b) Brute force attack
c) Phlashing
d) Smurf attack

12) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business
b) Business to Consumer
c) Business to Business
d) Consumer to Consumer

13) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway
b) E - E-Commerce gateway
c) Software gateway
d) E-Wallets

14) What is another name called PDoS?
a) Brute force attack
b) Non-technical attack
c) Phlashing
d) Smurf attack

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: **14**

1) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo b) regret
c) provide rating for d) forget

2) Digital Cash has the following characteristics _____.
a) Anonymity b) Security
c) Confidentiality d) All of the Above

3) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

4) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

5) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business b) Business to Consumer
c) Business to Business d) Consumer to Consumer

6) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway b) E - E-Commerce gateway
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7) What is another name called PDoS?
a) Brute force attack
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d) Smurf attack

8) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com
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9) Which type of E - Commerce is Amazon?
a) B2B
b) B2C
c) G2B
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10) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model
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c) Business plan
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11) All of the following are major B2C business models except _____.
a) content provider
b) industry consortium
c) transaction broker
d) service provider

12) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
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d) Customer

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b) Business to Government
c) Consumer to Business
d) Business to Consumer

SLR-QH-146

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: **14**

1) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

2) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business b) Business to Consumer
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3) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway b) E - E-Commerce gateway
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c) ability to buy products not available in the local market
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Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

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SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

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Seat No.	

Set | S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: 14

1) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
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c) Communication d) Customer

2) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business b) Business to Government
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c) G2B
d) G2C

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c) transaction broker
d) service provider

14) After completing an E-Commerce transaction, the buyer needs to _____.
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b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

SLR-QH-146

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-147

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) History is best defined as the study of _____.
a) Future events b) Past human activities
c) Natural phenomena d) Scientific experiments

2) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

3) Which of the following disciplines deals with political systems and governance?
a) Economics b) Political Science
c) Sociology d) Cultural Studies

4) Urbanization is best described as _____.
a) Decline of rural population b) Growth of cities and towns
c) Spread of agriculture d) Industrial decline

5) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

6) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

7) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

8) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

9) Socialization refers to _____.
a) Economic growth
b) Learning social norms
c) Political participation
d) Cultural diffusion

10) The study of language structure and its evolution is called _____.
a) Sociology
b) Linguistics
c) Psychology
d) Anthropology

11) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women’s rights
c) Political ideologies
d) Technological advancements

12) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science
b) Psychoanalysis
c) Economic theory
d) Structural linguistics

13) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology
b) Political Science
c) Economics
d) History

14) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

SLR-QH-147

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

2) Socialization refers to _____.
a) Economic growth b) Learning social norms
c) Political participation d) Cultural diffusion

3) The study of language structure and its evolution is called _____.
a) Sociology b) Linguistics
c) Psychology d) Anthropology

4) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women's rights
c) Political ideologies
d) Technological advancements

5) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science b) Psychoanalysis
c) Economic theory d) Structural linguistics

6) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology b) Political Science
c) Economics d) History

7) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

8) History is best defined as the study of _____.
a) Future events
b) Past human activities
c) Natural phenomena
d) Scientific experiments

9) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

10) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

11) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

12) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

13) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

14) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

SLR-QH-147

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women's rights
c) Political ideologies
d) Technological advancements

2) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science b) Psychoanalysis
c) Economic theory d) Structural linguistics

3) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology b) Political Science
c) Economics d) History

4) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning b) Moral principles and conduct
c) Aesthetics and beauty d) Scientific discovery

5) History is best defined as the study of _____.
a) Future events b) Past human activities
c) Natural phenomena d) Scientific experiments

6) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

7) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

8) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

9) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

10) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

11) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

12) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

13) Socialization refers to _____.
a) Economic growth
b) Learning social norms
c) Political participation
d) Cultural diffusion

14) The study of language structure and its evolution is called _____.
a) Sociology
b) Linguistics
c) Psychology
d) Anthropology

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

Seat No.	

Set | S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

2) In which ancient civilization did the term "democracy" originate?
a) Ancient Egypt b) Ancient Greece
c) Ancient Rome d) Mesopotamia

3) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

4) Socialization refers to _____.
a) Economic growth b) Learning social norms
c) Political participation d) Cultural diffusion

5) The study of language structure and its evolution is called _____.
a) Sociology b) Linguistics
c) Psychology d) Anthropology

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a) Economic inequality
b) Gender equality and women's rights
c) Political ideologies
d) Technological advancements

7) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science
b) Psychoanalysis
c) Economic theory
d) Structural linguistics

8) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology
b) Political Science
c) Economics
d) History

9) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

10) History is best defined as the study of _____.
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b) Past human activities
c) Natural phenomena
d) Scientific experiments

11) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

12) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

13) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

14) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

SLR-QH-147

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

SLR-QH-148

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

2) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing b) Controlling
c) Planning d) Leading

3) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

4) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

5) Which is the first step in the planning process?
a) Developing alternatives b) Evaluating alternatives
c) Setting objectives d) Selecting the best alternative

6) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

7) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

8) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs
b) Social needs
c) Esteem needs
d) Self-actualization

9) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

10) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

11) Which of the following is not typically considered an element of quality?
a) Performance
b) Reliability
c) Advertising
d) Durability

12) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

13) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

14) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

SLR-QH-148

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: **14**

1) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs b) Social needs
c) Esteem needs d) Self-actualization

2) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

3) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

4) Which of the following is not typically considered an element of quality?
a) Performance b) Reliability
c) Advertising d) Durability

5) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

6) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

7) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

8) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

9) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

10) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

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b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

12) Which is the first step in the planning process?
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b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

13) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

14) What is the main purpose of employee training and development?

a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

SLR-QH-148

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) Which of the following is not typically considered an element of quality?
a) Performance b) Reliability
c) Advertising d) Durability

2) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

3) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

4) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

5) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

6) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

7) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

8) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

9) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

10) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

11) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

12) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs
b) Social needs
c) Esteem needs
d) Self-actualization

13) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

14) Which of the following best defines “quality” in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

SLR-QH-148

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

2) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

3) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs b) Social needs
c) Esteem needs d) Self-actualization

4) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

5) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

6) Which of the following is not typically considered an element of quality?
a) Performance
b) Reliability
c) Advertising
d) Durability

7) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

8) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

9) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

10) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

11) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

12) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

13) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

14) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

SLR-QH-148

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-149

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

2) If $L\{f(t)\} = \emptyset(s)$, then $L\{f(at)\} =$ _____.

a) $\emptyset\left(\frac{s}{a}\right)$ b) $\frac{1}{s}\emptyset\left(\frac{s}{a}\right)$

c) $\emptyset'\left(\frac{s}{a}\right)$ d) $\frac{1}{a}\emptyset\left(\frac{s}{a}\right)$

3) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^t f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

4) The particular Integral of $(D^2-2D+1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(c_1+c_2x)e^x$ d) x^2e^x

5) The general solution of the equation $(D^3 - 7D - 6)y = 0$ is _____.

a) $y = c_1e^{-x} + c_2e^{2x} + c_3e^{-3x}$ b) $y = c_1e^{x} + c_2e^{2x} + c_3e^{3x}$

c) $y = c_1e^{-x} + c_2e^{-2x} + c_3e^{-3x}$ d) None of these

6) $z\{k\} =$_____ for $|z| > 1$

a) $\frac{z}{z-1}$ b) $\frac{1}{(z-1)^2}$

c) $\frac{z}{(z-1)^2}$ d) $\frac{z}{(z+1)^2}$

7) If $z\{f(k)\} = F(z)$, then $z\{a^k f(k)\} =$ _____.

a) $f\left(\frac{a}{z}\right)$ b) $f\left(\frac{z}{a}\right)$

c) $\frac{1}{a}f\left(\frac{z}{a}\right)$ d) None

8) $Z\left\{\frac{1}{k!}\right\} =$? for $k \geq 0$

a) e^z b) $e^{\frac{1}{z}}$

c) $\frac{1}{z}$ d) $\frac{1}{1-z}$

9) The Fourier sine transform of $f(x)$ is given by _____.

a) $\sqrt{\frac{2}{\pi}}\int_{-\infty}^{\infty} f(x)\sin sx\, dx$ b) $\int_0^{\infty} f(x)\cos sx\, dx$

c) $\sqrt{\frac{2}{\pi}}\int_0^{\infty} f(x)\sin sx\, dx$ d) $\sqrt{\frac{\pi}{2}}\int_0^{\infty} f(x)\sin sx\, dx$

10) From the result $\int_{-\infty}^{\infty} \frac{\cos sx\,.\sin sk}{s} ds = \begin{cases}\pi, & |x| < k \\ 0, & |x| > k\end{cases}$ we can deduce that $\int_0^{\infty} \frac{\sin sk}{s} ds =$ _____.

a) 0 b) 1

c) π d) $\frac{\pi}{2}$

11) The first real positive root of $x^3 = 6x - 4$ by Newton Raphson method near $x_0 = 1$ is _____.

a) 0.6667 b) 0.6

c) 0.4 d) 0.3

12) In solving algebraic and Transcendental equations, which of the fallowing method is called method of tangent?

a) Trapezoidal rule
b) Newton's Raphson method
c) Regula Falsie method
d) Weddle's rule

13) In the interval $(0, a)$ the constant term in the Fourier series of $f(x) = \frac{a}{2} - x$ is _____.

a) 0
b) 1
c) $\frac{a^2}{2\pi}$
d) $\frac{a^2}{4\pi}$

14) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$
b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$
c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$
d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2 + 4D + 5)y = -2\cos hx + 2^x$

b) Solve: $(D^2 + 1)y = x \sin 2x$

c) Find Z-transform of $x_k = 2^k \cos(3k + 2)\,, k \geq 0$

d) Find $z\{k\alpha^k + k\beta^k\}, k \geq 0$

e) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+4)}\right]$

Q.3 Attempt Any Three. **09**

a) Solve $(D^3 + 3D^2 + 3D + 1)y = e^{-x}$

b) Find Laplace transform of $f(t) = \frac{2t}{3}$ $0 < t < 3$ where $f(t)$ is a periodic function with period 3

c) Find Laplace transform of $te^{-\bar{t}} \cos 2t$

d) Find Z-transform of $f(k) = \begin{cases} 4^k, & k < 0 \\ 3^k, & k \geq 0 \end{cases}$

e) Evaluate $\int_0^\infty \frac{e^{-t} - e^{-3t}}{t}$ by using Laplace transform.

Q.4 Attempt Any Two. **10**

a) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

b) Find $L\{t.\sqrt{1 - \sin t}\}$

c) Solve $(D^2 - 6D + 13)y = 2^x + 8e^{3x} \sin 4x$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule. (Take $h = 1$)

b) Evaluate $I = \int_0^2 e^{-x}dx$ by using Simpson's 1/3rd rule given $h = 0.5$

c) Obtain half range cosine series $f(x) = x$ in $0 < x < 2$

d) Find the Fourier series expansion of $f(x) = x^2$ in $(-\pi, \pi)$

e) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

Q.6 Attempt Any Three. **09**

a) Find $f(x)$ if its fourier sine transform is e^{-as}

b) Find the Fourier cosine transform of $f(x)$, if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x \ge 1 \end{cases}$

c) Find the Fourier series expansion of $f(x) = x$ in $(-\pi, \pi)$

d) Find the positive root of the following by using Newton Raphson method to four decimal places $3x - \cos x - 1 = 0$

e) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

Q.7 Attempt Any Two. **10**

a) Find $\int_1^8 \frac{1}{1+x}dx\ h = 1$ by using Trapezoidal rule and Simpson's 1/3 rule

b) Find Fourier transform of

$$f(x) \begin{matrix} = 1 & |x| & < K \\ = 0 & |x| & > K \end{matrix}$$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk.\cos sk}{s}ds$ ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s}ds$

c) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) $Z\left\{\frac{1}{k!}\right\} =?$ for $k \geq 0$

a) e^z b) $e^{\frac{1}{z}}$

c) $\frac{1}{z}$ d) $\frac{1}{1-z}$

2) The Fourier sine transform of $f(x)$ is given by _____.

a) $\sqrt{\frac{2}{\pi}}\int_{-\infty}^{\infty} f(x)\sin sx\, dx$ b) $\int_0^{\infty} f(x)\cos sx\, dx$

c) $\sqrt{\frac{2}{\pi}}\int_0^{\infty} f(x)\sin sx\, dx$ d) $\sqrt{\frac{\pi}{2}}\int_0^{\infty} f(x)\sin sx\, dx$

3) From the result $\int_{-\infty}^{\infty}\frac{\cos sx\,.\sin sk}{s}ds = \begin{cases}\pi, & |x| < k \\ 0, & |x| > k\end{cases}$ we can deduce that $\int_0^{\infty}\frac{\sin sk}{s}ds =$ _____.

a) 0 b) 1

c) π d) $\frac{\pi}{2}$

4) The first real positive root of $x^3 = 6x - 4$ by Newton Raphson method near $x_0 = 1$ is _____.

a) 0.6667 b) 0.6

c) 0.4 d) 0.3

5) In solving algebraic and Transcendental equations, which of the fallowing method is called method of tangent?

a) Trapezoidal rule
b) Newton's Raphson method
c) Regula Falsie method
d) Weddle's rule

6) In the interval $(0, a)$ the constant term in the Fourier series of $f(x) = \frac{a}{2} - x$ is _____.

a) 0
b) 1
c) $\frac{a^2}{2\pi}$
d) $\frac{a^2}{4\pi}$

7) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$
b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$
c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$
d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

8) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$
b) $e^{-ax}\int e^{ax}Xdx$
c) $e^{ax}\int e^{-ax}Xdx$
d) $e^{ax}\int e^{ax}Xdx$

9) If $L\{f(t)\} = \emptyset(s)$, then $L\{f(at)\} =$ _____.

a) $\emptyset\left(\frac{s}{a}\right)$
b) $\frac{1}{s}\emptyset\left(\frac{s}{a}\right)$
c) $\emptyset'\left(\frac{s}{a}\right)$
d) $\frac{1}{a}\emptyset\left(\frac{s}{a}\right)$

10) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^t f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$
b) $\frac{a}{s(s^2+a^2)}$
c) $\frac{as}{s^2+a^2}$
d) $\frac{as^2}{s^2+a^2}$

11) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$
b) $-4x^2e^x$
c) $(c_1 + c_2x)e^x$
d) x^2e^x

12) The general solution of the equation $(D^3 - 7D - 6)y = 0$ is _____.

a) $y = c_1e^{-x} + c_2e^{2x} + c_3e^{-3x}$ b) $y = c_1e^{x} + c_2e^{2x} + c_3e^{3x}$

c) $y = c_1e^{-x} + c_2e^{-2x} + c_3e^{-3x}$ d) None of these

13) $z\{k\} =$_____ for $|z| > 1$

a) $\frac{z}{z-1}$ b) $\frac{1}{(z-1)^2}$

c) $\frac{z}{(z-1)^2}$ d) $\frac{z}{(z+1)^2}$

14) If $z\{f(k)\} = F(z)$, then $z\{a^k f(k)\} =$ _____.

a) $f\left(\frac{a}{z}\right)$ b) $f\left(\frac{z}{a}\right)$

c) $\frac{1}{a}f\left(\frac{z}{a}\right)$ d) None

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2 + 4D + 5)y = -2\cos hx + 2^x$

b) Solve: $(D^2 + 1)y = x \sin 2x$

c) Find Z-transform of $x_k = 2^k \cos(3k + 2)\,, k \geq 0$

d) Find $z\{k\alpha^k + k\beta^k\}, k \geq 0$

e) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+4)}\right]$

Q.3 Attempt Any Three. **09**

a) Solve $(D^3 + 3D^2 + 3D + 1)y = e^{-x}$

b) Find Laplace transform of $f(t) = \frac{2t}{3}$ $0 < t < 3$ where $f(t)$ is a periodic function with period 3

c) Find Laplace transform of $te^{-\bar{t}} \cos 2t$

d) Find Z-transform of $f(k) = \begin{cases} 4^k, & k < 0 \\ 3^k, & k \geq 0 \end{cases}$

e) Evaluate $\int_0^\infty \frac{e^{-t} - e^{-3t}}{t}$ by using Laplace transform.

Q.4 Attempt Any Two. **10**

a) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

b) Find $L\{t.\sqrt{1 - \sin t}\}$

c) Solve $(D^2 - 6D + 13)y = 2^x + 8e^{3x} \sin 4x$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule. (Take $h = 1$)

b) Evaluate $I = \int_0^2 e^{-x}dx$ by using Simpson's 1/3rd rule given $h = 0.5$

c) Obtain half range cosine series $f(x) = x$ in $0 < x < 2$

d) Find the Fourier series expansion of $f(x) = x^2$ in $(-\pi, \pi)$

e) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

Q.6 Attempt Any Three. **09**

a) Find $f(x)$ if its fourier sine transform is e^{-as}

b) Find the Fourier cosine transform of $f(x)$, if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x \ge 1 \end{cases}$

c) Find the Fourier series expansion of $f(x) = x$ in $(-\pi, \pi)$

d) Find the positive root of the following by using Newton Raphson method to four decimal places $3x - \cos x - 1 = 0$

e) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

Q.7 Attempt Any Two. **10**

a) Find $\int_1^8 \frac{1}{1+x}dx\ h = 1$ by using Trapezoidal rule and Simpson's 1/3 rule

b) Find Fourier transform of

$$f(x) \begin{matrix} = 1 & |x| & < K \\ = 0 & |x| & > K \end{matrix}$$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk.\cos sk}{s}ds$ ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s}ds$

c) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) The first real positive root of $x^3 = 6x - 4$ by Newton Raphson method near $x_0 = 1$ is _____.

a) 0.6667 b) 0.6
c) 0.4 d) 0.3

2) In solving algebraic and Transcendental equations, which of the fallowing method is called method of tangent?

a) Trapezoidal rule b) Newton's Raphson method
c) Regula Falsie method d) Weddle's rule

3) In the interval $(0, a)$ the constant term in the Fourier series of $f(x) = \frac{a}{2} - x$ is _____.

a) 0 b) 1
c) $\frac{a^2}{2\pi}$ d) $\frac{a^2}{4\pi}$

4) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$
c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

5) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

6) If $L\{f(t)\} = \emptyset(s)$, then $L\{f(at)\} =$ _____.

a) $\emptyset\left(\frac{s}{a}\right)$ b) $\frac{1}{s}\emptyset\left(\frac{s}{a}\right)$

c) $\emptyset'\left(\frac{s}{a}\right)$ d) $\frac{1}{a}\emptyset\left(\frac{s}{a}\right)$

7) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^t f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

8) The particular Integral of $(D^2-2D+1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(c_1+c_2x)e^x$ d) x^2e^x

9) The general solution of the equation $(D^3-7D-6)y = 0$ is _____.

a) $y = c_1e^{-x}+c_2e^{2x}+c_3e^{-3x}$ b) $y = c_1e^{x}+c_2e^{2x}+c_3e^{3x}$

c) $y = c_1e^{-x}+c_2e^{-2x}+c_3e^{-3x}$ d) None of these

10) $z\{k\} =$_____ for $|z| > 1$

a) $\frac{z}{z-1}$ b) $\frac{1}{(z-1)^2}$

c) $\frac{z}{(z-1)^2}$ d) $\frac{z}{(z+1)^2}$

11) If $z\{f(k)\} = F(z)$, then $z\{a^kf(k)\} =$ _____.

a) $f\left(\frac{a}{z}\right)$ b) $f\left(\frac{z}{a}\right)$

c) $\frac{1}{a}f\left(\frac{z}{a}\right)$ d) None

12) $Z\left\{\frac{1}{k!}\right\} =$? for $k \geq 0$

a) e^z b) $e^{\frac{1}{z}}$

c) $\frac{1}{z}$ d) $\frac{1}{1-z}$

13) The Fourier sine transform of $f(x)$ is given by _____.

a) $\sqrt{\frac{2}{\pi}}\int_{-\infty}^{\infty} f(x)\sin sx\ dx$

b) $\int_{0}^{\infty} f(x)\cos sx\ dx$

c) $\sqrt{\frac{2}{\pi}}\int_{0}^{\infty} f(x)\sin sx\ dx$

d) $\sqrt{\frac{\pi}{2}}\int_{0}^{\infty} f(x)\sin sx\ dx$

14) From the result $\int_{-\infty}^{\infty}\frac{\cos sx\ .\sin sk}{s}ds = \begin{cases}\pi, & |x| < k\\ 0, & |x| > k\end{cases}$ we can deduce that $\int_{0}^{\infty}\frac{\sin sk}{s}ds =$ _____.

a) 0

b) 1

c) π

d) $\frac{\pi}{2}$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2 + 4D + 5)y = -2\cos hx + 2^x$

b) Solve: $(D^2 + 1)y = x \sin 2x$

c) Find Z-transform of $x_k = 2^k \cos(3k + 2)\,, k \geq 0$

d) Find $z\{k\alpha^k + k\beta^k\}, k \geq 0$

e) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+4)}\right]$

Q.3 Attempt Any Three. **09**

a) Solve $(D^3 + 3D^2 + 3D + 1)y = e^{-x}$

b) Find Laplace transform of $f(t) = \frac{2t}{3}$ $0 < t < 3$ where $f(t)$ is a periodic function with period 3

c) Find Laplace transform of $te^{-\bar{t}} \cos 2t$

d) Find Z-transform of $f(k) = \begin{cases} 4^k, & k < 0 \\ 3^k, & k \geq 0 \end{cases}$

e) Evaluate $\int_0^\infty \frac{e^{-t} - e^{-3t}}{t}$ by using Laplace transform.

Q.4 Attempt Any Two. **10**

a) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

b) Find $L\{t.\sqrt{1 - \sin t}\}$

c) Solve $(D^2 - 6D + 13)y = 2^x + 8e^{3x} \sin 4x$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule. (Take $h = 1$)

b) Evaluate $I = \int_0^2 e^{-x}dx$ by using Simpson's 1/3rd rule given $h = 0.5$

c) Obtain half range cosine series $f(x) = x$ in $0 < x < 2$

d) Find the Fourier series expansion of $f(x) = x^2$ in $(-\pi, \pi)$

e) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

Q.6 Attempt Any Three. **09**

a) Find $f(x)$ if its fourier sine transform is e^{-as}

b) Find the Fourier cosine transform of $f(x)$, if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x \ge 1 \end{cases}$

c) Find the Fourier series expansion of $f(x) = x$ in $(-\pi, \pi)$

d) Find the positive root of the following by using Newton Raphson method to four decimal places $3x - \cos x - 1 = 0$

e) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

Q.7 Attempt Any Two. **10**

a) Find $\int_1^8 \frac{1}{1+x}dx\ h = 1$ by using Trapezoidal rule and Simpson's 1/3 rule

b) Find Fourier transform of

$$f(x) \begin{matrix} = 1 & |x| & < K \\ = 0 & |x| & > K \end{matrix}$$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk.\cos sk}{s}ds$ ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s}ds$

c) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

SLR-QH-149

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) $z\{k\} =$_____ for $|z| > 1$

a) $\frac{z}{z-1}$ b) $\frac{1}{(z-1)^2}$

c) $\frac{z}{(z-1)^2}$ d) $\frac{z}{(z+1)^2}$

2) If $z\{f(k)\} = F(z)$, then $z\{a^k f(k)\} =$ _____.

a) $f\left(\frac{a}{z}\right)$ b) $f\left(\frac{z}{a}\right)$

c) $\frac{1}{a} f\left(\frac{z}{a}\right)$ d) None

3) $Z\left\{\frac{1}{k!}\right\} =$? for $k \geq 0$

a) e^z b) $e^{\frac{1}{z}}$

c) $\frac{1}{z}$ d) $\frac{1}{1-z}$

4) The Fourier sine transform of $f(x)$ is given by _____.

a) $\sqrt{\frac{2}{\pi}} \int_{-\infty}^{\infty} f(x) \sin sx \, dx$ b) $\int_0^{\infty} f(x) \cos sx \, dx$

c) $\sqrt{\frac{2}{\pi}} \int_0^{\infty} f(x) \sin sx \, dx$ d) $\sqrt{\frac{\pi}{2}} \int_0^{\infty} f(x) \sin sx \, dx$

5) From the result $\int_{-\infty}^{\infty} \frac{\cos sx \,.\sin sk}{s} ds = \begin{cases} \pi, & |x| < k \\ 0, & |x| > k \end{cases}$ we can deduce that $\int_0^{\infty} \frac{\sin sk}{s} ds =$ _____.

a) 0 b) 1

c) π d) $\frac{\pi}{2}$

6) The first real positive root of $x^3 = 6x - 4$ by Newton Raphson method near $x_0 = 1$ is _____.

a) 0.6667 b) 0.6

c) 0.4 d) 0.3

7) In solving algebraic and Transcendental equations, which of the fallowing method is called method of tangent?

a) Trapezoidal rule b) Newton's Raphson method

c) Regula Falsie method d) Weddle's rule

8) In the interval $(0, a)$ the constant term in the Fourier series of $f(x) = \frac{a}{2} - x$ is _____.

a) 0 b) 1

c) $\frac{a^2}{2\pi}$ d) $\frac{a^2}{4\pi}$

9) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

10) The value of $\frac{1}{D-a} X =$ _____.

a) $e^{-ax} \int e^{-ax} X dx$ b) $e^{-ax} \int e^{ax} X dx$

c) $e^{ax} \int e^{-ax} X dx$ d) $e^{ax} \int e^{ax} X dx$

11) If $L\{f(t)\} = \emptyset(s)$, then $L\{f(at)\} =$ _____.

a) $\emptyset\left(\frac{s}{a}\right)$ b) $\frac{1}{s}\emptyset\left(\frac{s}{a}\right)$

c) $\emptyset'\left(\frac{s}{a}\right)$ d) $\frac{1}{a}\emptyset\left(\frac{s}{a}\right)$

12) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^t f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

13) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(c_1 + c_2x)e^x$ d) x^2e^x

14) The general solution of the equation $(D^3 - 7D - 6)y = 0$ is _____.

a) $y = c_1e^{-x} + c_2e^{2x} + c_3e^{-3x}$ b) $y = c_1e^{x} + c_2e^{2x} + c_3e^{3x}$

c) $y = c_1e^{-x} + c_2e^{-2x} + c_3e^{-3x}$ d) None of these

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2 + 4D + 5)y = -2\cos hx + 2^x$

b) Solve: $(D^2 + 1)y = x \sin 2x$

c) Find Z-transform of $x_k = 2^k \cos(3k + 2)\,, k \geq 0$

d) Find $z\{k\alpha^k + k\beta^k\}, k \geq 0$

e) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+4)}\right]$

Q.3 Attempt Any Three. **09**

a) Solve $(D^3 + 3D^2 + 3D + 1)y = e^{-x}$

b) Find Laplace transform of $f(t) = \frac{2t}{3}$ $0 < t < 3$ where $f(t)$ is a periodic function with period 3

c) Find Laplace transform of $te^{-\bar{t}} \cos 2t$

d) Find Z-transform of $f(k) = \begin{cases} 4^k, & k < 0 \\ 3^k, & k \geq 0 \end{cases}$

e) Evaluate $\int_0^\infty \frac{e^{-t} - e^{-3t}}{t}$ by using Laplace transform.

Q.4 Attempt Any Two. **10**

a) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

b) Find $L\{t.\sqrt{1 - \sin t}\}$

c) Solve $(D^2 - 6D + 13)y = 2^x + 8e^{3x} \sin 4x$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule. (Take $h = 1$)

b) Evaluate $I = \int_0^2 e^{-x}dx$ by using Simpson's 1/3rd rule given $h = 0.5$

c) Obtain half range cosine series $f(x) = x$ in $0 < x < 2$

d) Find the Fourier series expansion of $f(x) = x^2$ in $(-\pi, \pi)$

e) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

Q.6 Attempt Any Three. **09**

a) Find $f(x)$ if its fourier sine transform is e^{-as}

b) Find the Fourier cosine transform of $f(x)$, if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x \ge 1 \end{cases}$

c) Find the Fourier series expansion of $f(x) = x$ in $(-\pi, \pi)$

d) Find the positive root of the following by using Newton Raphson method to four decimal places $3x - \cos x - 1 = 0$

e) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

Q.7 Attempt Any Two. **10**

a) Find $\int_1^8 \frac{1}{1+x}dx\ h = 1$ by using Trapezoidal rule and Simpson's 1/3 rule

b) Find Fourier transform of

$$f(x) \begin{matrix} = 1 & |x| & < K \\ = 0 & |x| & > K \end{matrix}$$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk.\cos sk}{s}ds$ ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s}ds$

c) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

SLR-QH-150

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

2) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

3) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

4) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

5) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

6) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

7) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

8) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

9) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

10) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

11) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

12) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

13) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

14) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

SLR-QH-150

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

2) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

3) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

4) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

5) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

6) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

7) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

8) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

9) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

10) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

11) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

12) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

13) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

14) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

2) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

3) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

4) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

5) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

6) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

7) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

8) Stress is defined as _____.
   a) A physical or emotional reaction to challenges or demands
   b) A type of disease
   c) Only physical pain
   d) A mental disorder

9) Time management means _____.
   a) Doing work very quickly
   b) Planning and organizing how to spend time effectively
   c) Wasting time
   d) Avoiding responsibilities

10) Effective non-verbal communication in presentations helps to _____.
   a) Confuse the audience
   b) Improve understanding and engagement
   c) Reduce communication
   d) Replace verbal communication

11) Which of the following helps in effective presentation?
   a) Organizing ideas clearly b) Using complex language
   c) Ignoring the audience d) All of the above

12) The main purpose of an interview is to _____.
   a) Test physical strength
   b) Assess a candidate's suitability
   c) Conduct training
   d) Provide entertainment

13) Which of the following is part of presentation etiquette?
   a) Clear speaking b) Good posture
   c) Proper visual aids d) All of the above

14) Good posture during a presentation indicates _____.
   a) Confidence b) Nervousness
   c) Disinterest d) Laziness

SLR-QH-150

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-150

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

2) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

3) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

4) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

5) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

6) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

7) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

8) Procrastination means _____.
a) Completing work early
b) Delaying tasks unnecessarily
c) Planning work
d) Finishing tasks on time

9) Taking short breaks during work helps to _____.
a) Reduce efficiency
b) Improve focus
c) Waste time
d) Increase stress

10) In the process of communication, _____ is the person who encodes the message.
a) Receiver
b) Driver
c) Cleaner
d) Sender

11) Which among the following barriers is related to fault in the channel?
a) Physical
b) Mechanical
c) Psychological
d) All of above

12) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy
b) Self-awareness
c) Emotional intelligence
d) Relationship management

13) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

14) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

SLR-QH-150

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-151

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (New) (NEP CBCS)
Examination: March/April – 2026
Electric Vehicle Technology (EEHn-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option: 14

1) Which component stores electrical energy in an electric vehicle?
a) Differential b) Inverter
c) Battery pack d) Gearbox

2) The main function of an inverter in an EV is to _____.
a) Store energy b) Convert DC to AC
c) Increase tire pressure d) Cool the battery

3) According to Newton's Second Law, force is equal to ____.
a) Mass × Velocity b) Mass × Acceleration
c) Power × Time d) Velocity ÷Time

4) Propulsion power in an electric vehicle is primarily produced by _____.
a) Fuel injector b) Electric motor
c) Clutch plate d) Carburetor

5) A hybrid electric vehicle uses _____.
a) Only solar energy
b) Only battery power
c) Internal combustion engine and electric motor
d) Steam engine and battery

6) SPCS stands for _____.
a) Solar Powered Charging System
b) Smart Power Control System
c) Series Power Charging Station
d) Solar Panel Current Source

7) E-Mobility refers to _____.
   a) Manual transportation
   b) Transportation using electric-powered systems
   c) Bicycle repair systems
   d) Petrol engine mobility

8) Vehicle kinetics mainly deals with _____.
   a) Vehicle color design
   b) Motion without considering forces
   c) Battery chemistry
   d) Charging connectors

9) Tractive effort is the _____.
   a) Cooling force of battery
   b) Force available at the wheels for motion
   c) Air resistance force
   d) Weight of the vehicle

10) The SI unit of power is _____.
   a) Newton
   b) Joule
   c) Watt
   d) Pascal

11) Connected mobility mainly uses _____.
   a) Internet and communication technologies
   b) Steam engines
   c) Mechanical brakes only
   d) Coal-powered systems

12) Which charging system combines AC and DC charging capability in one connector?
   a) CHAdeMO
   b) CCS
   c) Type-l only
   d) Tesla Roadster

13) Fuel economy in electric vehicles is generally measured in _____.
   a) Km/litre
   b) Watt only
   c) km per kWh
   d) Newton-meter

14) Powertrain component sizing in hybrid vehicles is important for _____.
   a) Decoration purposes
   b) Balancing performance and efficiency
   c) Increasing paint quality
   d) Reducing wheel size only

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (New) (NEP CBCS)
Examination: March/April – 2026
Electric Vehicle Technology (EEHn-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Describe the major components of an electric vehicle.

b) Describe the present and future electric vehicle market.

c) State and explain Newton's laws of motion related to vehicles.

d) Explain propulsion power in electric vehicles.

e) Explain transmission requirements in electric vehicles.

f) Explain tractive effort during normal driving conditions.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the history of electric vehicles.

b) Explain vehicle kinetics and its importance.

c) Explain different electric vehicle configurations.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain parallel hybrid electric drive trains.

b) Explain mass analysis and packaging in hybrid vehicles.

c) Explain the social benefits of SPCSs.क्र

d) Explain energy storage systems used in EV charging

e) Explain the types of EV charging connectors.

f) Explain the concept of E-Mobility.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the architecture of hybrid electric drive trains.

b) Explain the environmental and economic benefits of solar-powered charging systems.

c) Explain CCS and CHAdeMO charging systems.

SLR-QH-151

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (New) (NEP CBCS)
Examination: March/April – 2026
Electric Vehicle Technology (EEHn-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option: 14

1) Vehicle kinetics mainly deals with _____.
a) Vehicle color design
b) Motion without considering forces
c) Battery chemistry
d) Charging connectors

2) Tractive effort is the _____.
a) Cooling force of battery
b) Force available at the wheels for motion
c) Air resistance force
d) Weight of the vehicle

3) The SI unit of power is _____.
a) Newton b) Joule
c) Watt d) Pascal

4) Connected mobility mainly uses _____.
a) Internet and communication technologies
b) Steam engines
c) Mechanical brakes only
d) Coal-powered systems

5) Which charging system combines AC and DC charging capability in one connector?
a) CHAdeMO b) CCS
c) Type-l only d) Tesla Roadster

6) Fuel economy in electric vehicles is generally measured in _____.
a) Km/litre
b) Watt only
c) km per kWh
d) Newton-meter

7) Powertrain component sizing in hybrid vehicles is important for _____.
a) Decoration purposes
b) Balancing performance and efficiency
c) Increasing paint quality
d) Reducing wheel size only

8) Which component stores electrical energy in an electric vehicle?
a) Differential
b) Inverter
c) Battery pack
d) Gearbox

9) The main function of an inverter in an EV is to _____.
a) Store energy
b) Convert DC to AC
c) Increase tire pressure
d) Cool the battery

10) According to Newton's Second Law, force is equal to ____.
a) Mass × Velocity
b) Mass × Acceleration
c) Power × Time
d) Velocity ÷Time

11) Propulsion power in an electric vehicle is primarily produced by _____.
a) Fuel injector
b) Electric motor
c) Clutch plate
d) Carburetor

12) A hybrid electric vehicle uses _____.
a) Only solar energy
b) Only battery power
c) Internal combustion engine and electric motor
d) Steam engine and battery

13) SPCS stands for _____.
a) Solar Powered Charging System
b) Smart Power Control System
c) Series Power Charging Station
d) Solar Panel Current Source

14) E-Mobility refers to _____.
a) Manual transportation
b) Transportation using electric-powered systems
c) Bicycle repair systems
d) Petrol engine mobility

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (New) (NEP CBCS)
Examination: March/April – 2026
Electric Vehicle Technology (EEHn-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Describe the major components of an electric vehicle.

b) Describe the present and future electric vehicle market.

c) State and explain Newton's laws of motion related to vehicles.

d) Explain propulsion power in electric vehicles.

e) Explain transmission requirements in electric vehicles.

f) Explain tractive effort during normal driving conditions.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the history of electric vehicles.

b) Explain vehicle kinetics and its importance.

c) Explain different electric vehicle configurations.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain parallel hybrid electric drive trains.

b) Explain mass analysis and packaging in hybrid vehicles.

c) Explain the social benefits of SPCSs.क्र

d) Explain energy storage systems used in EV charging

e) Explain the types of EV charging connectors.

f) Explain the concept of E-Mobility.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the architecture of hybrid electric drive trains.

b) Explain the environmental and economic benefits of solar-powered charging systems.

c) Explain CCS and CHAdeMO charging systems.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (New) (NEP CBCS)
Examination: March/April – 2026
Electric Vehicle Technology (EEHn-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option: 14

1) Connected mobility mainly uses _____.
a) Internet and communication technologies
b) Steam engines
c) Mechanical brakes only
d) Coal-powered systems

2) Which charging system combines AC and DC charging capability in one connector?
a) CHAdeMO b) CCS
c) Type-l only d) Tesla Roadster

3) Fuel economy in electric vehicles is generally measured in _____.
a) Km/litre b) Watt only
c) km per kWh d) Newton-meter

4) Powertrain component sizing in hybrid vehicles is important for _____.
a) Decoration purposes
b) Balancing performance and efficiency
c) Increasing paint quality
d) Reducing wheel size only

5) Which component stores electrical energy in an electric vehicle?
a) Differential b) Inverter
c) Battery pack d) Gearbox

6) The main function of an inverter in an EV is to _____.
a) Store energy
b) Convert DC to AC
c) Increase tire pressure
d) Cool the battery

7) According to Newton's Second Law, force is equal to ____.
a) Mass × Velocity
b) Mass × Acceleration
c) Power × Time
d) Velocity ÷Time

8) Propulsion power in an electric vehicle is primarily produced by _____.
a) Fuel injector
b) Electric motor
c) Clutch plate
d) Carburetor

9) A hybrid electric vehicle uses _____.
a) Only solar energy
b) Only battery power
c) Internal combustion engine and electric motor
d) Steam engine and battery

10) SPCS stands for _____.
a) Solar Powered Charging System
b) Smart Power Control System
c) Series Power Charging Station
d) Solar Panel Current Source

11) E-Mobility refers to _____.
a) Manual transportation
b) Transportation using electric-powered systems
c) Bicycle repair systems
d) Petrol engine mobility

12) Vehicle kinetics mainly deals with _____.
a) Vehicle color design
b) Motion without considering forces
c) Battery chemistry
d) Charging connectors

13) Tractive effort is the _____.
a) Cooling force of battery
b) Force available at the wheels for motion
c) Air resistance force
d) Weight of the vehicle

14) The SI unit of power is _____.
a) Newton
b) Joule
c) Watt
d) Pascal

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (New) (NEP CBCS)
Examination: March/April – 2026
Electric Vehicle Technology (EEHn-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Describe the major components of an electric vehicle.

b) Describe the present and future electric vehicle market.

c) State and explain Newton's laws of motion related to vehicles.

d) Explain propulsion power in electric vehicles.

e) Explain transmission requirements in electric vehicles.

f) Explain tractive effort during normal driving conditions.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the history of electric vehicles.

b) Explain vehicle kinetics and its importance.

c) Explain different electric vehicle configurations.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain parallel hybrid electric drive trains.

b) Explain mass analysis and packaging in hybrid vehicles.

c) Explain the social benefits of SPCSs.क्र

d) Explain energy storage systems used in EV charging

e) Explain the types of EV charging connectors.

f) Explain the concept of E-Mobility.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the architecture of hybrid electric drive trains.

b) Explain the environmental and economic benefits of solar-powered charging systems.

c) Explain CCS and CHAdeMO charging systems.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (New) (NEP CBCS)
Examination: March/April – 2026
Electric Vehicle Technology (EEHn-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option: 14

1) SPCS stands for _____.
a) Solar Powered Charging System
b) Smart Power Control System
c) Series Power Charging Station
d) Solar Panel Current Source

2) E-Mobility refers to _____.
a) Manual transportation
b) Transportation using electric-powered systems
c) Bicycle repair systems
d) Petrol engine mobility

3) Vehicle kinetics mainly deals with _____.
a) Vehicle color design
b) Motion without considering forces
c) Battery chemistry
d) Charging connectors

4) Tractive effort is the _____.
a) Cooling force of battery
b) Force available at the wheels for motion
c) Air resistance force
d) Weight of the vehicle

5) The SI unit of power is _____.
a) Newton b) Joule
c) Watt d) Pascal

6) Connected mobility mainly uses _____.
   a) Internet and communication technologies
   b) Steam engines
   c) Mechanical brakes only
   d) Coal-powered systems

7) Which charging system combines AC and DC charging capability in one connector?
   a) CHAdeMO
   b) CCS
   c) Type-l only
   d) Tesla Roadster

8) Fuel economy in electric vehicles is generally measured in _____.
   a) Km/litre
   b) Watt only
   c) km per kWh
   d) Newton-meter

9) Powertrain component sizing in hybrid vehicles is important for _____.
   a) Decoration purposes
   b) Balancing performance and efficiency
   c) Increasing paint quality
   d) Reducing wheel size only

10) Which component stores electrical energy in an electric vehicle?
   a) Differential
   b) Inverter
   c) Battery pack
   d) Gearbox

11) The main function of an inverter in an EV is to _____.
   a) Store energy
   b) Convert DC to AC
   c) Increase tire pressure
   d) Cool the battery

12) According to Newton's Second Law, force is equal to ____.
   a) Mass × Velocity
   b) Mass × Acceleration
   c) Power × Time
   d) Velocity ÷Time

13) Propulsion power in an electric vehicle is primarily produced by _____.
   a) Fuel injector
   b) Electric motor
   c) Clutch plate
   d) Carburetor

14) A hybrid electric vehicle uses _____.
   a) Only solar energy
   b) Only battery power
   c) Internal combustion engine and electric motor
   d) Steam engine and battery

SLR-QH-151

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (New) (NEP CBCS)
Examination: March/April – 2026
Electric Vehicle Technology (EEHn-01A)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Describe the major components of an electric vehicle.

b) Describe the present and future electric vehicle market.

c) State and explain Newton's laws of motion related to vehicles.

d) Explain propulsion power in electric vehicles.

e) Explain transmission requirements in electric vehicles.

f) Explain tractive effort during normal driving conditions.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the history of electric vehicles.

b) Explain vehicle kinetics and its importance.

c) Explain different electric vehicle configurations.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain parallel hybrid electric drive trains.

b) Explain mass analysis and packaging in hybrid vehicles.

c) Explain the social benefits of SPCSs.क्र

d) Explain energy storage systems used in EV charging

e) Explain the types of EV charging connectors.

f) Explain the concept of E-Mobility.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the architecture of hybrid electric drive trains.

b) Explain the environmental and economic benefits of solar-powered charging systems.

c) Explain CCS and CHAdeMO charging systems.

SLR-QH-152

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Advanced and Sustainable Energy Sources (EEHn-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Heating value of coal is approximately _____.
a) 1000-2000 kcal / kg b) 2000-4000 kcal / kg
c) 5000-6500 kcal / kg d) 9000-10,500 kcal / kg

2) Water gas is a mixture of _____.
a) CO_2 and O_2 b) O_2 and H_2
c) H_2, N_2 and O_2 d) CO, N_2 and H_2

3) Which of the following contributes to the improvement of efficiency of Rankine cycle in a thermal power plant?
a) Reheating of steam at intermediate stage
b) Regeneration use of steam for heating boiler feed water
c) Use of high pressures
d) All of the above

4) Steam pressures usually used in thermal power plants are _____.
a) 5 kg/cm^2 to 10 kg/cm^2 b) 50 kg/cm^2 to 100 kg/cm^2
c) 110 kg/cm^2 to 170 kg/cm^2 d) 200 kg/cm^2 to 215 kg/cm^2

5) Permissible pH value of water for boilers is _____.
a) 1 b) 7
c) slightly more than 7 d) 10

6) A condenser in a thermal power plant condenses steam combing out of _____.
a) Boiler b) Super-heater
c) Economizer d) Turbine

7) In a hydro-electric plant a conduct system for taking water from the intake works to the turbine is known as _____.

a) Dam
b) Reservoir
c) Penstock
d) Surge tank

8) A Pelton wheel is _____.

a) Inward flow impulse turbine
b) outward flow impulse turbine
c) inward flow rection turbine
d) axial flow impulse turbine

9) In a thermal power plant cooling towers are used to _____.

a) condense low pressure steam
b) cool condensed steam
c) cool water used in condenser for condensing steam
d) cool feed water of boiler

10) Major constituent of methane gas is?

a) CO
b) Methane
c) Oxygen
d) Hydrogen

11) The firing order of a four cylinder engine is _____.

a) 1-2-4-3
b) 1-4-2-3
c) 1-2-3-4
d) 1-3-2-4

12) The performance of engines of different HP, RPM and sizes can be compared based on _____.

a) specific fuel consumption
b) compression ratio
c) clearance volume
d) cylinder volume

13) In hydrothermal systems when steam, water and dissolved solids are available as source of energy, the entrained solids are removed by _____.

a) filters
b) centrifugal separators
c) strainers
d) None of the above

14) Tidal energy mainly makes use of _____.

a) kinetic energy of water
b) potential energy of water
c) both kinetic as well as potential energy of water
d) None of the above

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Advanced and Sustainable Energy Sources (EEHn-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the suitable data wherever necessary.
4) Draw neat diagram whenever necessary.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Explain the Construction of Nuclear Power Station.

b) Explain the basic characteristics of Sunlight.

c) Discuss the rotor design and types wind generation.

d) Write short note on Environmental Impacts and Sustainability of conventional sources of power.

e) Explain control and monitoring system of wind generation.

Q.3 Attempt Any Two of the following. **12**

a) Explain solar power plant also draw the equivalent circuit diagram.

b) Explain the Components of Gas Turbine Power plants.

c) Explain with a neat sketch the working of a thermal electric power plant station and discuss the function of major components in it.

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) Explain the design of biomass power generation.

b) With neat sketches explain briefly the Tidal power plant.

c) Explain with a neat diagram of wind-disel generating power plant.

d) Write short note on Co-generation.

e) Explain performance analysis of Recycling Radio Waves.

Q.5 Attempt Any Two of the following. **12**

a) Write short note turbo Electric Nano generators.

b) Explain the Micro-hydel Power Plant with advantages and disadvantages.

c) State the merits and demerits OTEC and explain environmental aspects of OTEC System.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Advanced and Sustainable Energy Sources (EEHn-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A Pelton wheel is _____.
a) Inward flow impulse turbine
b) outward flow impulse turbine
c) inward flow rection turbine
d) axial flow impulse turbine

2) In a thermal power plant cooling towers are used to _____.
a) condense low pressure steam
b) cool condensed steam
c) cool water used in condenser for condensing steam
d) cool feed water of boiler

3) Major constituent of methane gas is?
a) CO b) Methane
c) Oxygen d) Hydrogen

4) The firing order of a four cylinder engine is _____.
a) 1-2-4-3 b) 1-4-2-3
c) 1-2-3-4 d) 1-3-2-4

5) The performance of engines of different HP, RPM and sizes can be compared based on _____.
a) specific fuel consumption b) compression ratio
c) clearance volume d) cylinder volume

6) In hydrothermal systems when steam, water and dissolved solids are available as source of energy, the entrained solids are removed by _____.

a) filters
b) centrifugal separators
c) strainers
d) None of the above

7) Tidal energy mainly makes use of _____.

a) kinetic energy of water
b) potential energy of water
c) both kinetic as well as potential energy of water
d) None of the above

8) Heating value of coal is approximately _____.

a) 1000-2000 kcal / kg
b) 2000-4000 kcal / kg
c) 5000-6500 kcal / kg
d) 9000-10,500 kcal / kg

9) Water gas is a mixture of _____.

a) CO_2 and O_2
b) O_2 and H_2
c) H_2, N_2 and O_2
d) CO, N_2 and H_2

10) Which of the following contributes to the improvement of efficiency of Rankine cycle in a thermal power plant?

a) Reheating of steam at intermediate stage
b) Regeneration use of steam for heating boiler feed water
c) Use of high pressures
d) All of the above

11) Steam pressures usually used in thermal power plants are _____.

a) 5 kg/cm^2 to 10 kg/cm^2
b) 50 kg/cm^2 to 100 kg/cm^2
c) 110 kg/cm^2 to 170 kg/cm^2
d) 200 kg/cm^2 to 215 kg/cm^2

12) Permissible pH value of water for boilers is _____.

a) 1
b) 7
c) slightly more than 7
d) 10

13) A condenser in a thermal power plant condenses steam combing out of _____.

a) Boiler
b) Super-heater
c) Economizer
d) Turbine

14) In a hydro-electric plant a conduct system for taking water from the intake works to the turbine is known as _____.

a) Dam
b) Reservoir
c) Penstock
d) Surge tank

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Advanced and Sustainable Energy Sources (EEHn-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the suitable data wherever necessary.
4) Draw neat diagram whenever necessary.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Explain the Construction of Nuclear Power Station.

b) Explain the basic characteristics of Sunlight.

c) Discuss the rotor design and types wind generation.

d) Write short note on Environmental Impacts and Sustainability of conventional sources of power.

e) Explain control and monitoring system of wind generation.

Q.3 Attempt Any Two of the following. **12**

a) Explain solar power plant also draw the equivalent circuit diagram.

b) Explain the Components of Gas Turbine Power plants.

c) Explain with a neat sketch the working of a thermal electric power plant station and discuss the function of major components in it.

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) Explain the design of biomass power generation.

b) With neat sketches explain briefly the Tidal power plant.

c) Explain with a neat diagram of wind-disel generating power plant.

d) Write short note on Co-generation.

e) Explain performance analysis of Recycling Radio Waves.

Q.5 Attempt Any Two of the following. **12**

a) Write short note turbo Electric Nano generators.

b) Explain the Micro-hydel Power Plant with advantages and disadvantages.

c) State the merits and demerits OTEC and explain environmental aspects of OTEC System.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Advanced and Sustainable Energy Sources (EEHn-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The firing order of a four cylinder engine is _____.
a) 1-2-4-3 b) 1-4-2-3
c) 1-2-3-4 d) 1-3-2-4

2) The performance of engines of different HP, RPM and sizes can be compared based on _____.
a) specific fuel consumption b) compression ratio
c) clearance volume d) cylinder volume

3) In hydrothermal systems when steam, water and dissolved solids are available as source of energy, the entrained solids are removed by _____.
a) filters b) centrifugal separators
c) strainers d) None of the above

4) Tidal energy mainly makes use of _____.
a) kinetic energy of water
b) potential energy of water
c) both kinetic as well as potential energy of water
d) None of the above

5) Heating value of coal is approximately _____.
a) 1000-2000 kcal / kg b) 2000-4000 kcal / kg
c) 5000-6500 kcal / kg d) 9000-10,500 kcal / kg

6) Water gas is a mixture of _____.
a) CO_2 and O_2 b) O_2 and H_2
c) H_2, N_2 and O_2 d) CO, N_2 and H_2

7) Which of the following contributes to the improvement of efficiency of Rankine cycle in a thermal power plant?
   a) Reheating of steam at intermediate stage
   b) Regeneration use of steam for heating boiler feed water
   c) Use of high pressures
   d) All of the above

8) Steam pressures usually used in thermal power plants are _____.
   a) 5 kg/cm^2 to 10 kg/cm^2 b) 50 kg/cm^2 to 100 kg/cm^2
   c) 110 kg/cm^2 to 170 kg/cm^2 d) 200 kg/cm^2 to 215 kg/cm^2

9) Permissible pH value of water for boilers is _____.
   a) 1 b) 7
   c) slightly more than 7 d) 10

10) A condenser in a thermal power plant condenses steam combing out of _____.
   a) Boiler b) Super-heater
   c) Economizer d) Turbine

11) In a hydro-electric plant a conduct system for taking water from the intake works to the turbine is known as _____.
   a) Dam b) Reservoir
   c) Penstock d) Surge tank

12) A Pelton wheel is _____.
   a) Inward flow impulse turbine
   b) outward flow impulse turbine
   c) inward flow rection turbine
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13) In a thermal power plant cooling towers are used to _____.
   a) condense low pressure steam
   b) cool condensed steam
   c) cool water used in condenser for condensing steam
   d) cool feed water of boiler

14) Major constituent of methane gas is?
   a) CO b) Methane
   c) Oxygen d) Hydrogen

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Advanced and Sustainable Energy Sources (EEHn-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the suitable data wherever necessary.
4) Draw neat diagram whenever necessary.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Explain the Construction of Nuclear Power Station.

b) Explain the basic characteristics of Sunlight.

c) Discuss the rotor design and types wind generation.

d) Write short note on Environmental Impacts and Sustainability of conventional sources of power.

e) Explain control and monitoring system of wind generation.

Q.3 Attempt Any Two of the following. **12**

a) Explain solar power plant also draw the equivalent circuit diagram.

b) Explain the Components of Gas Turbine Power plants.

c) Explain with a neat sketch the working of a thermal electric power plant station and discuss the function of major components in it.

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) Explain the design of biomass power generation.

b) With neat sketches explain briefly the Tidal power plant.

c) Explain with a neat diagram of wind-disel generating power plant.

d) Write short note on Co-generation.

e) Explain performance analysis of Recycling Radio Waves.

Q.5 Attempt Any Two of the following. **12**

a) Write short note turbo Electric Nano generators.

b) Explain the Micro-hydel Power Plant with advantages and disadvantages.

c) State the merits and demerits OTEC and explain environmental aspects of OTEC System.

SLR-QH-152

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Advanced and Sustainable Energy Sources (EEHn-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A condenser in a thermal power plant condenses steam combing out of _____.
a) Boiler b) Super-heater
c) Economizer d) Turbine

2) In a hydro-electric plant a conduct system for taking water from the intake works to the turbine is known as _____.
a) Dam b) Reservoir
c) Penstock d) Surge tank

3) A Pelton wheel is _____.
a) Inward flow impulse turbine
b) outward flow impulse turbine
c) inward flow rection turbine
d) axial flow impulse turbine

4) In a thermal power plant cooling towers are used to _____.
a) condense low pressure steam
b) cool condensed steam
c) cool water used in condenser for condensing steam
d) cool feed water of boiler

5) Major constituent of methane gas is?
a) CO b) Methane
c) Oxygen d) Hydrogen

6) The firing order of a four cylinder engine is _____.
a) 1-2-4-3 b) 1-4-2-3
c) 1-2-3-4 d) 1-3-2-4

7) The performance of engines of different HP, RPM and sizes can be compared based on _____.
a) specific fuel consumption b) compression ratio
c) clearance volume d) cylinder volume

8) In hydrothermal systems when steam, water and dissolved solids are available as source of energy, the entrained solids are removed by _____.
a) filters b) centrifugal separators
c) strainers d) None of the above

9) Tidal energy mainly makes use of _____.
a) kinetic energy of water
b) potential energy of water
c) both kinetic as well as potential energy of water
d) None of the above

10) Heating value of coal is approximately _____.
a) 1000-2000 kcal / kg b) 2000-4000 kcal / kg
c) 5000-6500 kcal / kg d) 9000-10,500 kcal / kg

11) Water gas is a mixture of _____.
a) CO_2 and O_2 b) O_2 and H_2
c) H_2, N_2 and O_2 d) CO, N_2 and H_2

12) Which of the following contributes to the improvement of efficiency of Rankine cycle in a thermal power plant?
a) Reheating of steam at intermediate stage
b) Regeneration use of steam for heating boiler feed water
c) Use of high pressures
d) All of the above

13) Steam pressures usually used in thermal power plants are _____.
a) 5 kg/cm^2 to 10 kg/cm^2 b) 50 kg/cm^2 to 100 kg/cm^2
c) 110 kg/cm^2 to 170 kg/cm^2 d) 200 kg/cm^2 to 215 kg/cm^2

14) Permissible pH value of water for boilers is _____.
a) 1 b) 7
c) slightly more than 7 d) 10

SLR-QH-152

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Advanced and Sustainable Energy Sources (EEHn-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume the suitable data wherever necessary.
4) Draw neat diagram whenever necessary.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Explain the Construction of Nuclear Power Station.

b) Explain the basic characteristics of Sunlight.

c) Discuss the rotor design and types wind generation.

d) Write short note on Environmental Impacts and Sustainability of conventional sources of power.

e) Explain control and monitoring system of wind generation.

Q.3 Attempt Any Two of the following. **12**

a) Explain solar power plant also draw the equivalent circuit diagram.

b) Explain the Components of Gas Turbine Power plants.

c) Explain with a neat sketch the working of a thermal electric power plant station and discuss the function of major components in it.

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) Explain the design of biomass power generation.

b) With neat sketches explain briefly the Tidal power plant.

c) Explain with a neat diagram of wind-disel generating power plant.

d) Write short note on Co-generation.

e) Explain performance analysis of Recycling Radio Waves.

Q.5 Attempt Any Two of the following. **12**

a) Write short note turbo Electric Nano generators.

b) Explain the Micro-hydel Power Plant with advantages and disadvantages.

c) State the merits and demerits OTEC and explain environmental aspects of OTEC System.

SLR-QH-153

Seat No.		Set	P

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Value education enables us _____.
a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

2) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

3) _____ is the basic unit of any human society.
a) Group b) Individual
c) Nature d) Society

4) Natural acceptance & _____ are the two processes of knowing.
a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

5) Present Education system gives more focus to skills.
a) True b) False
c) May be d) None of the above

6) Value of an entity is _____.
a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

7) _____ are as Basic Human Aspirations.
a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

8) Any course content on value education needs to be _____.
a) Universal b) Rational
c) Natural d) All of above

9) When we live with correct understanding of values, we feel _____.
a) Deprived b) Frustrated
c) Happy d) Unhappy

10) Following are the basic guidelines for value education except _____.
a) Universal b) Personal
c) Rational d) Natural

11) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

12) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

13) Right Understanding and Physical Facilities leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

14) ____ are the content of self-exploration.
a) Program b) Desire
c) Both a and b d) None of the above

15) To be in state of liking is _____.
a) Happy b) Unhappy
c) Both a and b d) None of the above

16) _____ helps the human being to transform from Animal consciousness to human consciousness.
a) Physical Facility b) Right understanding
c) Relationship d) All of above

17) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.

a) Value b) Skill
c) Technology d) All of above

18) _____ means physical facilities more than to satisfy my needs.

a) Health b) Prosperity
c) Happiness d) None of above

19) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

a) naturally acceptable b) pushed
c) common d) None of above

20) Physical facilities are necessary and complete for _____.

a) Animal b) Human being
c) Nature d) All of the above

21) Beside physical facilities human being want _____.

a) Name b) Fame
c) Relationship d) None of the above

22) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.

a) Swatantra b) Partantra
c) Prosperous d) None of the above

23) To be in state of _____ is unhappiness.

a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

24) Which of following leads to variety of problems at different levels of our living?

a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

25) Working only for physical facilities in living is called _____.

a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

26) Self and _____ are different in nature, materiality, needs and activities.

a) Trust b) Body
c) Belief d) None of the above

27) Sukh and _____ both are needed and can't replace each other.

a) Self b) Body
c) Suvidha d) Belief

28) In value education Sanyama means _____.
a) Self-regulation b) Health
c) Happiness d) Prosperity

29) Sadupyog of the Body mean _____ of the Body.
a) Self-regulation b) Care
c) Happiness d) Right utilization

30) Knowing means having the _____.
a) Assumption b) Right understanding
c) Right feeling d) None of the above

31) Each human being is co-existence of the _____ and the _____.
a) self, self b) body, body
c) self, body d) None of the above

32) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.
a) Swasthya b) Sanyam
c) Prosperity d) None of the above

33) The system of the body works in a _____ way.
a) Happy b) Self organized
c) Random d) Independent

34) The self is _____ in nature while body is _____ in nature.
a) Unconscious, Physico-chemical
b) Conscious, Physico-chemical
c) Physico-chemical, Conscious
d) Physico-chemical, Unconscious

35) The activity of desire, thought and expecting together is called as _____.
a) Body b) Health
c) Imagination d) Future

36) Harmony should be maintained in _____.
a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

37) Sah-astitva means _____.
a) Co-existence b) Co-operation
c) Co-ordination d) Corporate identity

38) The process of education and right living leads to _____ in the individual.

a) Right understanding b) Health
c) Prosperity d) None of the above

39) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness b) Confusion
c) Confidence d) Fear

40) _____ is the foundational value in relationship.

a) Respect b) Love
c) Trust d) Glory

41) To be assured of others at all time is the feeling of _____.

a) Respect b) Love
c) Trust d) Glory

42) _____ is the feeling for someone who has made efforts for excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

43) _____ is the feeling of acceptance for those who have made efforts for my excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

44) The feeling of relatedness to all human beings is called _____.

a) Love b) Affection
c) Gratitude d) Respect

45) All the units of nature can be classified into _____ orders.

a) Two b) Three
c) Four d) Six

46) Which of the following does not form an order in nature?

a) Bio b) Animal
c) Consciousness d) Human

47) Which of the following statement is not true?

a) There is interconnectedness in nature
b) There is recyclability and self-regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

48) Harmony in the family is the building block for harmony in the _____.

a) society b) individual
c) friend d) relative

49) _____ in the family means that the family is able to identify its needs.

a) wealth
b) prosperity
c) harmony
d) happiness

50) _____ means right evaluation.

a) Respect
b) Love
c) Trust
d) Glory

SLR-QH-153

Seat No.		Set	Q

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Beside physical facilities human being want _____.
a) Name b) Fame
c) Relationship d) None of the above

2) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.
a) Swatantra b) Partantra
c) Prosperous d) None of the above

3) To be in state of _____ is unhappiness.
a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

4) Which of following leads to variety of problems at different levels of our living?
a) Lack of right understanding of happiness
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5) Working only for physical facilities in living is called _____.
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6) Self and _____ are different in nature, materiality, needs and activities.
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7) Sukh and _____ both are needed and can't replace each other.
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8) In value education Sanyama means _____.
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11) Each human being is co-existence of the _____ and the _____.
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12) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.
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17) Sah-astitva means _____.
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18) The process of education and right living leads to _____ in the individual.

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19) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness b) Confusion
c) Confidence d) Fear

20) _____ is the foundational value in relationship.

a) Respect b) Love
c) Trust d) Glory

21) To be assured of others at all time is the feeling of _____.

a) Respect b) Love
c) Trust d) Glory

22) _____ is the feeling for someone who has made efforts for excellence.

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23) _____ is the feeling of acceptance for those who have made efforts for my excellence.

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25) All the units of nature can be classified into _____ orders.

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c) friend d) relative

29) _____ in the family means that the family is able to identify its needs.

a) wealth b) prosperity
c) harmony d) happiness

30) _____ means right evaluation.

a) Respect b) Love
c) Trust d) Glory

31) Value education enables us _____.

a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

32) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

33) _____ is the basic unit of any human society.

a) Group b) Individual
c) Nature d) Society

34) Natural acceptance & _____ are the two processes of knowing.

a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

35) Present Education system gives more focus to skills.

a) True b) False
c) May be d) None of the above

36) Value of an entity is _____.

a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

37) _____ are as Basic Human Aspirations.

a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

38) Any course content on value education needs to be _____.

a) Universal b) Rational
c) Natural d) All of above

39) When we live with correct understanding of values, we feel _____.
a) Deprived b) Frustrated
c) Happy d) Unhappy

40) Following are the basic guidelines for value education except _____.
a) Universal b) Personal
c) Rational d) Natural

41) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

42) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

43) Right Understanding and Physical Facilities leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

44) ____ are the content of self-exploration.
a) Program b) Desire
c) Both a and b d) None of the above

45) To be in state of liking is _____.
a) Happy b) Unhappy
c) Both a and b d) None of the above

46) _____ helps the human being to transform from Animal consciousness to human consciousness.
a) Physical Facility b) Right understanding
c) Relationship d) All of above

47) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.
a) Value b) Skill
c) Technology d) All of above

48) _____ means physical facilities more than to satisfy my needs.
a) Health b) Prosperity
c) Happiness d) None of above

49) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

a) naturally acceptable b) pushed
c) common d) None of above

50) Physical facilities are necessary and complete for _____.

a) Animal b) Human being
c) Nature d) All of the above

SLR-QH-153

Seat No.		Set	R

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) To be assured of others at all time is the feeling of _____.
a) Respect b) Love
c) Trust d) Glory

2) _____ is the feeling for someone who has made efforts for excellence.
a) Reverence b) Glory
c) Gratitude d) Guidance

3) _____ is the feeling of acceptance for those who have made efforts for my excellence.
a) Reverence b) Glory
c) Gratitude d) Guidance

4) The feeling of relatedness to all human beings is called _____.
a) Love b) Affection
c) Gratitude d) Respect

5) All the units of nature can be classified into _____ orders.
a) Two b) Three
c) Four d) Six

6) Which of the following does not form an order in nature?
a) Bio b) Animal
c) Consciousness d) Human

7) Which of the following statement is not true?
a) There is interconnectedness in nature
b) There is recyclability and self-regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

8) Harmony in the family is the building block for harmony in the _____.
a) society b) individual
c) friend d) relative

9) _____ in the family means that the family is able to identify its needs.
a) wealth b) prosperity
c) harmony d) happiness

10) _____ means right evaluation.
a) Respect b) Love
c) Trust d) Glory

11) Value education enables us _____.
a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

12) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

13) _____ is the basic unit of any human society.
a) Group b) Individual
c) Nature d) Society

14) Natural acceptance & _____ are the two processes of knowing.
a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

15) Present Education system gives more focus to skills.
a) True b) False
c) May be d) None of the above

16) Value of an entity is _____.
a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

17) _____ are as Basic Human Aspirations.
a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

18) Any course content on value education needs to be _____.
a) Universal b) Rational
c) Natural d) All of above

19) When we live with correct understanding of values, we feel _____.
a) Deprived b) Frustrated
c) Happy d) Unhappy

20) Following are the basic guidelines for value education except _____.
a) Universal b) Personal
c) Rational d) Natural

21) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

22) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

23) Right Understanding and Physical Facilities leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

24) ____ are the content of self-exploration.
a) Program b) Desire
c) Both a and b d) None of the above

25) To be in state of liking is _____.
a) Happy b) Unhappy
c) Both a and b d) None of the above

26) _____ helps the human being to transform from Animal consciousness to human consciousness.
a) Physical Facility b) Right understanding
c) Relationship d) All of above

27) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.
a) Value b) Skill
c) Technology d) All of above

28) _____ means physical facilities more than to satisfy my needs.
a) Health b) Prosperity
c) Happiness d) None of above

29) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.
a) naturally acceptable b) pushed
c) common d) None of above

30) Physical facilities are necessary and complete for _____.
a) Animal b) Human being
c) Nature d) All of the above

31) Beside physical facilities human being want _____.
a) Name b) Fame
c) Relationship d) None of the above

32) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.
a) Swatantra b) Partantra
c) Prosperous d) None of the above

33) To be in state of _____ is unhappiness.
a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

34) Which of following leads to variety of problems at different levels of our living?
a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

35) Working only for physical facilities in living is called _____.
a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

36) Self and _____ are different in nature, materiality, needs and activities.
a) Trust b) Body
c) Belief d) None of the above

37) Sukh and _____ both are needed and can't replace each other.
a) Self b) Body
c) Suvidha d) Belief

38) In value education Sanyama means _____.
a) Self-regulation b) Health
c) Happiness d) Prosperity

39) Sadupyog of the Body mean _____ of the Body.
a) Self-regulation b) Care
c) Happiness d) Right utilization

40) Knowing means having the _____.
a) Assumption b) Right understanding
c) Right feeling d) None of the above

41) Each human being is co-existence of the _____ and the _____.
a) self, self b) body, body
c) self, body d) None of the above

42) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.
a) Swasthya b) Sanyam
c) Prosperity d) None of the above

43) The system of the body works in a _____ way.
a) Happy b) Self organized
c) Random d) Independent

44) The self is _____ in nature while body is _____ in nature.
a) Unconscious, Physico-chemical
b) Conscious, Physico-chemical
c) Physico-chemical, Conscious
d) Physico-chemical, Unconscious

45) The activity of desire, thought and expecting together is called as _____.
a) Body b) Health
c) Imagination d) Future

46) Harmony should be maintained in _____.
a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

47) Sah-astitva means _____.
a) Co-existence b) Co-operation
c) Co-ordination d) Corporate identity

48) The process of education and right living leads to _____ in the individual.
a) Right understanding b) Health
c) Prosperity d) None of the above

49) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness b) Confusion

c) Confidence d) Fear

50) _____ is the foundational value in relationship.

a) Respect b) Love

c) Trust d) Glory

SLR-QH-153

Seat No.		Set	S

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

2) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
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3) Right Understanding and Physical Facilities leads to _____.
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7) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.
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c) friend d) relative

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a) Happy b) Sad
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43) _____ is the basic unit of any human society.

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a) True b) False
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b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

47) _____ are as Basic Human Aspirations.

a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

48) Any course content on value education needs to be _____.

a) Universal b) Rational
c) Natural d) All of above

49) When we live with correct understanding of values, we feel _____.

a) Deprived b) Frustrated

c) Happy d) Unhappy

50) Following are the basic guidelines for value education except _____.

a) Universal b) Personal

c) Rational d) Natural

SLR-QH-154

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Engineering Mathematics – III (BTN07301)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) $\frac{1}{D-a}X$ is equal to _____.

a) $\int Xe^{ax}dx$ b) $\int Xe^{-ax}dx$

c) $e^{ax}\int Xe^{-ax}\,dx$ d) $e^{-ax}\int Xe^{ax}\,dx$

2) $\frac{1}{D^2}\,X^3$ equal to _____.

a) $e^x.x^2$ b) $e^{-x}.x^3$

c) $e^x\left[x^2+\frac{x^3}{3}\right]$ d) $\frac{x^5}{20}$

3) The solution of $x^2\frac{d^2y}{dx^2}+x\frac{dy}{dx}=0$ is _____.

a) $y=c_1+c_2x$ b) $y=c_1+c_2e^x$

c) $y=c_1+c_2e^{-x}$ d) $y=c_1+c_2\log x$

4) The Laplace Transform of $t\sin t$ is _____.

a) $\frac{-2s}{s^2+1}$ b) $\frac{-2s}{(s^2+1)^2}$

c) $\frac{2s}{s^2+1}$ d) $\frac{2s}{(s^2+1)^2}$

5) The value if integral $\int_0^\infty e^{-st}\sin t\,dt\ is$ _____.

a) $\frac{1}{s^2-1^2}$ b) $\frac{1}{s^2+1^2}$

c) $\frac{1}{s^2+2^2}$ d) $\frac{1}{s^2-2^2}$

6) $L^{-1}\left(\frac{1}{s}\right)$ _____

a) $\frac{1}{t}$ b) 1

c) 0 d) $\frac{-1}{t}$

7) $L^{-1}\left[\frac{1}{(s+2)^2}\right]$_____

a) $e^{-2t}.t$ b) $\frac{e^{-2t}}{t}$

c) $e^{2t}.t$ d) None of these

8) The solution of $pq = 1$ is _____.

a) $z = ax + \frac{1}{a}y + c$ b) $z = ax + ay + c$

c) $z = ax + by + c$ d) $z = ax + \frac{1}{b}y + c$

9) The solution of $q = 3p^2$ is _____.

a) $z = ax + 3a^2y + c$ b) $z = 3ax + a^2y + c$

c) $z = 3ax^2 + by$ d) None of these

10) If $z\{f(k)\} = F(z)$ then $z\{a^k f(k)\} =$ _____.

a) $F\left(\frac{a}{z}\right)$ b) $F\left(\frac{z}{a}\right)$

c) $\frac{1}{a}F\left(\frac{z}{a}\right)$ d) None of these

11) $Z\{1\} =$ _____.

a) $\frac{1}{z-1}$ b) $\frac{z}{z-1}$

c) $\frac{1}{z+1}$ d) $\frac{Z}{z+1}$

12) If the function is an analytic in connected region C, $\int_C f(z)dz =$ _____

a) 0 b) $2\pi i$

c) $-2\pi i$ d) $4\pi i$

13) The Cauchy integral formula $\int \frac{f(z)}{(z-z_0)^n} dz$ is _____.

a) $\frac{2\pi i}{(n+1)!} f^{n+1}(z_0)$ b) $\frac{2\pi i}{n!} f^{n}(z_0)$

c) $\frac{2\pi i}{(n-1)!} f^{n-1}(z_0)$ d) None of these

14) The inverse Z transform of $\frac{z}{z-a}$, $|z| > a$ _____.

a) a^{-k} b) a^{k+1}

c) a^{k} d) a^{-k-1}

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Engineering Mathematics – III (BTN07301)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three questions. **09**

a) $(D^2 - 7D + 12)y = e^{2x}$

b) $(D^2 - 5D + 6)y = \sin 3x$

c) $(D^2 + 4)y = x \sin x$

d) $x^2 \dfrac{d^2y}{dx^2} - 2x \dfrac{dy}{dx} - 4y = x^4$

e) $(1 + x)^2 \dfrac{d^2y}{dx^2} + (1 + x) \dfrac{dy}{dx} + y = 2 \sin \log(1 + x)$

Q.3 Attempt Any Three questions. **09**

a) $L[4t^2 + \sin 3t + e^{2t}]$

b) $L[e^{2t} + \sin^3 t]$

c) Find Laplace Transform of $\int_0^\infty \dfrac{\sin t}{t} dt = \dfrac{\pi}{2}$

d) Find inverse Laplace Transform of $L^{-1}\left[\frac{s+29}{(s+4)(s^2+9)}\right]$

e) Find inverse Laplace Transform of $L^{-1}\left[\frac{4s+12}{(s^2-8s+16}\right]$

Q.4 Attempt Any Two questions. **10**

a) $(D^2 + 6D + 9)y = \dfrac{e^{-3x}}{1 + x^2}$

b) In LC Circuit, the charge q on a plate of condenser is given by $\frac{d^2q}{dt^2} + \frac{q}{CL} = \frac{E}{L} \sin nt$, prove that the charge at any time t is given by $q = \frac{E}{2Ln^2} (\sin nt - nt \cos nt)\ n^2 = \frac{1}{LC}$

c) Find inverse Laplace Transform by convolution theorem $\frac{1}{(s+3)(s-1)}$

Section – II

Q.5 Attempt Any Three questions. **09**

a) Solve $p^2 + q^2 = z$

b) Sove $p^2 + q^2 = x + y$

c) Evaluate $\int_c \frac{z+6}{z^2-4} dz$ where c is circle given by $|z-2| = 1$.

d) Show that $\int_c \log z dz = 2\pi i$ where c is unit the z-plane

e) Find $z\{a^{|k|}\}$

Q.6 Attempt Any Three questions. **09**

a) Solve $Pe^y = qe^x$

b) Solve $pq = x^4 y^3 z^4$

c) Evaluate $\int_0^{1+i} (x - y + ix^2)\, dz$ along the line from $z = 0$ to $z = 1 + i$

d) Evaluate $\int_c \frac{z+2}{(z-3)(z-4)} dz$ where C is circle $|Z| = 1$

e) Find $z\{(k+1)a^k\}, k \geq 0$

Q.7 Attempt Any Two questions. **10**

a) Solve the partial differential equation
$3x\frac{\partial z}{\partial x} - 5y\frac{\partial z}{\partial y} = 0$ by method of separation of variable.

b) Find the inverse Z transform of $F(z) = \frac{z}{(z-1)(z-2)}, |z| > 2$

c) Evaluate $\int_c \frac{e^{2z}}{(z+1)^4} dz, |z| = 2$

SLR-QH-154

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Engineering Mathematics – III (BTN07301)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The solution of $pq = 1$ is _____.

a) $z = ax + \frac{1}{a}y + c$ b) $z = ax + ay + c$

c) $z = ax + by + c$ d) $z = ax + \frac{1}{b}y + c$

2) The solution of $q = 3p^2$ is _____.

a) $z = ax + 3a^2y + c$ b) $z = 3ax + a^2y + c$

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3) If $z\{f(k)\} = F(z)$ then $z\{a^k f(k)\} =$ _____.

a) $F\left(\frac{a}{z}\right)$ b) $F\left(\frac{z}{a}\right)$

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a) $\frac{2\pi i}{(n+1)!} f^{n+1}(z_0)$ b) $\frac{2\pi i}{n!} f^{n}(z_0)$

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7) The inverse Z transform of $\frac{z}{z-a}$, $|z| > a$ _____.

a) a^{-k} b) a^{k+1}

c) a^{k} d) a^{-k-1}

8) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $\int X e^{-ax} dx$

c) $e^{ax} \int X e^{-ax}\, dx$ d) $e^{-ax} \int X e^{ax}\, dx$

9) $\frac{1}{D^2}\, X^3$ equal to _____.

a) $e^{x}.x^{2}$ b) $e^{-x}.x^{3}$

c) $e^{x}\left[x^{2} + \frac{x^{3}}{3}\right]$ d) $\frac{x^{5}}{20}$

10) The solution of $x^2 \frac{d^2y}{dx^2} + x\frac{dy}{dx} = 0$ is _____.

a) $y = c_1 + c_2 x$ b) $y = c_1 + c_2 e^{x}$

c) $y = c_1 + c_2 e^{-x}$ d) $y = c_1 + c_2 \log x$

11) The Laplace Transform of $t \sin t$ is _____.

a) $\frac{-2s}{s^2+1}$ b) $\frac{-2s}{(s^2+1)^2}$

c) $\frac{2s}{s^2+1}$ d) $\frac{2s}{(s^2+1)^2}$

12) The value if integral $\int_0^{\infty} e^{-st} \sin t\, dt\, is$ _____.

a) $\frac{1}{s^2-1^2}$ b) $\frac{1}{s^2+1^2}$

c) $\frac{1}{s^2+2^2}$ d) $\frac{1}{s^2-2^2}$

13) $L^{-1}\left(\frac{1}{s}\right)$ _____

a) $\frac{1}{t}$ b) 1

c) 0 d) $\frac{-1}{t}$

14) $L^{-1}\left[\frac{1}{(s+2)^2}\right]$ ———

a) $e^{-2t}.t$

b) $\frac{e^{-2t}}{t}$

c) $e^{2t}.t$

d) None of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Engineering Mathematics – III (BTN07301)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three questions. **09**

a) $(D^2 - 7D + 12)y = e^{2x}$

b) $(D^2 - 5D + 6)y = \sin 3x$

c) $(D^2 + 4)y = x \sin x$

d) $x^2 \dfrac{d^2y}{dx^2} - 2x \dfrac{dy}{dx} - 4y = x^4$

e) $(1 + x)^2 \dfrac{d^2y}{dx^2} + (1 + x) \dfrac{dy}{dx} + y = 2 \sin \log(1 + x)$

Q.3 Attempt Any Three questions. **09**

a) $L[4t^2 + \sin 3t + e^{2t}]$

b) $L[e^{2t} + \sin^3 t]$

c) Find Laplace Transform of $\int_0^\infty \dfrac{\sin t}{t} dt = \dfrac{\pi}{2}$

d) Find inverse Laplace Transform of $L^{-1}\left[\frac{s+29}{(s+4)(s^2+9)}\right]$

e) Find inverse Laplace Transform of $L^{-1}\left[\frac{4s+12}{(s^2-8s+16}\right]$

Q.4 Attempt Any Two questions. **10**

a) $(D^2 + 6D + 9)y = \dfrac{e^{-3x}}{1 + x^2}$

b) In LC Circuit, the charge q on a plate of condenser is given by $\frac{d^2q}{dt^2} + \frac{q}{CL} = \frac{E}{L} \sin nt$, prove that the charge at any time t is given by $q = \frac{E}{2Ln^2} (\sin nt - nt \cos nt)\ n^2 = \frac{1}{LC}$

c) Find inverse Laplace Transform by convolution theorem $\frac{1}{(s+3)(s-1)}$

Section – II

Q.5 Attempt Any Three questions. **09**

a) Solve $p^2 + q^2 = z$

b) Sove $p^2 + q^2 = x + y$

c) Evaluate $\int_c \frac{z+6}{z^2-4} dz$ where c is circle given by $|z-2| = 1$.

d) Show that $\int_c \log z dz = 2\pi i$ where c is unit the z-plane

e) Find $z\{a^{|k|}\}$

Q.6 Attempt Any Three questions. **09**

a) Solve $Pe^y = qe^x$

b) Solve $pq = x^4 y^3 z^4$

c) Evaluate $\int_0^{1+i} (x - y + ix^2)\, dz$ along the line from $z = 0$ to $z = 1 + i$

d) Evaluate $\int_c \frac{z+2}{(z-3)(z-4)} dz$ where C is circle $|Z| = 1$

e) Find $z\{(k+1)a^k\}, k \geq 0$

Q.7 Attempt Any Two questions. **10**

a) Solve the partial differential equation
$3x\frac{\partial z}{\partial x} - 5y\frac{\partial z}{\partial y} = 0$ by method of separation of variable.

b) Find the inverse Z transform of $F(z) = \frac{z}{(z-1)(z-2)}, |z| > 2$

c) Evaluate $\int_c \frac{e^{2z}}{(z+1)^4} dz, |z| = 2$

SLR-QH-154

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Engineering Mathematics – III (BTN07301)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) $Z\{1\} =$ _____.

a) $\frac{1}{z-1}$ b) $\frac{z}{z-1}$

c) $\frac{1}{z+1}$ d) $\frac{Z}{z+1}$

2) If the function is an analytic in connected region C, $\int_C f(z)dz =$ _____

a) 0 b) $2\pi i$

c) $-2\pi i$ d) $4\pi i$

3) The Cauchy integral formula $\int \frac{f(z)}{(z-z_0)^n} dz$ is _____.

a) $\frac{2\pi i}{(n+1)!} f^{n+1}(z_0)$ b) $\frac{2\pi i}{n!} f^{n}(z_0)$

c) $\frac{2\pi i}{(n-1)!} f^{n-1}(z_0)$ d) None of these

4) The inverse Z transform of $\frac{z}{z-a}$, $|z| > a$ _____.

a) a^{-k} b) a^{k+1}

c) a^{k} d) a^{-k-1}

5) $\frac{1}{D-a} X$ is equal to _____.

a) $\int Xe^{ax}dx$ b) $\int Xe^{-ax}dx$

c) $e^{ax}\int Xe^{-ax}\,dx$ d) $e^{-ax}\int Xe^{ax}\,dx$

6) $\frac{1}{D^2}\ X^3$ equal to _____.

a) $e^x.x^2$ b) $e^{-x}.x^3$

c) $e^x\left[x^2+\frac{x^3}{3}\right]$ d) $\frac{x^5}{20}$

7) The solution of $x^2\frac{d^2y}{dx^2}+x\frac{dy}{dx}=0$ is _____.

a) $y=c_1+c_2x$ b) $y=c_1+c_2e^x$

c) $y=c_1+c_2e^{-x}$ d) $y=c_1+c_2\log x$

8) The Laplace Transform of $t\sin t$ is _____.

a) $\frac{-2s}{s^2+1}$ b) $\frac{-2s}{(s^2+1)^2}$

c) $\frac{2s}{s^2+1}$ d) $\frac{2s}{(s^2+1)^2}$

9) The value if integral $\int_0^\infty e^{-st}\sin t\ dt\ is$ _____.

a) $\frac{1}{s^2-1^2}$ b) $\frac{1}{s^2+1^2}$

c) $\frac{1}{s^2+2^2}$ d) $\frac{1}{s^2-2^2}$

10) $L^{-1}\left(\frac{1}{s}\right)$ _____

a) $\frac{1}{t}$ b) 1

c) 0 d) $\frac{-1}{t}$

11) $L^{-1}\left[\frac{1}{(s+2)^2}\right]$ _____

a) $e^{-2t}.t$ b) $\frac{e^{-2t}}{t}$

c) $e^{2t}.t$ d) None of these

12) The solution of $pq=1$ is _____.

a) $z=ax+\frac{1}{a}y+c$ b) $z=ax+ay+c$

c) $z=ax+by+c$ d) $z=ax+\frac{1}{b}y+c$

13) The solution of $q = 3p^2$ is _____.

a) $z = ax + 3a^2y + c$ b) $z = 3ax + a^2y + c$

c) $z = 3ax^2 + by$ d) None of these

14) If $z\{f(k)\} = F(z)$ then $z\{a^k f(k)\} =$ _____.

a) $F\left(\frac{a}{z}\right)$ b) $F\left(\frac{z}{a}\right)$

c) $\frac{1}{a}F\left(\frac{z}{a}\right)$ d) None of these

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Engineering Mathematics – III (BTN07301)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three questions. **09**

a) $(D^2 - 7D + 12)y = e^{2x}$

b) $(D^2 - 5D + 6)y = \sin 3x$

c) $(D^2 + 4)y = x \sin x$

d) $x^2 \frac{d^2y}{dx^2} - 2x \frac{dy}{dx} - 4y = x^4$

e) $(1 + x)^2 \frac{d^2y}{dx^2} + (1 + x) \frac{dy}{dx} + y = 2 \sin \log(1 + x)$

Q.3 Attempt Any Three questions. **09**

a) $L[4t^2 + \sin 3t + e^{2t}]$

b) $L[e^{2t} + \sin^3 t]$

c) Find Laplace Transform of $\int_0^\infty \frac{\sin t}{t} dt = \frac{\pi}{2}$

d) Find inverse Laplace Transform of $L^{-1}\left[\frac{s+29}{(s+4)(s^2+9)}\right]$

e) Find inverse Laplace Transform of $L^{-1}\left[\frac{4s+12}{(s^2-8s+16}\right]$

Q.4 Attempt Any Two questions. **10**

a) $(D^2 + 6D + 9)y = \frac{e^{-3x}}{1 + x^2}$

b) In LC Circuit, the charge q on a plate of condenser is given by $\frac{d^2q}{dt^2} + \frac{q}{CL} = \frac{E}{L} \sin nt$, prove that the charge at any time t is given by $q = \frac{E}{2Ln^2} (\sin nt - nt \cos nt)\ n^2 = \frac{1}{LC}$

c) Find inverse Laplace Transform by convolution theorem $\frac{1}{(s+3)(s-1)}$

Section – II

Q.5 Attempt Any Three questions. **09**

a) Solve $p^2 + q^2 = z$

b) Sove $p^2 + q^2 = x + y$

c) Evaluate $\int_c \frac{z+6}{z^2-4} dz$ where c is circle given by $|z-2| = 1$.

d) Show that $\int_c \log z dz = 2\pi i$ where c is unit the z-plane

e) Find $z\{a^{|k|}\}$

Q.6 Attempt Any Three questions. **09**

a) Solve $Pe^y = qe^x$

b) Solve $pq = x^4y^3z^4$

c) Evaluate $\int_0^{1+i} (x - y + ix^2)\, dz$ along the line from $z = 0$ to $z = 1 + i$

d) Evaluate $\int_c \frac{z+2}{(z-3)(z-4)} dz$ where C is circle $|Z| = 1$

e) Find $z\{(k+1)a^k\}, k \geq 0$

Q.7 Attempt Any Two questions. **10**

a) Solve the partial differential equation
$3x\frac{\partial z}{\partial x} - 5y\frac{\partial z}{\partial y} = 0$ by method of separation of variable.

b) Find the inverse Z transform of $F(z) = \frac{z}{(z-1)(z-2)}, |z| > 2$

c) Evaluate $\int_c \frac{e^{2z}}{(z+1)^4} dz, |z| = 2$

SLR-QH-154

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Engineering Mathematics – III (BTN07301)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) $L^{-1}\left(\frac{1}{s}\right)$ _____

a) $\frac{1}{t}$ b) 1

c) 0 d) $\frac{-1}{t}$

2) $L^{-1}\left[\frac{1}{(s+2)^2}\right]$ _____

a) $e^{-2t}.t$ b) $\frac{e^{-2t}}{t}$

c) $e^{2t}.t$ d) None of these

3) The solution of $pq = 1$ is _____.

a) $z = ax + \frac{1}{a}y + c$ b) $z = ax + ay + c$

c) $z = ax + by + c$ d) $z = ax + \frac{1}{b}y + c$

4) The solution of $q = 3p^2$ is _____.

a) $z = ax + 3a^2y + c$ b) $z = 3ax + a^2y + c$

c) $z = 3ax^2 + by$ d) None of these

5) If $z\{f(k)\} = F(z)$ then $z\{a^k f(k)\} =$ _____.

a) $F\left(\frac{a}{z}\right)$ b) $F\left(\frac{z}{a}\right)$

c) $\frac{1}{a}F\left(\frac{z}{a}\right)$ d) None of these

6) $Z\{1\} =$ _____.

a) $\frac{1}{z-1}$ b) $\frac{z}{z-1}$

c) $\frac{1}{z+1}$ d) $\frac{Z}{z+1}$

7) If the function is an analytic in connected region C, $\int_C f(z)dz =$ _____

a) 0 b) $2\pi i$

c) $-2\pi i$ d) $4\pi i$

8) The Cauchy integral formula $\int \frac{f(z)}{(z-z_0)^n}dz$ is _____.

a) $\frac{2\pi i}{(n+1)!}f^{n+1}(z_0)$ b) $\frac{2\pi i}{n!}f^{n}(z_0)$

c) $\frac{2\pi i}{(n-1)!}f^{n-1}(z_0)$ d) None of these

9) The inverse Z transform of $\frac{z}{z-a}$, $|z| > a$ _____.

a) a^{-k} b) a^{k+1}

c) a^{k} d) a^{-k-1}

10) $\frac{1}{D-a}X$ is equal to _____.

a) $\int Xe^{ax}dx$ b) $\int Xe^{-ax}dx$

c) $e^{ax}\int Xe^{-ax}\,dx$ d) $e^{-ax}\int Xe^{ax}\,dx$

11) $\frac{1}{D^2}\,X^3$ equal to _____.

a) $e^x.x^2$ b) $e^{-x}.x^3$

c) $e^x\left[x^2+\frac{x^3}{3}\right]$ d) $\frac{x^5}{20}$

12) The solution of $x^2\frac{d^2y}{dx^2}+x\frac{dy}{dx}=0$ is _____.

a) $y = c_1 + c_2x$ b) $y = c_1 + c_2e^x$

c) $y = c_1 + c_2e^{-x}$ d) $y = c_1 + c_2\log x$

13) The Laplace Transform of $t \sin t$ is _____.

a) $\frac{-2s}{s^2+1}$ b) $\frac{-2s}{(s^2+1)^2}$

c) $\frac{2s}{s^2+1}$ d) $\frac{2s}{(s^2+1)^2}$

14) The value if integral $\int_0^\infty e^{-st} \sin t \, dt \, is$ _____.

a) $\frac{1}{s^2-1^2}$ b) $\frac{1}{s^2+1^2}$

c) $\frac{1}{s^2+2^2}$ d) $\frac{1}{s^2-2^2}$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Engineering Mathematics – III (BTN07301)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt any three questions. **09**

a) $(D^2 - 7D + 12)y = e^{2x}$

b) $(D^2 - 5D + 6)y = \sin 3x$

c) $(D^2 + 4)y = x \sin x$

d) $x^2 \frac{d^2y}{dx^2} - 2x\frac{dy}{dx} - 4y = x^4$

e) $(1+x)^2 \frac{d^2y}{dx^2} + (1+x)\frac{dy}{dx} + y = 2\sin\log(1+x)$

Q.3 Attempt Any Three questions. **09**

a) $L[4t^2 + \sin 3t + e^{2t}]$

b) $L[e^{2t} + \sin^3 t]$

c) Find Laplace Transform of $\int_0^\infty \frac{\sin t}{t} dt = \frac{\pi}{2}$

d) Find inverse Laplace Transform of $L^{-1}\left[\frac{s+29}{(s+4)(s^2+9)}\right]$

e) Find inverse Laplace Transform of $L^{-1}\left[\frac{4s+12}{(s^2-8s+16}\right]$

Q.4 Attempt Any Two questions. **10**

a) $(D^2 + 6D + 9)y = \frac{e^{-3x}}{1+x^2}$

b) In LC Circuit, the charge q on a plate of condenser is given by $\frac{d^2q}{dt^2} + \frac{q}{CL} = \frac{E}{L}\sin nt$, prove that the charge at any time t is given by $q = \frac{E}{2Ln^2}(\sin nt - nt\cos nt)\; n^2 = \frac{1}{LC}$

c) Find inverse Laplace Transform by convolution theorem $\frac{1}{(s+3)(s-1)}$

Section – II

Q.5 Attempt Any Three questions. **09**

a) Solve $p^2 + q^2 = z$

b) Sove $p^2 + q^2 = x + y$

c) Evaluate $\int_c \frac{z+6}{z^2-4} dz$ where c is circle given by $|z-2| = 1$.

d) Show that $\int_c \log z dz = 2\pi i$ where c is unit the z-plane

e) Find $z\{a^{|k|}\}$

Q.6 Attempt Any Three questions. **09**

a) Solve $Pe^y = qe^x$

b) Solve $pq = x^4y^3z^4$

c) Evaluate $\int_0^{1+i} (x - y + ix^2)\, dz$ along the line from $z = 0$ to $z = 1 + i$

d) Evaluate $\int_c \frac{z+2}{(z-3)(z-4)} dz$ where C is circle $|Z| = 1$

e) Find $z\{(k+1)a^k\}, k \geq 0$

Q.7 Attempt Any Two questions. **10**

a) Solve the partial differential equation
$3x\frac{\partial z}{\partial x} - 5y\frac{\partial z}{\partial y} = 0$ by method of separation of variable.

b) Find the inverse Z transform of $F(z) = \frac{z}{(z-1)(z-2)}, |z| > 2$

c) Evaluate $\int_c \frac{e^{2z}}{(z+1)^4} dz, |z| = 2$

SLR-QH-155

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (CBCS)
Examination: March/April – 2026
Electrical Machines – I (BTN07302)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The process of building up voltage in a DC shunt generator depends on: _____.
a) Residual magnetism b) Armature resistance
c) Load current d) Supply voltage

2) Armature reaction in a DC generator causes: _____.
a) Increase in terminal voltage b) Reduction in main flux
c) Increase in flux per pole d) Speed increase

3) A 6-pole lap-wound generator has 720 conductors and generates 240 V at 1000 rpm. Find the flux per pole?
a) 0.02 Wb b) 0.04 Wb
c) 0.05 Wb d) 0.01 Wb

4) The back e.m.f. in a DC motor is directly proportional to: _____.
a) Armature current b) Speed and flux
c) Supply voltage d) Field resistance

5) A 220 V DC shunt motor takes 25 A at full load. Armature resistance $= 0.5\ \Omega$, field current = 2 A. Calculate back e.m.f. _____.
a) 210 V b) 208 V
c) 195 V d) 215 V

6) In a brake test on a DC motor, which parameters are determined?
a) Efficiency and torque b) Speed only
c) Voltage regulation d) Power factor

7) The Swinburne's test is a: _____.
a) Direct test
b) Indirect test
c) Short-circuit test
d) Open-circuit test

8) The e.m.f. per turn in primary and secondary windings of an ideal transformer are: _____.
a) Unequal
b) Equal
c) Inversely proportional to current
d) Depends on load

9) A 1-phase transformer has 400 turns on the primary and 100 on the secondary. If the primary voltage is 200 V, find the secondary voltage?
a) 25 V
b) 50 V
c) 100 V
d) 500 V

10) The condition for maximum efficiency of a transformer is: _____.
a) Copper loss = Iron loss
b) Copper loss < Iron loss
c) Copper loss > Iron loss
d) No copper loss

11) An auto-transformer is preferred over a two-winding transformer because: _____.
a) It has higher leakage reactance
b) It is cheaper, lighter, and more efficient
c) It provides isolation
d) It reduces efficiency

12) In a delta-star ($\Delta - Y$) connected transformer, the line voltage ratio is related to the turns ratio by: _____.
a) Equal to turns ratio
b) $\sqrt{3}$ times turns ratio
c) Turns ratio divided by $\sqrt{3}$
d) Independent of turns ratio

13) The zig-zag connection in a three-phase transformer is primarily used to: _____.
a) Improve voltage regulation
b) Reduce harmonic voltages and provide a neutral point
c) Increase the efficiency
d) Provide isolation between windings

14) When a $\mathrm{V} - \mathrm{V}$ system is converted into a $\Delta - \Delta$ system, an increase in capacity of the system is _____ percent.
a) 86.6
b) 66.7
c) 73.2
d) 50

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (CBCS)
Examination: March/April – 2026
Electrical Machines – I (BTN07302)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams whenever necessary.
4) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Derive an expression for cross-magnetizing and demagnetizing Ampere Turns due to armature reaction in DC machine.

b) Derive an emf equation of DC generator.

c) A series generator delivers a current of 100 A at 250 V. Its armature and series field resistances are $0.1\ \Omega$ and $0.055\ \Omega$ respectively. Find:
i) Armature current
ii) Generated e.m.f.

d) With help of neat diagram explain speed control methods of dc shunt motor.

e) With a neat sketch explain the Hopkinson's test for dc motor.

f) A DC Shunt motor designed to operate on 500 V supply takes full load current of 42 A and runs at 800 rpm. The flux per pole is reduced to 75% of its normal value. Calculate the speed of the motor if the total torque exerted on the armature is
i) unchanged
ii) reduced by 20%. The armature resistance is $0.6\ \Omega$ and the total voltage loss at the brushes is 2V.

Q.3 Attempt the following questions. **12**

a) What is the necessity of a starter? Explain the 3-point starter with a neat diagram.

b) The open circuit characteristic (O.C.C.) of a separately excited generator, at 600 r.p.m., is as under:

Field Current, A:	1.6	3.2	4.8	6.4	8.0	9.6	11.2
E.m.f.:	148	285	390	460	520	560	590

Find:
i) The voltage to which the machine will excite as a shunt generator with a field circuit resistance of 60 ohms,
ii) The critical resistance at this speed.

OR

b) The brake test on a DC shunt motor gave the following results: tensions on two sides of the brake were 10 kg and 35 kg, radius of pulley 20 cm, speed 950 rpm, Input current was 30 A at 200V. Find:

i) Output torque
ii) Output power
iii) Input power
iv) Efficiency

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) What are the losses that occur in the transformer, how they vary with load, and how can be minimized?

b) A 40KVA transformer has an iron loss of 450W and a full load copper loss of 850W. If the power factor of the load is 0.8 lagging, calculate:

i) Full load efficiency
ii) kVA load at which maximum efficiency occurs
iii) the maximum efficiency.

c) Write a short note on the autotransformer.

d) A Single-phase 200 kVA, 3300/230-volt, 50 Hz. The transformer carries 100 turns on its secondary. What will be its

i) primary and secondary current on full load;
ii) the maximum value of flux;
iii) the number of primary turns.

e) With a neat sketch, explain the $\Delta - Y$ connection of a $3 - \phi$ transformer.

f) With a neat sketch, explain the construction and working of a single-phase transformer.

Q.5 Attempt Any Two of the following. **12**

a) With the help of a neat diagram explain Scott's connection of three phase transformer.

b) The following data for 10 KVA, 450/120 V, 50 Hz transformer were obtained from OC and SC test. OC Test: V1 = 130 V, I1 = 5 A, W1 = 100 W SC Test: V1 = 10 V, I1 = 25 A, W1 = 140 W, Calculate:

i) Equivalent circuit constants
ii) Efficiency at full load 0.8 lagging power factor
iii) Efficiency at half load 0.8 lagging power factor

c) Two single-phase transformers with equal voltage ratio have an impedance of (0.4+3i) and (0.5+2i) with respect to secondary, if they operate in parallel, determine how they share a total load of 200KW, at 0.8 lag pf.

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (CBCS)
Examination: March/April – 2026
Electrical Machines – I (BTN07302)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) The e.m.f. per turn in primary and secondary windings of an ideal transformer are: _____.
a) Unequal
b) Equal
c) Inversely proportional to current
d) Depends on load

2) A 1-phase transformer has 400 turns on the primary and 100 on the secondary. If the primary voltage is 200 V, find the secondary voltage?
a) 25 V b) 50 V
c) 100 V d) 500 V

3) The condition for maximum efficiency of a transformer is: _____.
a) Copper loss = Iron loss b) Copper loss < Iron loss
c) Copper loss > Iron loss d) No copper loss

4) An auto-transformer is preferred over a two-winding transformer because: _____.
a) It has higher leakage reactance
b) It is cheaper, lighter, and more efficient
c) It provides isolation
d) It reduces efficiency

5) In a delta-star ($\Delta - Y$) connected transformer, the line voltage ratio is related to the turns ratio by: _____.
a) Equal to turns ratio b) $\sqrt{3}$ times turns ratio
c) Turns ratio divided by $\sqrt{3}$ d) Independent of turns ratio

6) The zig-zag connection in a three-phase transformer is primarily used to: _____.
   a) Improve voltage regulation
   b) Reduce harmonic voltages and provide a neutral point
   c) Increase the efficiency
   d) Provide isolation between windings

7) When a $\mathrm{V}-\mathrm{V}$ system is converted into a $\Delta-\Delta$ system, an increase in capacity of the system is _____ percent.
   a) 86.6 b) 66.7
   c) 73.2 d) 50

8) The process of building up voltage in a DC shunt generator depends on: _____.
   a) Residual magnetism b) Armature resistance
   c) Load current d) Supply voltage

9) Armature reaction in a DC generator causes: _____.
   a) Increase in terminal voltage b) Reduction in main flux
   c) Increase in flux per pole d) Speed increase

10) A 6-pole lap-wound generator has 720 conductors and generates 240 V at 1000 rpm. Find the flux per pole?
   a) 0.02 Wb b) 0.04 Wb
   c) 0.05 Wb d) 0.01 Wb

11) The back e.m.f. in a DC motor is directly proportional to: _____.
   a) Armature current b) Speed and flux
   c) Supply voltage d) Field resistance

12) A 220 V DC shunt motor takes 25 A at full load. Armature resistance $= 0.5\ \Omega$, field current = 2 A. Calculate back e.m.f. _____.
   a) 210 V b) 208 V
   c) 195 V d) 215 V

13) In a brake test on a DC motor, which parameters are determined?
   a) Efficiency and torque b) Speed only
   c) Voltage regulation d) Power factor

14) The Swinburne's test is a: _____.
   a) Direct test b) Indirect test
   c) Short-circuit test d) Open-circuit test

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (CBCS)
Examination: March/April – 2026
Electrical Machines – I (BTN07302)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams whenever necessary.
4) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Derive an expression for cross-magnetizing and demagnetizing Ampere Turns due to armature reaction in DC machine.

b) Derive an emf equation of DC generator.

c) A series generator delivers a current of 100 A at 250 V. Its armature and series field resistances are $0.1\ \Omega$ and $0.055\ \Omega$ respectively. Find:
i) Armature current
ii) Generated e.m.f.

d) With help of neat diagram explain speed control methods of dc shunt motor.

e) With a neat sketch explain the Hopkinson's test for dc motor.

f) A DC Shunt motor designed to operate on 500 V supply takes full load current of 42 A and runs at 800 rpm. The flux per pole is reduced to 75% of its normal value. Calculate the speed of the motor if the total torque exerted on the armature is
i) unchanged
ii) reduced by 20%. The armature resistance is $0.6\ \Omega$ and the total voltage loss at the brushes is 2V.

Q.3 Attempt the following questions. **12**

a) What is the necessity of a starter? Explain the 3-point starter with a neat diagram.

b) The open circuit characteristic (O.C.C.) of a separately excited generator, at 600 r.p.m., is as under:

Field Current, A:	1.6	3.2	4.8	6.4	8.0	9.6	11.2
E.m.f.:	148	285	390	460	520	560	590

Find:
i) The voltage to which the machine will excite as a shunt generator with a field circuit resistance of 60 ohms,
ii) The critical resistance at this speed.

OR

b) The brake test on a DC shunt motor gave the following results: tensions on two sides of the brake were 10 kg and 35 kg, radius of pulley 20 cm, speed 950 rpm, Input current was 30 A at 200V. Find:

i) Output torque
ii) Output power
iii) Input power
iv) Efficiency

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) What are the losses that occur in the transformer, how they vary with load, and how can be minimized?

b) A 40KVA transformer has an iron loss of 450W and a full load copper loss of 850W. If the power factor of the load is 0.8 lagging, calculate:

i) Full load efficiency
ii) kVA load at which maximum efficiency occurs
iii) the maximum efficiency.

c) Write a short note on the autotransformer.

d) A Single-phase 200 kVA, 3300/230-volt, 50 Hz. The transformer carries 100 turns on its secondary. What will be its

i) primary and secondary current on full load;
ii) the maximum value of flux;
iii) the number of primary turns.

e) With a neat sketch, explain the $\Delta - Y$ connection of a $3 - \phi$ transformer.

f) With a neat sketch, explain the construction and working of a single-phase transformer.

Q.5 Attempt Any Two of the following. **12**

a) With the help of a neat diagram explain Scott's connection of three phase transformer.

b) The following data for 10 KVA, 450/120 V, 50 Hz transformer were obtained from OC and SC test. OC Test: V1 = 130 V, I1 = 5 A, W1 = 100 W SC Test: V1 = 10 V, I1 = 25 A, W1 = 140 W, Calculate:

i) Equivalent circuit constants
ii) Efficiency at full load 0.8 lagging power factor
iii) Efficiency at half load 0.8 lagging power factor

c) Two single-phase transformers with equal voltage ratio have an impedance of (0.4+3i) and (0.5+2i) with respect to secondary, if they operate in parallel, determine how they share a total load of 200KW, at 0.8 lag pf.

SLR-QH-155

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (CBCS)
Examination: March/April – 2026
Electrical Machines – I (BTN07302)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) An auto-transformer is preferred over a two-winding transformer because: _____.
a) It has higher leakage reactance
b) It is cheaper, lighter, and more efficient
c) It provides isolation
d) It reduces efficiency

2) In a delta-star ($\Delta - Y$) connected transformer, the line voltage ratio is related to the turns ratio by: _____.
a) Equal to turns ratio
b) $\sqrt{3}$ times turns ratio
c) Turns ratio divided by $\sqrt{3}$
d) Independent of turns ratio

3) The zig-zag connection in a three-phase transformer is primarily used to: _____.
a) Improve voltage regulation
b) Reduce harmonic voltages and provide a neutral point
c) Increase the efficiency
d) Provide isolation between windings

4) When a $\mathrm{V} - \mathrm{V}$ system is converted into a $\Delta - \Delta$ system, an increase in capacity of the system is _____ percent.
a) 86.6
b) 66.7
c) 73.2
d) 50

5) The process of building up voltage in a DC shunt generator depends on: _____.
a) Residual magnetism
b) Armature resistance
c) Load current
d) Supply voltage

6) Armature reaction in a DC generator causes: _____.
a) Increase in terminal voltage b) Reduction in main flux
c) Increase in flux per pole d) Speed increase

7) A 6-pole lap-wound generator has 720 conductors and generates 240 V at 1000 rpm. Find the flux per pole?
a) 0.02 Wb b) 0.04 Wb
c) 0.05 Wb d) 0.01 Wb

8) The back e.m.f. in a DC motor is directly proportional to: _____.
a) Armature current b) Speed and flux
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9) A 220 V DC shunt motor takes 25 A at full load. Armature resistance $= 0.5\ \Omega$, field current = 2 A. Calculate back e.m.f. _____.
a) 210 V b) 208 V
c) 195 V d) 215 V

10) In a brake test on a DC motor, which parameters are determined?
a) Efficiency and torque b) Speed only
c) Voltage regulation d) Power factor

11) The Swinburne's test is a: _____.
a) Direct test b) Indirect test
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12) The e.m.f. per turn in primary and secondary windings of an ideal transformer are: _____.
a) Unequal
b) Equal
c) Inversely proportional to current
d) Depends on load

13) A 1-phase transformer has 400 turns on the primary and 100 on the secondary. If the primary voltage is 200 V, find the secondary voltage?
a) 25 V b) 50 V
c) 100 V d) 500 V

14) The condition for maximum efficiency of a transformer is: _____.
a) Copper loss = Iron loss b) Copper loss < Iron loss
c) Copper loss > Iron loss d) No copper loss

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (CBCS)
Examination: March/April – 2026
Electrical Machines – I (BTN07302)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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3) Draw neat diagrams whenever necessary.
4) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Derive an expression for cross-magnetizing and demagnetizing Ampere Turns due to armature reaction in DC machine.

b) Derive an emf equation of DC generator.

c) A series generator delivers a current of 100 A at 250 V. Its armature and series field resistances are $0.1\ \Omega$ and $0.055\ \Omega$ respectively. Find:
i) Armature current
ii) Generated e.m.f.

d) With help of neat diagram explain speed control methods of dc shunt motor.

e) With a neat sketch explain the Hopkinson's test for dc motor.

f) A DC Shunt motor designed to operate on 500 V supply takes full load current of 42 A and runs at 800 rpm. The flux per pole is reduced to 75% of its normal value. Calculate the speed of the motor if the total torque exerted on the armature is
i) unchanged
ii) reduced by 20%. The armature resistance is $0.6\ \Omega$ and the total voltage loss at the brushes is 2V.

Q.3 Attempt the following questions. **12**

a) What is the necessity of a starter? Explain the 3-point starter with a neat diagram.

b) The open circuit characteristic (O.C.C.) of a separately excited generator, at 600 r.p.m., is as under:

Field Current, A:	1.6	3.2	4.8	6.4	8.0	9.6	11.2
E.m.f.:	148	285	390	460	520	560	590

Find:
i) The voltage to which the machine will excite as a shunt generator with a field circuit resistance of 60 ohms,
ii) The critical resistance at this speed.

OR

b) The brake test on a DC shunt motor gave the following results: tensions on two sides of the brake were 10 kg and 35 kg, radius of pulley 20 cm, speed 950 rpm, Input current was 30 A at 200V. Find:

i) Output torque
ii) Output power
iii) Input power
iv) Efficiency

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) What are the losses that occur in the transformer, how they vary with load, and how can be minimized?

b) A 40KVA transformer has an iron loss of 450W and a full load copper loss of 850W. If the power factor of the load is 0.8 lagging, calculate:

i) Full load efficiency
ii) kVA load at which maximum efficiency occurs
iii) the maximum efficiency.

c) Write a short note on the autotransformer.

d) A Single-phase 200 kVA, 3300/230-volt, 50 Hz. The transformer carries 100 turns on its secondary. What will be its

i) primary and secondary current on full load;
ii) the maximum value of flux;
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e) With a neat sketch, explain the $\Delta - \mathrm{Y}$ connection of a $3 - \phi$ transformer.

f) With a neat sketch, explain the construction and working of a single-phase transformer.

Q.5 Attempt Any Two of the following. **12**

a) With the help of a neat diagram explain Scott's connection of three phase transformer.

b) The following data for 10 KVA, 450/120 V, 50 Hz transformer were obtained from OC and SC test. OC Test: V1 = 130 V, I1 = 5 A, W1 = 100 W SC Test: V1 = 10 V, I1 = 25 A, W1 = 140 W, Calculate:

i) Equivalent circuit constants
ii) Efficiency at full load 0.8 lagging power factor
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c) Two single-phase transformers with equal voltage ratio have an impedance of (0.4+3i) and (0.5+2i) with respect to secondary, if they operate in parallel, determine how they share a total load of 200KW, at 0.8 lag pf.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (CBCS)
Examination: March/April – 2026
Electrical Machines – I (BTN07302)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) In a brake test on a DC motor, which parameters are determined?
a) Efficiency and torque b) Speed only
c) Voltage regulation d) Power factor

2) The Swinburne's test is a: _____.
a) Direct test b) Indirect test
c) Short-circuit test d) Open-circuit test

3) The e.m.f. per turn in primary and secondary windings of an ideal transformer are: _____.
a) Unequal
b) Equal
c) Inversely proportional to current
d) Depends on load

4) A 1-phase transformer has 400 turns on the primary and 100 on the secondary. If the primary voltage is 200 V, find the secondary voltage?
a) 25 V b) 50 V
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5) The condition for maximum efficiency of a transformer is: _____.
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9) When a $\mathrm{V} - \mathrm{V}$ system is converted into a $\Delta - \Delta$ system, an increase in capacity of the system is _____ percent.
a) 86.6
b) 66.7
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10) The process of building up voltage in a DC shunt generator depends on: _____.
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12) A 6-pole lap-wound generator has 720 conductors and generates 240 V at 1000 rpm. Find the flux per pole?
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14) A 220 V DC shunt motor takes 25 A at full load. Armature resistance $= 0.5\ \Omega$, field current = 2 A. Calculate back e.m.f. _____.
a) 210 V
b) 208 V
c) 195 V
d) 215 V

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Sem - I) (CBCS)
Examination: March/April – 2026
Electrical Machines – I (BTN07302)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagrams whenever necessary.
4) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Derive an expression for cross-magnetizing and demagnetizing Ampere Turns due to armature reaction in DC machine.

b) Derive an emf equation of DC generator.

c) A series generator delivers a current of 100 A at 250 V. Its armature and series field resistances are $0.1\ \Omega$ and $0.055\ \Omega$ respectively. Find:
i) Armature current
ii) Generated e.m.f.

d) With help of neat diagram explain speed control methods of dc shunt motor.

e) With a neat sketch explain the Hopkinson's test for dc motor.

f) A DC Shunt motor designed to operate on 500 V supply takes full load current of 42 A and runs at 800 rpm. The flux per pole is reduced to 75% of its normal value. Calculate the speed of the motor if the total torque exerted on the armature is
i) unchanged
ii) reduced by 20%. The armature resistance is $0.6\ \Omega$ and the total voltage loss at the brushes is 2V.

Q.3 Attempt the following questions. **12**

a) What is the necessity of a starter? Explain the 3-point starter with a neat diagram.

b) The open circuit characteristic (O.C.C.) of a separately excited generator, at 600 r.p.m., is as under:

Field Current, A:	1.6	3.2	4.8	6.4	8.0	9.6	11.2
E.m.f.:	148	285	390	460	520	560	590

Find:
i) The voltage to which the machine will excite as a shunt generator with a field circuit resistance of 60 ohms,
ii) The critical resistance at this speed.

OR

b) The brake test on a DC shunt motor gave the following results: tensions on two sides of the brake were 10 kg and 35 kg, radius of pulley 20 cm, speed 950 rpm, Input current was 30 A at 200V. Find:

i) Output torque
ii) Output power
iii) Input power
iv) Efficiency

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) What are the losses that occur in the transformer, how they vary with load, and how can be minimized?

b) A 40KVA transformer has an iron loss of 450W and a full load copper loss of 850W. If the power factor of the load is 0.8 lagging, calculate:

i) Full load efficiency
ii) kVA load at which maximum efficiency occurs
iii) the maximum efficiency.

c) Write a short note on the autotransformer.

d) A Single-phase 200 kVA, 3300/230-volt, 50 Hz. The transformer carries 100 turns on its secondary. What will be its

i) primary and secondary current on full load;
ii) the maximum value of flux;
iii) the number of primary turns.

e) With a neat sketch, explain the $\Delta - Y$ connection of a $3 - \phi$ transformer.

f) With a neat sketch, explain the construction and working of a single-phase transformer.

Q.5 Attempt Any Two of the following. **12**

a) With the help of a neat diagram explain Scott's connection of three phase transformer.

b) The following data for 10 KVA, 450/120 V, 50 Hz transformer were obtained from OC and SC test. OC Test: V1 = 130 V, I1 = 5 A, W1 = 100 W SC Test: V1 = 10 V, I1 = 25 A, W1 = 140 W, Calculate:

i) Equivalent circuit constants
ii) Efficiency at full load 0.8 lagging power factor
iii) Efficiency at half load 0.8 lagging power factor

c) Two single-phase transformers with equal voltage ratio have an impedance of (0.4+3i) and (0.5+2i) with respect to secondary, if they operate in parallel, determine how they share a total load of 200KW, at 0.8 lag pf.

SLR-QH-156

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Power System – I (BTN07304)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) What is the shape of the load duration curve?
a) Rectangular shape b) Triangular shape
c) Parabolic shape d) Free hand sketch

2) Burning of low grade fuel can be improved by _____.
a) Blending with better quality
b) Oil assisted ignition
c) Pulverizing
d) Any of the above

3) The surge tank controls the water when the load on the turbine is ____.
a) Equal b) Decreased
c) Increased d) Not present

4) What is introduced between the dam and power house?
a) Penstock b) Draft tube
c) Prime mover d) Surge tank

5) Which following is not part of Solar Thermal Power Plant?
a) Surge Tank b) Solar Collector
c) Boiler d) Generator

6) Silencer is usually incorporated in _____.
a) Cooling system b) Air intake
c) Fuel supply system d) Exhaust system

7) Gas Turbine plant is best suited for _____.
a) Base Load b) Emergency
c) Peak Load d) All of above

8) Which of the following is a part of typical AC power supply scheme?
a) Primary Transmission b) Primary Distribution
c) Secondary Distribution d) All of these

9) The Kelvin's law is limited because which of the following assumption made in it is only partly true?
a) load factor is uniform
b) annual charges are of the form P1 + aP2
c) Both (a) and (b) above
d) None of the above

10) The annual charge is given by _____.
a) P1 + P2 / a b) (P1 + P2) * a
c) P1 + P2 * a d) P1 * a + P2

11) Suspension insulator are made up of _____.
a) Glass b) Porcelain
c) Steatite d) epoxy resin

12) A string insulator has 4 units. The voltage across bottom most unit is 10 kV and its efficiency is 90%. Find the total operating phase voltage?
a) 40 kV b) 36 kV
c) 32 kV d) 45 kV

13) Which of the following materials in not used for transmission and distribution of electrical power?
a) Copper b) Aluminum
c) Steel d) Tungsten

14) In which of the following process are Neutrons emitted?
a) Inverse Beta Decay b) Nuclear Fission
c) Spontaneous Fission d) Nuclear Fusion

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Power System – I (BTN07304)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define the following terms:
i) Peak load
ii) Base load
iii) Load factor
iv) Average load

b) Write a short note on interconnected grid system.

c) Write the site selection factors of hydro power plant.

d) Draw the layout of wind power plant with neat diagram & explain the operation of main components.

e) Write the advantages & disadvantages of thermal power plant.

Q.3 Attempt Any Two. **12**

a) Describe with neat diagram thermal power station.

b) Explain the 3 types of tariffs.

c) Draw the layout of diesel power plant with neat diagram & explain the operation of main components.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain Typical AC Power Supply Scheme in detail.

b) Derive equation for conductor material required in single phase 3-wire system.

c) What are the properties of conductor used in transmission and distribution line? Describe about ACSR conductor.

d) Compare AC and DC power transmission system.

e) Explain methods of improving string efficiency.

Q.5 Attempt Any Two. **12**

a) Explain:
- i) Pin Type Insulator
- ii) String type Insulator
- iii) Suspension Type Insulator

b) State and explain Kelvin's law to determine the economic size of transmission conductor.

c) Compare AC and DC transmission system.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Power System – I (BTN07304)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Which of the following is a part of typical AC power supply scheme?
a) Primary Transmission b) Primary Distribution
c) Secondary Distribution d) All of these

2) The Kelvin's law is limited because which of the following assumption made in it is only partly true?
a) load factor is uniform
b) annual charges are of the form P1 + aP2
c) Both (a) and (b) above
d) None of the above

3) The annual charge is given by _____.
a) P1 + P2 / a b) (P1 + P2) * a
c) P1 + P2 * a d) P1 * a + P2

4) Suspension insulator are made up of _____.
a) Glass b) Porcelain
c) Steatite d) epoxy resin

5) A string insulator has 4 units. The voltage across bottom most unit is 10 kV and its efficiency is 90%. Find the total operating phase voltage?
a) 40 kV b) 36 kV
c) 32 kV d) 45 kV

6) Which of the following materials in not used for transmission and distribution of electrical power?
   a) Copper
   b) Aluminum
   c) Steel
   d) Tungsten

7) In which of the following process are Neutrons emitted?
   a) Inverse Beta Decay
   b) Nuclear Fission
   c) Spontaneous Fission
   d) Nuclear Fusion

8) What is the shape of the load duration curve?
   a) Rectangular shape
   b) Triangular shape
   c) Parabolic shape
   d) Free hand sketch

9) Burning of low grade fuel can be improved by _____.
   a) Blending with better quality
   b) Oil assisted ignition
   c) Pulverizing
   d) Any of the above

10) The surge tank controls the water when the load on the turbine is ____.
   a) Equal
   b) Decreased
   c) Increased
   d) Not present

11) What is introduced between the dam and power house?
   a) Penstock
   b) Draft tube
   c) Prime mover
   d) Surge tank

12) Which following is not part of Solar Thermal Power Plant?
   a) Surge Tank
   b) Solar Collector
   c) Boiler
   d) Generator

13) Silencer is usually incorporated in _____.
   a) Cooling system
   b) Air intake
   c) Fuel supply system
   d) Exhaust system

14) Gas Turbine plant is best suited for _____.
   a) Base Load
   b) Emergency
   c) Peak Load
   d) All of above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Power System – I (BTN07304)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define the following terms:
i) Peak load
ii) Base load
iii) Load factor
iv) Average load

b) Write a short note on interconnected grid system.

c) Write the site selection factors of hydro power plant.

d) Draw the layout of wind power plant with neat diagram & explain the operation of main components.

e) Write the advantages & disadvantages of thermal power plant.

Q.3 Attempt Any Two. **12**

a) Describe with neat diagram thermal power station.

b) Explain the 3 types of tariffs.

c) Draw the layout of diesel power plant with neat diagram & explain the operation of main components.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain Typical AC Power Supply Scheme in detail.

b) Derive equation for conductor material required in single phase 3-wire system.

c) What are the properties of conductor used in transmission and distribution line? Describe about ACSR conductor.

d) Compare AC and DC power transmission system.

e) Explain methods of improving string efficiency.

Q.5 Attempt Any Two. **12**

a) Explain:
   i) Pin Type Insulator
   ii) String type Insulator
   iii) Suspension Type Insulator

b) State and explain Kelvin's law to determine the economic size of transmission conductor.

c) Compare AC and DC transmission system.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Power System – I (BTN07304)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Suspension insulator are made up of _____.
a) Glass b) Porcelain
c) Steatite d) epoxy resin

2) A string insulator has 4 units. The voltage across bottom most unit is 10 kV and its efficiency is 90%. Find the total operating phase voltage?
a) 40 kV b) 36 kV
c) 32 kV d) 45 kV

3) Which of the following materials in not used for transmission and distribution of electrical power?
a) Copper b) Aluminum
c) Steel d) Tungsten

4) In which of the following process are Neutrons emitted?
a) Inverse Beta Decay b) Nuclear Fission
c) Spontaneous Fission d) Nuclear Fusion

5) What is the shape of the load duration curve?
a) Rectangular shape b) Triangular shape
c) Parabolic shape d) Free hand sketch

6) Burning of low grade fuel can be improved by _____.
a) Blending with better quality
b) Oil assisted ignition
c) Pulverizing
d) Any of the above

7) The surge tank controls the water when the load on the turbine is ____.
a) Equal b) Decreased
c) Increased d) Not present

8) What is introduced between the dam and power house?
a) Penstock b) Draft tube
c) Prime mover d) Surge tank

9) Which following is not part of Solar Thermal Power Plant?
a) Surge Tank b) Solar Collector
c) Boiler d) Generator

10) Silencer is usually incorporated in _____.
a) Cooling system b) Air intake
c) Fuel supply system d) Exhaust system

11) Gas Turbine plant is best suited for _____.
a) Base Load b) Emergency
c) Peak Load d) All of above

12) Which of the following is a part of typical AC power supply scheme?
a) Primary Transmission b) Primary Distribution
c) Secondary Distribution d) All of these

13) The Kelvin's law is limited because which of the following assumption made in it is only partly true?
a) load factor is uniform
b) annual charges are of the form P1 + aP2
c) Both (a) and (b) above
d) None of the above

14) The annual charge is given by _____.
a) P1 + P2 / a b) (P1 + P2) * a
c) P1 + P2 * a d) P1 * a + P2

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Power System – I (BTN07304)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define the following terms:
i) Peak load
ii) Base load
iii) Load factor
iv) Average load

b) Write a short note on interconnected grid system.

c) Write the site selection factors of hydro power plant.

d) Draw the layout of wind power plant with neat diagram & explain the operation of main components.

e) Write the advantages & disadvantages of thermal power plant.

Q.3 Attempt Any Two. **12**

a) Describe with neat diagram thermal power station.

b) Explain the 3 types of tariffs.

c) Draw the layout of diesel power plant with neat diagram & explain the operation of main components.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain Typical AC Power Supply Scheme in detail.

b) Derive equation for conductor material required in single phase 3-wire system.

c) What are the properties of conductor used in transmission and distribution line? Describe about ACSR conductor.

d) Compare AC and DC power transmission system.

e) Explain methods of improving string efficiency.

Q.5 Attempt Any Two. **12**

a) Explain:
   i) Pin Type Insulator
   ii) String type Insulator
   iii) Suspension Type Insulator

b) State and explain Kelvin's law to determine the economic size of transmission conductor.

c) Compare AC and DC transmission system.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Power System – I (BTN07304)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Silencer is usually incorporated in _____.
a) Cooling system b) Air intake
c) Fuel supply system d) Exhaust system

2) Gas Turbine plant is best suited for _____.
a) Base Load b) Emergency
c) Peak Load d) All of above

3) Which of the following is a part of typical AC power supply scheme?
a) Primary Transmission b) Primary Distribution
c) Secondary Distribution d) All of these

4) The Kelvin's law is limited because which of the following assumption made in it is only partly true?
a) load factor is uniform
b) annual charges are of the form P1 + aP2
c) Both (a) and (b) above
d) None of the above

5) The annual charge is given by _____.
a) P1 + P2 / a b) (P1 + P2) * a
c) P1 + P2 * a d) P1 * a + P2

6) Suspension insulator are made up of _____.
a) Glass b) Porcelain
c) Steatite d) epoxy resin

7) A string insulator has 4 units. The voltage across bottom most unit is 10 kV and its efficiency is 90%. Find the total operating phase voltage?

a) 40 kV b) 36 kV
c) 32 kV d) 45 kV

8) Which of the following materials in not used for transmission and distribution of electrical power?

a) Copper b) Aluminum
c) Steel d) Tungsten

9) In which of the following process are Neutrons emitted?

a) Inverse Beta Decay b) Nuclear Fission
c) Spontaneous Fission d) Nuclear Fusion

10) What is the shape of the load duration curve?

a) Rectangular shape b) Triangular shape
c) Parabolic shape d) Free hand sketch

11) Burning of low grade fuel can be improved by _____.

a) Blending with better quality
b) Oil assisted ignition
c) Pulverizing
d) Any of the above

12) The surge tank controls the water when the load on the turbine is ____.

a) Equal b) Decreased
c) Increased d) Not present

13) What is introduced between the dam and power house?

a) Penstock b) Draft tube
c) Prime mover d) Surge tank

14) Which following is not part of Solar Thermal Power Plant?

a) Surge Tank b) Solar Collector
c) Boiler d) Generator

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Power System – I (BTN07304)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Define the following terms:
i) Peak load
ii) Base load
iii) Load factor
iv) Average load

b) Write a short note on interconnected grid system.

c) Write the site selection factors of hydro power plant.

d) Draw the layout of wind power plant with neat diagram & explain the operation of main components.

e) Write the advantages & disadvantages of thermal power plant.

Q.3 Attempt Any Two. **12**

a) Describe with neat diagram thermal power station.

b) Explain the 3 types of tariffs.

c) Draw the layout of diesel power plant with neat diagram & explain the operation of main components.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain Typical AC Power Supply Scheme in detail.

b) Derive equation for conductor material required in single phase 3-wire system.

c) What are the properties of conductor used in transmission and distribution line? Describe about ACSR conductor.

d) Compare AC and DC power transmission system.

e) Explain methods of improving string efficiency.

Q.5 Attempt Any Two. **12**

a) Explain:
   i) Pin Type Insulator
   ii) String type Insulator
   iii) Suspension Type Insulator

b) State and explain Kelvin's law to determine the economic size of transmission conductor.

c) Compare AC and DC transmission system.

SLR-QH-157

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electronic Devices and Circuits (BTN07305)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) Which of the following biasing techniques uses a resistor between collector and base?
a) Fixed bias b) Collector-to-base bias
c) Self-bias d) Voltage-divider bias

2) Thermal runaway in a BJT is prevented by _____.
a) Increasing collector current
b) Reducing base resistance
c) Adding emitter resistance or compensation techniques
d) Using a Darlington pair

3) The AC equivalent circuit of a CE amplifier does NOT include _____
a) Coupling capacitor b) Bypass capacitor
c) DC voltage source d) Load resistor

4) A Darlington pair is used to _____.
a) Increase input impedance
b) Increase voltage gain
c) Increase current gain
d) Reduce thermal stability

5) The effect of a bypass capacitor (C_e) in a CE amplifier is to _____.
a) Increase DC gain b) Reduce AC gain
c) Increase AC gain d) Decrease input resistance

6) The low-frequency response of an RC-coupled amplifier is primarily affected by _____.
   a) Coupling and bypass capacitors
   b) Transistor gain
   c) Supply voltage
   d) Load resistance only

7) h-parameters of a transistor are used to _____.
   a) Determine thermal stability
   b) Analyze transistor using hybrid model
   c) Design power amplifiers
   d) Measure ripple factor

8) The ripple factor of a C-type filter is _____.
   a) Less than L-type filter
   b) More than L-type filter
   c) Independent of capacitance
   d) Zero

9) Which of the following ICs is used for fixed voltage regulation?
   a) 555 b) 78XX
   c) LM324 d) 7400

10) Negative feedback in an amplifier generally _____.
   a) Increases gain
   b) Reduces bandwidth
   c) Improves stability and linearity
   d) Reduces input resistance

11) A voltage series feedback amplifier _____.
   a) Increases input resistance and reduces output resistance
   b) Reduces input resistance and increases output resistance
   c) Reduces both input and output resistance
   d) Increases both input and output resistance

12) Class B power amplifier operates with _____.
   a) 180° conduction angle
   b) 360° conduction angle
   c) Less than 180° conduction angle
   d) 90° conduction angle

13) Crossover distortion occurs in _____.
   a) Class A amplifier b) Class B amplifier
   c) Class AB amplifier d) Class C amplifier

14) The efficiency of a Class A power amplifier is approximately _____.
   a) 25-30% b) 50-60%
   c) 75-80% d) 90%

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electronic Devices and Circuits (BTN07305)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain concept of DC load line with derivation? Write significance of load line.

b) Explain drain & transfer characteristics of N-channel enhancement type of MOSFET with neat diagram.

c) Derive the relation between α & β.

d) "For amplifier application Q point is selected into center of load line" justify & explain this statement.

e) Define the following small signal parameter of JFET.
i) DC drain to source resistance
ii) Amplification factor
iii) AC drain resistance
iv) Transconductance

Q.3 Attempt the following. (Any Two) **12**

a) Draw & Explain V-I characteristics of JFET, also draw & explain V-I characteristics for different value of VGS.

b) Design single stage CE amplifier to give Av = 100, S = 10 and output voltage 2V r.m.s., hfe = 125, hie = 2.7k.

c) What is MOSFET? Explain with diagram construction of depletion type MOSFET.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Draw the Circuit diagram of Full wave center tap rectifier with π filter. Explain.

b) Explain crossover distortion in power amplifier with suitable diagram.

c) Explain transformer coupled class A amplifier.

d) Derive the equation for voltage series feedback amplifier for effect of Input resistance (Rif).

e) Differentiate between negative and positive feedback amplifiers.

Q.5 Attempt the following. (Any Two) **12**

a) Draw the block diagram of regulated power supply? Explain.

b) Explain the concept of critical inductance in LC filter with their derivation.

c) Derive the equation for voltage series feedback amplifier for effect of output resistance (Rof).

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electronic Devices and Circuits (BTN07305)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) The ripple factor of a C-type filter is _____.
a) Less than L-type filter
b) More than L-type filter
c) Independent of capacitance
d) Zero

2) Which of the following ICs is used for fixed voltage regulation?
a) 555 b) 78XX
c) LM324 d) 7400

3) Negative feedback in an amplifier generally _____.
a) Increases gain
b) Reduces bandwidth
c) Improves stability and linearity
d) Reduces input resistance

4) A voltage series feedback amplifier _____.
a) Increases input resistance and reduces output resistance
b) Reduces input resistance and increases output resistance
c) Reduces both input and output resistance
d) Increases both input and output resistance

5) Class B power amplifier operates with _____.
a) 180° conduction angle
b) 360° conduction angle
c) Less than 180° conduction angle
d) 90° conduction angle

6) Crossover distortion occurs in _____.
a) Class A amplifier b) Class B amplifier
c) Class AB amplifier d) Class C amplifier

7) The efficiency of a Class A power amplifier is approximately _____.
a) 25-30% b) 50-60%
c) 75-80% d) 90%

8) Which of the following biasing techniques uses a resistor between collector and base?
a) Fixed bias b) Collector-to-base bias
c) Self-bias d) Voltage-divider bias

9) Thermal runaway in a BJT is prevented by _____.
a) Increasing collector current
b) Reducing base resistance
c) Adding emitter resistance or compensation techniques
d) Using a Darlington pair

10) The AC equivalent circuit of a CE amplifier does NOT include _____
a) Coupling capacitor b) Bypass capacitor
c) DC voltage source d) Load resistor

11) A Darlington pair is used to _____.
a) Increase input impedance
b) Increase voltage gain
c) Increase current gain
d) Reduce thermal stability

12) The effect of a bypass capacitor (C_e) in a CE amplifier is to _____.
a) Increase DC gain b) Reduce AC gain
c) Increase AC gain d) Decrease input resistance

13) The low-frequency response of an RC-coupled amplifier is primarily affected by _____.
a) Coupling and bypass capacitors
b) Transistor gain
c) Supply voltage
d) Load resistance only

14) h-parameters of a transistor are used to _____.
a) Determine thermal stability
b) Analyze transistor using hybrid model
c) Design power amplifiers
d) Measure ripple factor

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electronic Devices and Circuits (BTN07305)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain concept of DC load line with derivation? Write significance of load line.

b) Explain drain & transfer characteristics of N-channel enhancement type of MOSFET with neat diagram.

c) Derive the relation between α & β.

d) "For amplifier application Q point is selected into center of load line" justify & explain this statement.

e) Define the following small signal parameter of JFET.
i) DC drain to source resistance
ii) Amplification factor
iii) AC drain resistance
iv) Transconductance

Q.3 Attempt the following. (Any Two) **12**

a) Draw & Explain V-I characteristics of JFET, also draw & explain V-I characteristics for different value of VGS.

b) Design single stage CE amplifier to give Av = 100, S = 10 and output voltage 2V r.m.s., hfe = 125, hie = 2.7k.

c) What is MOSFET? Explain with diagram construction of depletion type MOSFET.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Draw the Circuit diagram of Full wave center tap rectifier with π filter. Explain.

b) Explain crossover distortion in power amplifier with suitable diagram.

c) Explain transformer coupled class A amplifier.

d) Derive the equation for voltage series feedback amplifier for effect of Input resistance (Rif).

e) Differentiate between negative and positive feedback amplifiers.

Q.5 Attempt the following. (Any Two) **12**

a) Draw the block diagram of regulated power supply? Explain.

b) Explain the concept of critical inductance in LC filter with their derivation.

c) Derive the equation for voltage series feedback amplifier for effect of output resistance (Rof).

SLR-QH-157

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electronic Devices and Circuits (BTN07305)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) A voltage series feedback amplifier _____.
a) Increases input resistance and reduces output resistance
b) Reduces input resistance and increases output resistance
c) Reduces both input and output resistance
d) Increases both input and output resistance

2) Class B power amplifier operates with _____.
a) 180° conduction angle
b) 360° conduction angle
c) Less than 180° conduction angle
d) 90° conduction angle

3) Crossover distortion occurs in _____.
a) Class A amplifier b) Class B amplifier
c) Class AB amplifier d) Class C amplifier

4) The efficiency of a Class A power amplifier is approximately _____.
a) 25-30% b) 50-60%
c) 75-80% d) 90%

5) Which of the following biasing techniques uses a resistor between collector and base?
a) Fixed bias b) Collector-to-base bias
c) Self-bias d) Voltage-divider bias

6) Thermal runaway in a BJT is prevented by _____.
   a) Increasing collector current
   b) Reducing base resistance
   c) Adding emitter resistance or compensation techniques
   d) Using a Darlington pair

7) The AC equivalent circuit of a CE amplifier does NOT include _____
   a) Coupling capacitor b) Bypass capacitor
   c) DC voltage source d) Load resistor

8) A Darlington pair is used to _____.
   a) Increase input impedance
   b) Increase voltage gain
   c) Increase current gain
   d) Reduce thermal stability

9) The effect of a bypass capacitor (C_e) in a CE amplifier is to _____.
   a) Increase DC gain b) Reduce AC gain
   c) Increase AC gain d) Decrease input resistance

10) The low-frequency response of an RC-coupled amplifier is primarily affected by _____.
   a) Coupling and bypass capacitors
   b) Transistor gain
   c) Supply voltage
   d) Load resistance only

11) h-parameters of a transistor are used to _____.
   a) Determine thermal stability
   b) Analyze transistor using hybrid model
   c) Design power amplifiers
   d) Measure ripple factor

12) The ripple factor of a C-type filter is _____.
   a) Less than L-type filter
   b) More than L-type filter
   c) Independent of capacitance
   d) Zero

13) Which of the following ICs is used for fixed voltage regulation?
   a) 555 b) 78XX
   c) LM324 d) 7400

14) Negative feedback in an amplifier generally _____.
   a) Increases gain
   b) Reduces bandwidth
   c) Improves stability and linearity
   d) Reduces input resistance

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electronic Devices and Circuits (BTN07305)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain concept of DC load line with derivation? Write significance of load line.

b) Explain drain & transfer characteristics of N-channel enhancement type of MOSFET with neat diagram.

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iii) AC drain resistance
iv) Transconductance

Q.3 Attempt the following. (Any Two) **12**

a) Draw & Explain V-I characteristics of JFET, also draw & explain V-I characteristics for different value of VGS.

b) Design single stage CE amplifier to give Av = 100, S = 10 and output voltage 2V r.m.s., hfe = 125, hie = 2.7k.

c) What is MOSFET? Explain with diagram construction of depletion type MOSFET.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Draw the Circuit diagram of Full wave center tap rectifier with π filter. Explain.

b) Explain crossover distortion in power amplifier with suitable diagram.

c) Explain transformer coupled class A amplifier.

d) Derive the equation for voltage series feedback amplifier for effect of Input resistance (Rif).

e) Differentiate between negative and positive feedback amplifiers.

Q.5 Attempt the following. (Any Two) **12**

a) Draw the block diagram of regulated power supply? Explain.

b) Explain the concept of critical inductance in LC filter with their derivation.

c) Derive the equation for voltage series feedback amplifier for effect of output resistance (Rof).

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electronic Devices and Circuits (BTN07305)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) The low-frequency response of an RC-coupled amplifier is primarily affected by _____.
a) Coupling and bypass capacitors
b) Transistor gain
c) Supply voltage
d) Load resistance only

2) h-parameters of a transistor are used to _____.
a) Determine thermal stability
b) Analyze transistor using hybrid model
c) Design power amplifiers
d) Measure ripple factor

3) The ripple factor of a C-type filter is _____.
a) Less than L-type filter
b) More than L-type filter
c) Independent of capacitance
d) Zero

4) Which of the following ICs is used for fixed voltage regulation?
a) 555 b) 78XX
c) LM324 d) 7400

5) Negative feedback in an amplifier generally _____.
a) Increases gain
b) Reduces bandwidth
c) Improves stability and linearity
d) Reduces input resistance

6) A voltage series feedback amplifier _____.
   a) Increases input resistance and reduces output resistance
   b) Reduces input resistance and increases output resistance
   c) Reduces both input and output resistance
   d) Increases both input and output resistance

7) Class B power amplifier operates with _____.
   a) 180° conduction angle
   b) 360° conduction angle
   c) Less than 180° conduction angle
   d) 90° conduction angle

8) Crossover distortion occurs in _____.
   a) Class A amplifier b) Class B amplifier
   c) Class AB amplifier d) Class C amplifier

9) The efficiency of a Class A power amplifier is approximately _____.
   a) 25-30% b) 50-60%
   c) 75-80% d) 90%

10) Which of the following biasing techniques uses a resistor between collector and base?
   a) Fixed bias b) Collector-to-base bias
   c) Self-bias d) Voltage-divider bias

11) Thermal runaway in a BJT is prevented by _____.
   a) Increasing collector current
   b) Reducing base resistance
   c) Adding emitter resistance or compensation techniques
   d) Using a Darlington pair

12) The AC equivalent circuit of a CE amplifier does NOT include _____
   a) Coupling capacitor b) Bypass capacitor
   c) DC voltage source d) Load resistor

13) A Darlington pair is used to _____.
   a) Increase input impedance
   b) Increase voltage gain
   c) Increase current gain
   d) Reduce thermal stability

14) The effect of a bypass capacitor (C_e) in a CE amplifier is to _____.
   a) Increase DC gain b) Reduce AC gain
   c) Increase AC gain d) Decrease input resistance

SLR-QH-157

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electronic Devices and Circuits (BTN07305)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain concept of DC load line with derivation? Write significance of load line.

b) Explain drain & transfer characteristics of N-channel enhancement type of MOSFET with neat diagram.

c) Derive the relation between α & β.

d) "For amplifier application Q point is selected into center of load line" justify & explain this statement.

e) Define the following small signal parameter of JFET.
i) DC drain to source resistance
ii) Amplification factor
iii) AC drain resistance
iv) Transconductance

Q.3 Attempt the following. (Any Two) **12**

a) Draw & Explain V-I characteristics of JFET, also draw & explain V-I characteristics for different value of VGS.

b) Design single stage CE amplifier to give Av = 100, S = 10 and output voltage 2V r.m.s., hfe = 125, hie = 2.7k.

c) What is MOSFET? Explain with diagram construction of depletion type MOSFET.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Draw the Circuit diagram of Full wave center tap rectifier with π filter. Explain.

b) Explain crossover distortion in power amplifier with suitable diagram.

c) Explain transformer coupled class A amplifier.

d) Derive the equation for voltage series feedback amplifier for effect of Input resistance (Rif).

e) Differentiate between negative and positive feedback amplifiers.

Q.5 Attempt the following. (Any Two) **12**

a) Draw the block diagram of regulated power supply? Explain.

b) Explain the concept of critical inductance in LC filter with their derivation.

c) Derive the equation for voltage series feedback amplifier for effect of output resistance (Rof).

SLR-QH-158

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) A working standard is mainly used for _____.
a) Realization of SI units
b) Calibration of instruments in laboratories
c) Maintaining highest accuracy in national labs
d) Defining fundamental quantities

2) Which error can be minimized by taking repeated readings?
a) Systematic error b) Random error
c) Instrumental error d) Environmental error

3) The dead zone of an instrument refers to _____.
a) Range of input where no output is obtained
b) Time delay before the pointer moves
c) Smallest increment of quantity measured
d) Drift in readings with temperature

4) A recording instrument provides _____.
a) Instantaneous reading only
b) Storage of time-varying data
c) Both analog and digital display
d) Automatic error correction

5) The control torque in electrodynamometer type instrument is provided by _____.
a) Eddy current damping b) Spring control
c) Gravity control d) Induced emf

6) In two wattmeter method of power measurement of a balanced $3-\Phi$ load at unity power factor, readings of the two wattmeters will be _____.
   a) Equal and opposite
   b) Equal and positive
   c) Zero
   d) Unequal and positive

7) A Megger is primarily used to measure _____.
   a) Low resistance
   b) High resistance
   c) Earth resistance
   d) Capacitance

8) The Crompton's DC potentiometer works on the principle of _____.
   a) Deflection method
   b) Null balance method
   c) Induction principle
   d) Moving coil principle

9) The Schering bridge is used for _____.
   a) Inductance measurement
   b) Resistance measurement
   c) Capacitance and dielectric loss measurement
   d) Frequency measurement

10) A transducer that generates its own electrical signal without external power is called _____.
   a) Active transducer
   b) Passive transducer
   c) Digital transducer
   d) Analog transducer

11) The ratio error of a CT is given by _____.
   a) (Nominal ratio - Actual ratio) / Actual ratio
   b) (Actual ratio - Nominal ratio) / Nominal ratio
   c) Nominal ratio / Actual ratio
   d) Actual ratio / Nominal ratio

12) In a digital voltmeter, the measured quantity is _____.
   a) Converted into frequency or time for measurement
   b) Directly read on analog scale
   c) Measured using Wheatstone bridge principle
   d) Dependent on resonance

13) A Q-meter is used for measuring _____.
   a) Quality factor of coils
   b) Capacitance only
   c) Resistance only
   d) Efficiency of transformers

14) In a CRO, deflection sensitivity is given by _____.
   a) Deflection per unit input frequency
   b) Deflection per unit input voltage
   c) Deflection per unit input current
   d) Deflection per unit input resistance

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION– I

Q.2 Solve Any Four **16**

a) What is the dead zone and resolution of an instrument? Explain with sketch.

b) Write a short note on the working of PMMC instrument.

c) Write a short note on the Megger and its application.

d) Explain Anderson's bridge with phasor diagram. Also derive the equation for Q-factor.

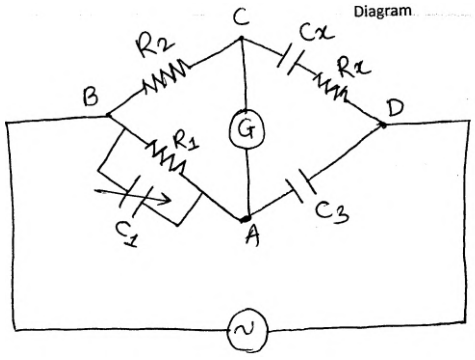
e) Explain with neat figure Crompton's type potentiometer.

Q.3 Solve Any Two **12**

a) Discuss all required forces or torques for satisfactory operation of indicating instruments in detail.

b) Derive torque equation of Electrodynamometer type instrument.

c) The Schering bridge is shown in figure. Arm AB consist of capacitor 0.4 μf in parallel with 1.5 KΩ resistance; Arm BC consist resistance of 3 KΩ, Arm CD consist unknown capacitor Cx and Rx in series, Arm DA consist capacitance of 0.4 μf; frequency 1 KHz. Determine
i) Rx and Cx
ii) Dissipation factor



SECTION – II

Q.4 Solve Any Four **16**

a) Write a short note on the construction and working of LVDT.

b) Differentiate between CT and PT (any 4 points).

c) Draw block diagram and write a short note on digital storage oscilloscope.

d) Define ratio error and phase angle error in instrument transformers.

e) Explain with neat diagram electronic counter.

Q.5 Solve Any Two **12**

a) Explain the working principle of Q-meter with neat figure also derive its equation.

b) With neat block diagram, explain the working of a CRO.

c) Explain with neat diagram:

i) Ramp type DVM

ii) Dual slope integrating type DVM

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) The Crompton's DC potentiometer works on the principle of _____.
a) Deflection method b) Null balance method
c) Induction principle d) Moving coil principle

2) The Schering bridge is used for _____.
a) Inductance measurement
b) Resistance measurement
c) Capacitance and dielectric loss measurement
d) Frequency measurement

3) A transducer that generates its own electrical signal without external power is called _____.
a) Active transducer b) Passive transducer
c) Digital transducer d) Analog transducer

4) The ratio error of a CT is given by _____.
a) (Nominal ratio - Actual ratio) / Actual ratio
b) (Actual ratio - Nominal ratio) / Nominal ratio
c) Nominal ratio / Actual ratio
d) Actual ratio / Nominal ratio

5) In a digital voltmeter, the measured quantity is _____.
a) Converted into frequency or time for measurement
b) Directly read on analog scale
c) Measured using Wheatstone bridge principle
d) Dependent on resonance

6) A Q-meter is used for measuring _____.
   a) Quality factor of coils b) Capacitance only
   c) Resistance only d) Efficiency of transformers

7) In a CRO, deflection sensitivity is given by _____.
   a) Deflection per unit input frequency
   b) Deflection per unit input voltage
   c) Deflection per unit input current
   d) Deflection per unit input resistance

8) A working standard is mainly used for _____.
   a) Realization of SI units
   b) Calibration of instruments in laboratories
   c) Maintaining highest accuracy in national labs
   d) Defining fundamental quantities

9) Which error can be minimized by taking repeated readings?
   a) Systematic error b) Random error
   c) Instrumental error d) Environmental error

10) The dead zone of an instrument refers to _____.
   a) Range of input where no output is obtained
   b) Time delay before the pointer moves
   c) Smallest increment of quantity measured
   d) Drift in readings with temperature

11) A recording instrument provides _____.
   a) Instantaneous reading only
   b) Storage of time-varying data
   c) Both analog and digital display
   d) Automatic error correction

12) The control torque in electrodynamometer type instrument is provided by _____.
   a) Eddy current damping b) Spring control
   c) Gravity control d) Induced emf

13) In two wattmeter method of power measurement of a balanced $3-\Phi$ load at unity power factor, readings of the two wattmeters will be _____.
   a) Equal and opposite b) Equal and positive
   c) Zero d) Unequal and positive

14) A Megger is primarily used to measure _____.
   a) Low resistance b) High resistance
   c) Earth resistance d) Capacitance

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION– I

Q.2 Solve Any Four **16**

a) What is the dead zone and resolution of an instrument? Explain with sketch.

b) Write a short note on the working of PMMC instrument.

c) Write a short note on the Megger and its application.

d) Explain Anderson's bridge with phasor diagram. Also derive the equation for Q-factor.

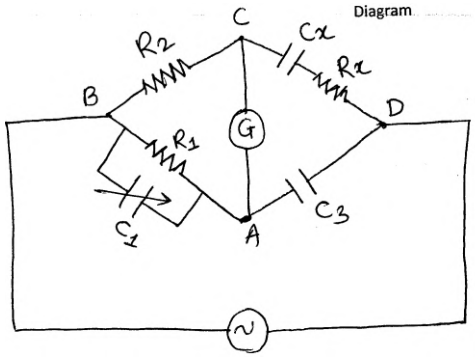
e) Explain with neat figure Crompton's type potentiometer.

Q.3 Solve Any Two **12**

a) Discuss all required forces or torques for satisfactory operation of indicating instruments in detail.

b) Derive torque equation of Electrodynamometer type instrument.

c) The Schering bridge is shown in figure. Arm AB consist of capacitor 0.4 μf in parallel with 1.5 KΩ resistance; Arm BC consist resistance of 3 KΩ, Arm CD consist unknown capacitor Cx and Rx in series, Arm DA consist capacitance of 0.4 μf; frequency 1 KHz. Determine
i) Rx and Cx
ii) Dissipation factor



SECTION – II

Q.4 Solve Any Four **16**

a) Write a short note on the construction and working of LVDT.

b) Differentiate between CT and PT (any 4 points).

c) Draw block diagram and write a short note on digital storage oscilloscope.

d) Define ratio error and phase angle error in instrument transformers.

e) Explain with neat diagram electronic counter.

Q.5 Solve Any Two **12**

a) Explain the working principle of Q-meter with neat figure also derive its equation.

b) With neat block diagram, explain the working of a CRO.

c) Explain with neat diagram:

i) Ramp type DVM

ii) Dual slope integrating type DVM

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

1) The ratio error of a CT is given by _____.
a) (Nominal ratio - Actual ratio) / Actual ratio
b) (Actual ratio - Nominal ratio) / Nominal ratio
c) Nominal ratio / Actual ratio
d) Actual ratio / Nominal ratio

2) In a digital voltmeter, the measured quantity is _____.
a) Converted into frequency or time for measurement
b) Directly read on analog scale
c) Measured using Wheatstone bridge principle
d) Dependent on resonance

3) A Q-meter is used for measuring _____.
a) Quality factor of coils b) Capacitance only
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4) In a CRO, deflection sensitivity is given by _____.
a) Deflection per unit input frequency
b) Deflection per unit input voltage
c) Deflection per unit input current
d) Deflection per unit input resistance

5) A working standard is mainly used for _____.
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b) Calibration of instruments in laboratories
c) Maintaining highest accuracy in national labs
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6) Which error can be minimized by taking repeated readings?
a) Systematic error b) Random error
c) Instrumental error d) Environmental error

7) The dead zone of an instrument refers to _____.
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13) The Schering bridge is used for _____.
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b) Resistance measurement
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d) Frequency measurement

14) A transducer that generates its own electrical signal without external power is called _____.
a) Active transducer b) Passive transducer
c) Digital transducer d) Analog transducer

SLR-QH-158

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION– I

Q.2 Solve Any Four **16**

a) What is the dead zone and resolution of an instrument? Explain with sketch.

b) Write a short note on the working of PMMC instrument.

c) Write a short note on the Megger and its application.

d) Explain Anderson's bridge with phasor diagram. Also derive the equation for Q-factor.

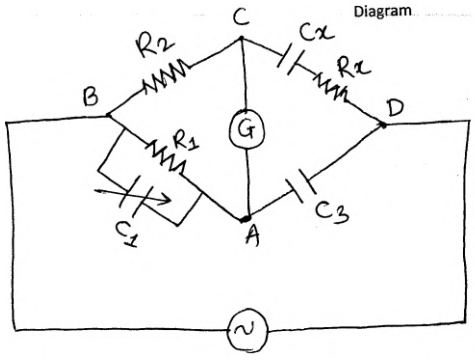
e) Explain with neat figure Crompton's type potentiometer.

Q.3 Solve Any Two **12**

a) Discuss all required forces or torques for satisfactory operation of indicating instruments in detail.

b) Derive torque equation of Electrodynamometer type instrument.

c) The Schering bridge is shown in figure. Arm AB consist of capacitor 0.4 μf in parallel with 1.5 KΩ resistance; Arm BC consist resistance of 3 KΩ, Arm CD consist unknown capacitor Cx and Rx in series, Arm DA consist capacitance of 0.4 μf; frequency 1 KHz. Determine
i) Rx and Cx
ii) Dissipation factor



SECTION – II

Q.4 Solve Any Four **16**

a) Write a short note on the construction and working of LVDT.

b) Differentiate between CT and PT (any 4 points).

c) Draw block diagram and write a short note on digital storage oscilloscope.

d) Define ratio error and phase angle error in instrument transformers.

e) Explain with neat diagram electronic counter.

Q.5 Solve Any Two **12**

a) Explain the working principle of Q-meter with neat figure also derive its equation.

b) With neat block diagram, explain the working of a CRO.

c) Explain with neat diagram:

i) Ramp type DVM

ii) Dual slope integrating type DVM

SLR-QH-158

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in answer book. Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the options. **14**

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   b) Storage of time-varying data
   c) Both analog and digital display
   d) Automatic error correction

14) The control torque in electrodynamometer type instrument is provided by _____.
   a) Eddy current damping b) Spring control
   c) Gravity control d) Induced emf

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (CBCS)
Examination: March/April – 2026
Electrical Measurement and Instrumentation (BTN07303)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION– I

Q.2 Solve Any Four **16**

a) What is the dead zone and resolution of an instrument? Explain with sketch.

b) Write a short note on the working of PMMC instrument.

c) Write a short note on the Megger and its application.

d) Explain Anderson's bridge with phasor diagram. Also derive the equation for Q-factor.

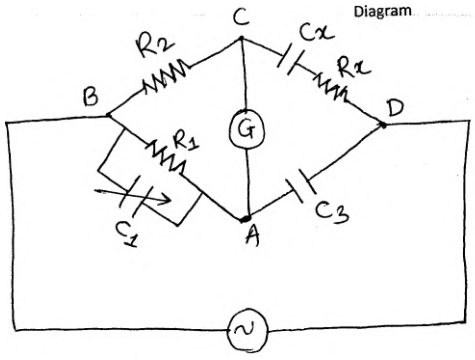
e) Explain with neat figure Crompton's type potentiometer.

Q.3 Solve Any Two **12**

a) Discuss all required forces or torques for satisfactory operation of indicating instruments in detail.

b) Derive torque equation of Electrodynamometer type instrument.

c) The Schering bridge is shown in figure. Arm AB consist of capacitor 0.4 μf in parallel with 1.5 KΩ resistance; Arm BC consist resistance of 3 KΩ, Arm CD consist unknown capacitor Cx and Rx in series, Arm DA consist capacitance of 0.4 μf; frequency 1 KHz. Determine
i) Rx and Cx
ii) Dissipation factor



SECTION – II

Q.4 Solve Any Four **16**

a) Write a short note on the construction and working of LVDT.

b) Differentiate between CT and PT (any 4 points).

c) Draw block diagram and write a short note on digital storage oscilloscope.

d) Define ratio error and phase angle error in instrument transformers.

e) Explain with neat diagram electronic counter.

Q.5 Solve Any Two **12**

a) Explain the working principle of Q-meter with neat figure also derive its equation.

b) With neat block diagram, explain the working of a CRO.

c) Explain with neat diagram:

i) Ramp type DVM

ii) Dual slope integrating type DVM

SLR-QH-159

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Transmission and Distribution (EEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the Correct Alternatives from the Options and Rewrite the Sentence. **14**

1) The sag of a transmission line depends upon _____.
a) Weight of conductor and directly proportional to span length
b) Weight of conductor and inversely proportional to span length
c) Weight of conductor and directly proportional to the square of span length
d) Weight of conductor and inversely proportional to the square of span length

2) The maximum tension in a section of overhead line conductor between two supports of unequal height occurs at _____.
a) The higher support b) The lower point
c) The midpoint of the conductor d) None of the above

3) Corona is accompanied by _____.
a) Violet visible light b) Hissing sound
c) Power loss and interference d) All of the above

4) Transmission line constants are _____.
a) Capacitance b) Inductance
c) Resistance d) All of these

5) The inductance of line is minimum when _____.
a) G M D is high
b) G M R is high
c) Both G M D and G M R are high
d) G M D is low but G M R is high

6) When two conductors between each of radius 'r' are at a distance D, the capacitance between the two is Proportional to _____.
   a) Loge (D/r)
   b) loge (r/ D)
   c) 1/loge (D/r)
   d) 1/loge(r/D)

7) Find the inductance per km of a 3- phase transmission line using 1.24 cm diameter conductors when these are placed at the corners of an equilateral triangle of each side 2 m.
   a) 3.2 mH/Km
   b) 2.1 mH/Km
   c) 1.205 mH/Km
   d) 2.3 mH/Km

8) In triangular configuration, inductance and capacitance values are _____ and _____ respectively.
   a) Less, Less
   b) Higher, Higher
   c) Less, Higher
   d) Higher, Less

9) What is the purpose of bedding on the underground cables?
   a) To avoid leakage of current.
   b) To protect the sheath against corrosion.
   c) To protect the sheath from mechanical injury due to armoring.
   d) Both b) and c)

10) The cable best suited for the transmission of voltages from 33 kV to 66 kV is _____.
   a) Belted cables
   b) Screened cables
   c) Pressure cables
   d) None of these

11) What does capacitance grade of cables mean?
   a) Use of dielectrics in different concentrations.
   b) Introduction of capacitance at various lengths of cable to counter the effect of inductance.
   c) Use of dielectrics of different permittivity's
   d) Grading according to capacitance per km length of the cable.

12) In long transmission lines Resistance and Capacitance parameters of lines are connected in _____.
   a) Series, shunt
   b) Series, series
   c) Shunt, shunt
   d) Shunt, parallel

13) In nominal-π method of solution of medium transmission line, capacitance is assumed to be _____.
   a) Distributed uniformly from sending end to receiving end
   b) Divided into two halves
   c) Lumped at the generation end
   d) Lumped at middle of generation and load end

14) Which of the following distribution system is more reliable?

a) Radial system
b) Tree system
c) Ring main system
d) All are equally reliable

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Transmission and Distribution (EEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt Any Four. **16**

a) Define corona discharge; enlist and describe in brief various methods of reducing the corona effect.

b) Calculate the loop inductance per km of a single-phase overhead line consisting of two conductors each 1 cm diameter and 1.2 m apart.

c) What is meant by sag? Derive an expression for sag in a transmission line having equal level of supports.

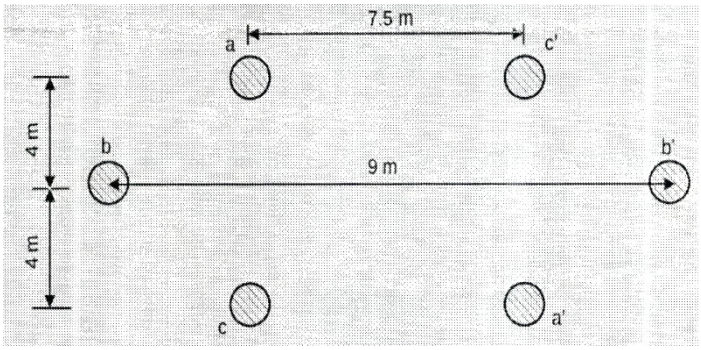
d) Derive the expression for capacitance of a single core underground cable with neat schematic diagram.

e) Find the line-to-line capacitance (Cab) per km of a three phase transmission line using 1.24 cm diameter conductor when these are placed at the corners of an equilateral triangle of each side 2m.

Q.3 Attempt Any Two. **12**

a) Derive the expression for Capacitance of 3-ph single circuit overhead triangular configuration of transmission line for symmetrical spacing.

b) The double circuit three-phase line has the configuration shown in figure the distance between conductor a and c' is 7.5 between b and b' is 9 m and between a and c is 8 m. Find inductance per kilometer per phase. The radius of each conductor is 1.25 cm.



c) Explain the following methods of cable grading with neat sketch:
i) Capacitance grading
ii) Inter-sheath grading

Section – II

Q.4 Attempt Any Four. **16**

a) Describe with neat diagram following AC Distribution System.
   i) Radial system
   ii) Ring main system

b) Draw and describe the uniformly loaded distributor fed at one end in DC system with a point of minimum potential, maximum and minimum voltage drops?

c) Explain in detail effect of Power Factor on Voltage regulation, Losses, efficiency in case of transmission line.

d) Define and explain brief following terms: feeders, distributor and service mains with neat schematic diagram in case of AC Distribution System.

e) Enlist and explain brief different advantages and limitations of EHVAC Transmission System.

Q.5 Attempt Any Two. **12**

a) Explain in details with neat circuit and phasor/Vector diagram performance analysis of short transmission line.

b) Enlist various types of HV DC Transmission System and Describe in brief with neat circuit diagram,
   i) Mono Polar and
   ii) Bipolar
   HVDC Transmission System with advantages and disadvantages.

c) A 3-ph, 50 Hz OH lines 100km long has the following constant:
   Resistance/ Km/phase $= 0.1\Omega$ Inductive reactance /km/phase $= 0.2\Omega$
   Capacitive Susceptance/km/phase $= 0.04 \times 10^4$ Siemens
   Determine:
   i) The sending end current
   ii) Sending end voltage
   iii) Sending end power factor and
   iv) Transmission efficiency when supporting a balanced load of 10000KW a 66 KV. P.F. 0.8 lagging. Use nominal T method.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Transmission and Distribution (EEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the Correct Alternatives from the Options and Rewrite the Sentence. **14**

1) In triangular configuration, inductance and capacitance values are _____ and _____ respectively.
a) Less, Less
b) Higher, Higher
c) Less, Higher
d) Higher, Less

2) What is the purpose of bedding on the underground cables?
a) To avoid leakage of current.
b) To protect the sheath against corrosion.
c) To protect the sheath from mechanical injury due to armoring.
d) Both b) and c)

3) The cable best suited for the transmission of voltages from 33 kV to 66 kV is _____.
a) Belted cables
b) Screened cables
c) Pressure cables
d) None of these

4) What does capacitance grade of cables mean?
a) Use of dielectrics in different concentrations.
b) Introduction of capacitance at various lengths of cable to counter the effect of inductance.
c) Use of dielectrics of different permittivity's
d) Grading according to capacitance per km length of the cable.

5) In long transmission lines Resistance and Capacitance parameters of lines are connected in _____.
a) Series, shunt
b) Series, series
c) Shunt, shunt
d) Shunt, parallel

6) In nominal-π method of solution of medium transmission line, capacitance is assumed to be _____.
   a) Distributed uniformly from sending end to receiving end
   b) Divided into two halves
   c) Lumped at the generation end
   d) Lumped at middle of generation and load end

7) Which of the following distribution system is more reliable?
   a) Radial system
   b) Tree system
   c) Ring main system
   d) All are equally reliable

8) The sag of a transmission line depends upon _____.
   a) Weight of conductor and directly proportional to span length
   b) Weight of conductor and inversely proportional to span length
   c) Weight of conductor and directly proportional to the square of span length
   d) Weight of conductor and inversely proportional to the square of span length

9) The maximum tension in a section of overhead line conductor between two supports of unequal height occurs at _____.
   a) The higher support
   b) The lower point
   c) The midpoint of the conductor
   d) None of the above

10) Corona is accompanied by _____.
   a) Violet visible light
   b) Hissing sound
   c) Power loss and interference
   d) All of the above

11) Transmission line constants are _____.
   a) Capacitance
   b) Inductance
   c) Resistance
   d) All of these

12) The inductance of line is minimum when _____.
   a) G M D is high
   b) G M R is high
   c) Both G M D and G M R are high
   d) G M D is low but G M R is high

13) When two conductors between each of radius ‘r’ are at a distance D, the capacitance between the two is Proportional to _____.
   a) Loge (D/r)
   b) loge (r/ D)
   c) 1/loge (D/r)
   d) 1/loge(r/D)

14) Find the inductance per km of a 3- phase transmission line using 1.24 cm diameter conductors when these are placed at the corners of an equilateral triangle of each side 2 m.
   a) 3.2 mH/Km
   b) 2.1 mH/Km
   c) 1.205 mH/Km
   d) 2.3 mH/Km

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Transmission and Distribution (EEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt Any Four. **16**

a) Define corona discharge; enlist and describe in brief various methods of reducing the corona effect.

b) Calculate the loop inductance per km of a single-phase overhead line consisting of two conductors each 1 cm diameter and 1.2 m apart.

c) What is meant by sag? Derive an expression for sag in a transmission line having equal level of supports.

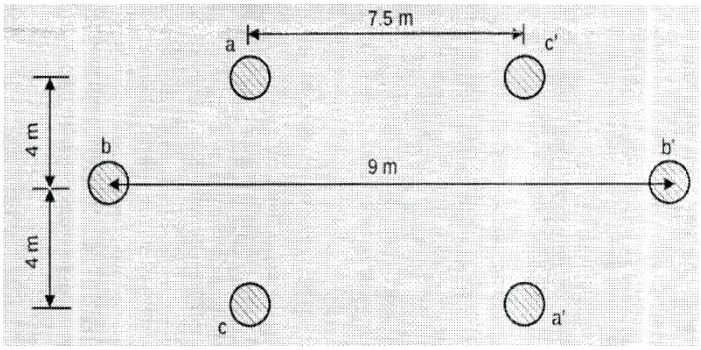
d) Derive the expression for capacitance of a single core underground cable with neat schematic diagram.

e) Find the line-to-line capacitance (Cab) per km of a three phase transmission line using 1.24 cm diameter conductor when these are placed at the corners of an equilateral triangle of each side 2m.

Q.3 Attempt Any Two. **12**

a) Derive the expression for Capacitance of 3-ph single circuit overhead triangular configuration of transmission line for symmetrical spacing.

b) The double circuit three-phase line has the configuration shown in figure the distance between conductor a and c' is 7.5 between b and b' is 9 m and between a and c is 8 m. Find inductance per kilometer per phase. The radius of each conductor is 1.25 cm.



c) Explain the following methods of cable grading with neat sketch:
i) Capacitance grading
ii) Inter-sheath grading

Section – II

Q.4 Attempt Any Four. **16**

a) Describe with neat diagram following AC Distribution System.
   i) Radial system
   ii) Ring main system

b) Draw and describe the uniformly loaded distributor fed at one end in DC system with a point of minimum potential, maximum and minimum voltage drops?

c) Explain in detail effect of Power Factor on Voltage regulation, Losses, efficiency in case of transmission line.

d) Define and explain brief following terms: feeders, distributor and service mains with neat schematic diagram in case of AC Distribution System.

e) Enlist and explain brief different advantages and limitations of EHVAC Transmission System.

Q.5 Attempt Any Two. **12**

a) Explain in details with neat circuit and phasor/Vector diagram performance analysis of short transmission line.

b) Enlist various types of HV DC Transmission System and Describe in brief with neat circuit diagram,
   i) Mono Polar and
   ii) Bipolar
   HVDC Transmission System with advantages and disadvantages.

c) A 3-ph, 50 Hz OH lines 100km long has the following constant:
   Resistance/ Km/phase $= 0.1\Omega$ Inductive reactance /km/phase $= 0.2\Omega$
   Capacitive Susceptance/km/phase $= 0.04 \times 10^4$ Siemens
   Determine:
   i) The sending end current
   ii) Sending end voltage
   iii) Sending end power factor and
   iv) Transmission efficiency when supporting a balanced load of 10000KW a 66 KV. P.F. 0.8 lagging. Use nominal T method.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Transmission and Distribution (EEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the Correct Alternatives from the Options and Rewrite the Sentence. **14**

1) What does capacitance grade of cables mean?
a) Use of dielectrics in different concentrations.
b) Introduction of capacitance at various lengths of cable to counter the effect of inductance.
c) Use of dielectrics of different permittivity's
d) Grading according to capacitance per km length of the cable.

2) In long transmission lines Resistance and Capacitance parameters of lines are connected in _____.
a) Series, shunt b) Series, series
c) Shunt, shunt d) Shunt, parallel

3) In nominal-π method of solution of medium transmission line, capacitance is assumed to be _____.
a) Distributed uniformly from sending end to receiving end
b) Divided into two halves
c) Lumped at the generation end
d) Lumped at middle of generation and load end

4) Which of the following distribution system is more reliable?
a) Radial system b) Tree system
c) Ring main system d) All are equally reliable

5) The sag of a transmission line depends upon _____.
a) Weight of conductor and directly proportional to span length
b) Weight of conductor and inversely proportional to span length
c) Weight of conductor and directly proportional to the square of span length
d) Weight of conductor and inversely proportional to the square of span length

6) The maximum tension in a section of overhead line conductor between two supports of unequal height occurs at _____.
a) The higher support
b) The lower point
c) The midpoint of the conductor
d) None of the above

7) Corona is accompanied by _____.
a) Violet visible light
b) Hissing sound
c) Power loss and interference
d) All of the above

8) Transmission line constants are _____.
a) Capacitance
b) Inductance
c) Resistance
d) All of these

9) The inductance of line is minimum when _____.
a) G M D is high
b) G M R is high
c) Both G M D and G M R are high
d) G M D is low but G M R is high

10) When two conductors between each of radius 'r' are at a distance D, the capacitance between the two is Proportional to _____.
a) Loge (D/r)
b) loge (r/ D)
c) 1/loge (D/r)
d) 1/loge(r/D)

11) Find the inductance per km of a 3- phase transmission line using 1.24 cm diameter conductors when these are placed at the corners of an equilateral triangle of each side 2 m.
a) 3.2 mH/Km
b) 2.1 mH/Km
c) 1.205 mH/Km
d) 2.3 mH/Km

12) In triangular configuration, inductance and capacitance values are _____ and _____ respectively.
a) Less, Less
b) Higher, Higher
c) Less, Higher
d) Higher, Less

13) What is the purpose of bedding on the underground cables?
a) To avoid leakage of current.
b) To protect the sheath against corrosion.
c) To protect the sheath from mechanical injury due to armoring.
d) Both b) and c)

14) The cable best suited for the transmission of voltages from 33 kV to 66 kV is _____.
a) Belted cables
b) Screened cables
c) Pressure cables
d) None of these

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Transmission and Distribution (EEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt Any Four. **16**

a) Define corona discharge; enlist and describe in brief various methods of reducing the corona effect.

b) Calculate the loop inductance per km of a single-phase overhead line consisting of two conductors each 1 cm diameter and 1.2 m apart.

c) What is meant by sag? Derive an expression for sag in a transmission line having equal level of supports.

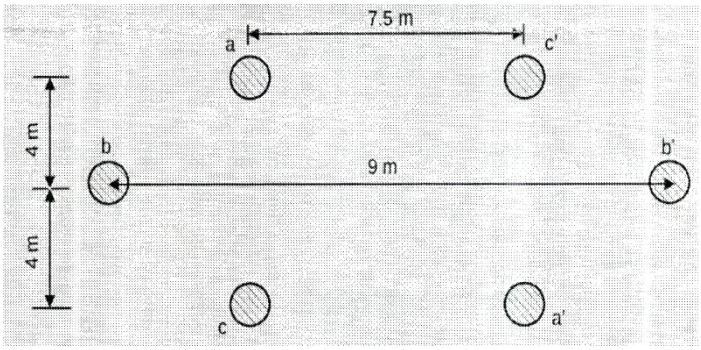
d) Derive the expression for capacitance of a single core underground cable with neat schematic diagram.

e) Find the line-to-line capacitance (Cab) per km of a three phase transmission line using 1.24 cm diameter conductor when these are placed at the corners of an equilateral triangle of each side 2m.

Q.3 Attempt Any Two. **12**

a) Derive the expression for Capacitance of 3-ph single circuit overhead triangular configuration of transmission line for symmetrical spacing.

b) The double circuit three-phase line has the configuration shown in figure the distance between conductor a and c' is 7.5 between b and b' is 9 m and between a and c is 8 m. Find inductance per kilometer per phase. The radius of each conductor is 1.25 cm.



c) Explain the following methods of cable grading with neat sketch:
i) Capacitance grading
ii) Inter-sheath grading

Section – II

Q.4 Attempt Any Four. **16**

a) Describe with neat diagram following AC Distribution System.
   i) Radial system
   ii) Ring main system

b) Draw and describe the uniformly loaded distributor fed at one end in DC system with a point of minimum potential, maximum and minimum voltage drops?

c) Explain in detail effect of Power Factor on Voltage regulation, Losses, efficiency in case of transmission line.

d) Define and explain brief following terms: feeders, distributor and service mains with neat schematic diagram in case of AC Distribution System.

e) Enlist and explain brief different advantages and limitations of EHVAC Transmission System.

Q.5 Attempt Any Two. **12**

a) Explain in details with neat circuit and phasor/Vector diagram performance analysis of short transmission line.

b) Enlist various types of HV DC Transmission System and Describe in brief with neat circuit diagram,
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c) A 3-ph, 50 Hz OH lines 100km long has the following constant:
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   Capacitive Susceptance/km/phase $= 0.04 \times 10^4$ Siemens
   Determine:
   i) The sending end current
   ii) Sending end voltage
   iii) Sending end power factor and
   iv) Transmission efficiency when supporting a balanced load of 10000KW a 66 KV. P.F. 0.8 lagging. Use nominal T method.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Transmission and Distribution (EEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the Correct Alternatives from the Options and Rewrite the Sentence. **14**

1) When two conductors between each of radius 'r' are at a distance D, the capacitance between the two is Proportional to _____.
a) Loge (D/r) b) loge (r/ D)
c) 1/loge (D/r) d) 1/loge(r/D)

2) Find the inductance per km of a 3- phase transmission line using 1.24 cm diameter conductors when these are placed at the corners of an equilateral triangle of each side 2 m.
a) 3.2 mH/Km b) 2.1 mH/Km
c) 1.205 mH/Km d) 2.3 mH/Km

3) In triangular configuration, inductance and capacitance values are _____ and _____ respectively.
a) Less, Less b) Higher, Higher
c) Less, Higher d) Higher, Less

4) What is the purpose of bedding on the underground cables?
a) To avoid leakage of current.
b) To protect the sheath against corrosion.
c) To protect the sheath from mechanical injury due to armoring.
d) Both b) and c)

5) The cable best suited for the transmission of voltages from 33 kV to 66 kV is _____.
a) Belted cables b) Screened cables
c) Pressure cables d) None of these

6) What does capacitance grade of cables mean?
   a) Use of dielectrics in different concentrations.
   b) Introduction of capacitance at various lengths of cable to counter the effect of inductance.
   c) Use of dielectrics of different permittivity's
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10) The sag of a transmission line depends upon _____.
   a) Weight of conductor and directly proportional to span length
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11) The maximum tension in a section of overhead line conductor between two supports of unequal height occurs at _____.
   a) The higher support
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12) Corona is accompanied by _____.
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13) Transmission line constants are _____.
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   b) G M R is high
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Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Transmission and Distribution (EEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if required.

Section – I

Q.2 Attempt Any Four. **16**

a) Define corona discharge; enlist and describe in brief various methods of reducing the corona effect.

b) Calculate the loop inductance per km of a single-phase overhead line consisting of two conductors each 1 cm diameter and 1.2 m apart.

c) What is meant by sag? Derive an expression for sag in a transmission line having equal level of supports.

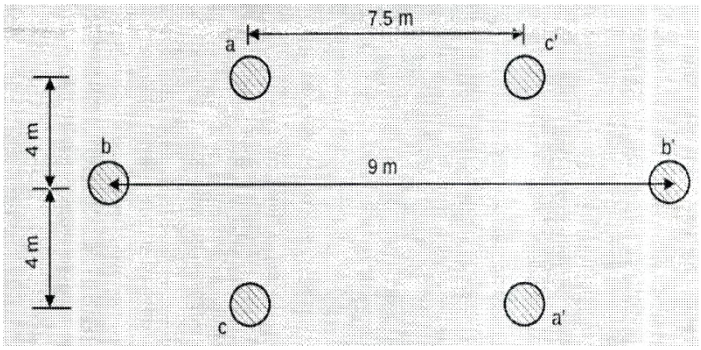
d) Derive the expression for capacitance of a single core underground cable with neat schematic diagram.

e) Find the line-to-line capacitance (Cab) per km of a three phase transmission line using 1.24 cm diameter conductor when these are placed at the corners of an equilateral triangle of each side 2m.

Q.3 Attempt Any Two. **12**

a) Derive the expression for Capacitance of 3-ph single circuit overhead triangular configuration of transmission line for symmetrical spacing.

b) The double circuit three-phase line has the configuration shown in figure the distance between conductor a and c' is 7.5 between b and b' is 9 m and between a and c is 8 m. Find inductance per kilometer per phase. The radius of each conductor is 1.25 cm.



c) Explain the following methods of cable grading with neat sketch:
i) Capacitance grading
ii) Inter-sheath grading

Section – II

Q.4 Attempt Any Four. **16**

a) Describe with neat diagram following AC Distribution System.
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   ii) Ring main system

b) Draw and describe the uniformly loaded distributor fed at one end in DC system with a point of minimum potential, maximum and minimum voltage drops?

c) Explain in detail effect of Power Factor on Voltage regulation, Losses, efficiency in case of transmission line.

d) Define and explain brief following terms: feeders, distributor and service mains with neat schematic diagram in case of AC Distribution System.

e) Enlist and explain brief different advantages and limitations of EHVAC Transmission System.

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a) Explain in details with neat circuit and phasor/Vector diagram performance analysis of short transmission line.

b) Enlist various types of HV DC Transmission System and Describe in brief with neat circuit diagram,
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   Resistance/ Km/phase $= 0.1\Omega$ Inductive reactance /km/phase $= 0.2\Omega$
   Capacitive Susceptance/km/phase $= 0.04 \times 10^4$ Siemens
   Determine:
   i) The sending end current
   ii) Sending end voltage
   iii) Sending end power factor and
   iv) Transmission efficiency when supporting a balanced load of 10000KW a 66 KV. P.F. 0.8 lagging. Use nominal T method.

SLR-QH-160

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Newton-Raphson Method Fails when _____.
a) $f'(x)$ is Negative b) $f'(x)$ is positive
c) $f'(x)$ is zero d) None of these

2) As Soon as new value of variable is found by iteration, it is used immediately in the following equation. This Method is called _____.
a) Gauss Seidel b) Gauss elimination
c) Gauss Jacobi d) None of these

3) An equation represented by as $x^2 + \sin x - 5 = 0$ is _____.
a) Algebraic b) Transcendental
c) Both a & b d) None of these

4) If $\frac{dy}{dx} = 2x - y$ & $y(1) = 3$ then by Picard's method first approximation y is _____.
a) 0 b) $x^3 - 3x + 5$
c) x^2 d) None of these

5) The quantity k, obtained by Runge-Kutta Method of Fourth order for differential equation
$\frac{dy}{dx} = x + y, \quad y(0) = 1, h = 0.2$
a) 0.2 b) 0.4
c) 2 d) None of these

6) Error in Simpson's $3/8^{\text{th}}$ rule is of order _____.

a) h^7 b) h^5

c) h^4 d) h^2

7) Romberg's Method is used to solve _____.

a) Ordinary differential equation b) Integration

c) Partial differential equation d) All of these

8) If system of equation has no free variable, then it has _____.

a) Unique Solution b) No Solution

c) Infinite Solution d) None of these

9) If A is given matrix. The columns of A are linearly independent if and only if the equation $AX = 0$ _____.

a) Non trivial Solution b) No Solution

c) Only trivial Solution d) None of these

10) Eigen values of matrix are $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 5 \end{bmatrix}$

a) $1, 2, 3$ b) $4, 5, 6$

c) $1, 3$ d) $1, 3, 5$

11) Inner Product of two vector u & u are orthogonal if and only if _____.

a) $u.v = 1$ b) $u.v = 2$

c) $u.v = 0$ d) None of these

12) Least square error in Least square solution $Ax = b$ is _____.

a) $\|b - A\hat{x}\|^2$ b) $\|b + A\hat{x}\|$

c) $\|b - A\hat{x}\|$ d) $b - A\hat{x}$

13) If all Eigen values are positive, then quadratic farm is _____.

a) Positive definite b) Negative definite

c) Positive & Negative definite d) Indefinite

14) $v.v = \|v\|^2$

a) True b) False

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Three) **09**

a) Find the Positive root of $x^4 - x - 10 = 0$ correct to three decimal places using Newton-Raphson Method.
Take $x_0 = 2$ as initial approximation.

b) Evaluate $I = \int_0^1 \frac{1}{1+x^2} dx$ by Trapezoidal rule taking $h = 0.25$

c) Solve the following System of equation by Gauss-Seidel Method.

$$10x + y + z = 12$$
$$2x + 10y + z = 13$$
$$2x + 2y + 10z = 14$$

d) Apply method Runge Kutta of fourth order to find an approximate value of y when $x = 0.1$ given that

$$\frac{dx}{dy} = x + y \ \& \ y(0) = 1$$

e) Derive Newton iterative formula for $f(x) = \sqrt{N}$

Q.3 Attempt the following. (Any Three) **09**

a) Solve the equation $x^3 - 2x - 5 = 0$ Regula - Falsi Method starting with $a = 2, b = 3$ correct to three decimal places.

b) Solve $\frac{dy}{dx} = 1 + xy, y(2) = 0$ by Picard's method upto second approximate.

c) Solve the system by Gauss-Elimination method

$$x + 2y + z = 3;\ 2x + 3y + 3z = 10;\ 3x - y + 2z = 13$$

d) Using three point Gaussian Quadrature, evaluate $\int_0^1 \frac{1}{1+x} dx$

e) Find the double root of $x^3 - x^2 - x + 1 = 0$ choosing $x_0 = 0.8$

Q.4 Attempt the following. (Any Two) **10**

a) Solve by factorization method the system of equation.

$$x + 5y + z = 14$$
$$2x + y + 3z = 13$$
$$3x + y + 4z = 17$$

b) Solve the non linear equation by Newton method upto two iteration $x^2 + y = 11,\ x + y^2 = 7$, with initial approximation $x_0 = 3.5,\ y_0 = -1.8$

c) Solve the differential equation $\frac{dy}{dx} = 1 + xz, \frac{dz}{dx} = -xy$ for $x = 0.3$ Using fourth order Runge-Kutta method. Take initial values $x_0 = 0, y_0 = 0, z_0 = 1$

SECTION – II

Q.5 Attempt the following. (Any Three) **09**

a) Determine the following system of equation having non trivial solution, then describe the solution set
$3x_1 + 5x_2 - 4x_3 = 0, -3x_1 - 2x_2 + 4x_3 = 0, 6x_1 + x_2 - 8x_3 = 0$

b) Let $v_1 = \begin{bmatrix}1\\2\\3\end{bmatrix}, v_2 = \begin{bmatrix}4\\5\\6\end{bmatrix}, v_3 = \begin{bmatrix}2\\1\\0\end{bmatrix}$ check whether the vector are linearly independent or dependent.

c) Let $A = \begin{bmatrix}2 & 1\\-4 & -2\end{bmatrix}$ and $u = \begin{bmatrix}-1\\2\end{bmatrix}$ determine u belongs to NULL of A.

d) Compute Quadratic form $X'AX$ for $A = \begin{bmatrix}3 & 2 & 0\\2 & 2 & 2\\0 & 2 & 1\end{bmatrix}$ and $x = \begin{bmatrix}x\\y\\z\end{bmatrix}$

e) Assume that T is linear transformation find standard matrix of $T: R^3 \to R^2$ defined by $T(e_1) = (1, 3)$
$T(e_2) = (4, -7)$
$T(e_3) = (-5, 4)$

Q.6 Attempt the following. (Any Three) **09**

a) Determine whether the vector are dependent or independent
Let $v_1 = \begin{bmatrix}0\\0\\2\end{bmatrix}, v_2 = \begin{bmatrix}0\\5\\-8\end{bmatrix}, v_3 = \begin{bmatrix}-3\\4\\1\end{bmatrix}$

b) Show that $\{v_1, v_2, v_3\}$ is orthonormal basis for IR^3 where

$$v_1 = \begin{bmatrix}3/\sqrt{11}\\1/\sqrt{11}\\1/\sqrt{11}\end{bmatrix}, v_2 = \begin{bmatrix}-1/\sqrt{6}\\2/\sqrt{6}\\1/\sqrt{6}\end{bmatrix}, v_3 = \begin{bmatrix}1/\sqrt{66}\\-4/\sqrt{66}\\7/\sqrt{66}\end{bmatrix}$$

c) Describe all solution of $Ax = b$ where

$$A = \begin{bmatrix} 3 & 5 & -4 \\ -3 & -2 & 4 \\ 6 & 1 & 8 \end{bmatrix} b = \begin{bmatrix} 7 \\ -1 \\ 4 \end{bmatrix}$$

d) Find the Eigen values of $A = \begin{bmatrix} 2 & 3 \\ 3 & -6 \end{bmatrix}$

e) Let $b_1 = \begin{bmatrix} 2 \\ 1 \end{bmatrix}, b_2 = \begin{bmatrix} -1 \\ 1 \end{bmatrix}, X = \begin{bmatrix} 4 \\ 5 \end{bmatrix}, B = \{b_1, b_2\}$ find the co-ordinate vector$[X]_B$ of X relative to B.

Q.7 Attempt the following. (Any Two) **10**

a) Find the numerically largest Eigen value of matrix A by power method

$$A = \begin{bmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}, \qquad x_0 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$

b) Diagonalizable the matrix A $\quad A = \begin{bmatrix} 4 & 2 & 2 \\ 2 & 4 & 2 \\ 2 & 2 & 4 \end{bmatrix}$

c) Find the least square solution of inconsistent system $AX = b$ for

$$A = \begin{bmatrix} 4 & 0 \\ 0 & 2 \\ 1 & 1 \end{bmatrix} \quad b = \begin{bmatrix} 2 \\ 0 \\ 11 \end{bmatrix}$$

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) If system of equation has no free variable, then it has _____.
a) Unique Solution b) No Solution
c) Infinite Solution d) None of these

2) If A is given matrix. The columns of A are linearly independent if and only if the equation $AX = 0$ _____.
a) Non trivial Solution b) No Solution
c) Only trivial Solution d) None of these

3) Eigen values of matrix are $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 5 \end{bmatrix}$
a) $1, 2, 3$ b) $4, 5, 6$
c) $1, 3$ d) $1, 3, 5$

4) Inner Product of two vector u & u are orthogonal if and only if _____.
a) $u.v = 1$ b) $u.v = 2$
c) $u.v = 0$ d) None of these

5) Least square error in Least square solution $Ax = b$ is _____.
a) $\|b - A\hat{x}\|^2$ b) $\|b + A\hat{x}\|$
c) $\|b - A\hat{x}\|$ d) $b - A\hat{x}$

6) If all Eigen values are positive, then quadratic farm is _____.
a) Positive definite b) Negative definite
c) Positive & Negative definite d) Indefinite

7) $v.v = \|v\|^2$
a) True b) False

8) Newton-Raphson Method Fails when _____.

a) $f'(x)$ is Negative
b) $f'(x)$ is positive
c) $f'(x)$ is zero
d) None of these

9) As Soon as new value of variable is found by iteration, it is used immediately in the following equation. This Method is called _____.

a) Gauss Seidel
b) Gauss elimination
c) Gauss Jacobi
d) None of these

10) An equation represented by as $x^2 + \sin x - 5 = 0$ is _____.

a) Algebraic
b) Transcendental
c) Both a & b
d) None of these

11) If $\frac{dy}{dx} = 2x - y$ & $y(1) = 3$ then by Picard's method first approximation y is _____.

a) 0
b) $x^3 - 3x + 5$
c) x^2
d) None of these

12) The quantity k, obtained by Runge-Kutta Method of Fourth order for differential equation

$$\frac{dy}{dx} = x + y, \qquad y(0) = 1, h = 0.2$$

a) 0.2
b) 0.4
c) 2
d) None of these

13) Error in Simpson's $3/8^{\text{th}}$ rule is of order _____.

a) h^7
b) h^5
c) h^4
d) h^2

14) Romberg's Method is used to solve _____.

a) Ordinary differential equation
b) Integration
c) Partial differential equation
d) All of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Three) **09**

a) Find the Positive root of $x^4 - x - 10 = 0$ correct to three decimal places using Newton-Raphson Method.
Take $x_0 = 2$ as initial approximation.

b) Evaluate $I = \int_0^1 \frac{1}{1+x^2} dx$ by Trapezoidal rule taking $h = 0.25$

c) Solve the following System of equation by Gauss-Seidel Method.

$$10x + y + z = 12$$
$$2x + 10y + z = 13$$
$$2x + 2y + 10z = 14$$

d) Apply method Runge Kutta of fourth order to find an approximate value of y when $x = 0.1$ given that

$$\frac{dx}{dy} = x + y \ \& \ y(0) = 1$$

e) Derive Newton iterative formula for $f(x) = \sqrt{N}$

Q.3 Attempt the following. (Any Three) **09**

a) Solve the equation $x^3 - 2x - 5 = 0$ Regula - Falsi Method starting with $a = 2, b = 3$ correct to three decimal places.

b) Solve $\frac{dy}{dx} = 1 + xy, y(2) = 0$ by Picard's method upto second approximate.

c) Solve the system by Gauss-Elimination method

$$x + 2y + z = 3;\ 2x + 3y + 3z = 10;\ 3x - y + 2z = 13$$

d) Using three point Gaussian Quadrature, evaluate $\int_0^1 \frac{1}{1+x} dx$

e) Find the double root of $x^3 - x^2 - x + 1 = 0$ choosing $x_0 = 0.8$

Q.4 Attempt the following. (Any Two) **10**

a) Solve by factorization method the system of equation.

$$x + 5y + z = 14$$
$$2x + y + 3z = 13$$
$$3x + y + 4z = 17$$

b) Solve the non linear equation by Newton method upto two iteration $x^2 + y = 11,\ x + y^2 = 7$, with initial approximation $x_0 = 3.5,\ y_0 = -1.8$

c) Solve the differential equation $\frac{dy}{dx} = 1 + xz, \frac{dz}{dx} = -xy$ for $x = 0.3$ Using fourth order Runge-Kutta method. Take initial values $x_0 = 0, y_0 = 0, z_0 = 1$

SECTION – II

Q.5 Attempt the following. (Any Three) **09**

a) Determine the following system of equation having non trivial solution, then describe the solution set
$3x_1 + 5x_2 - 4x_3 = 0, -3x_1 - 2x_2 + 4x_3 = 0, 6x_1 + x_2 - 8x_3 = 0$

b) Let $v_1 = \begin{bmatrix}1\\2\\3\end{bmatrix}, v_2 = \begin{bmatrix}4\\5\\6\end{bmatrix}, v_3 = \begin{bmatrix}2\\1\\0\end{bmatrix}$ check whether the vector are linearly independent or dependent.

c) Let $A = \begin{bmatrix}2 & 1\\-4 & -2\end{bmatrix}$ and $u = \begin{bmatrix}-1\\2\end{bmatrix}$ determine u belongs to NULL of A.

d) Compute Quadratic form $X'AX$ for $A = \begin{bmatrix}3 & 2 & 0\\2 & 2 & 2\\0 & 2 & 1\end{bmatrix}$ and $x = \begin{bmatrix}x\\y\\z\end{bmatrix}$

e) Assume that T is linear transformation find standard matrix of $T: R^3 \to R^2$ defined by $T(e_1) = (1, 3)$
$T(e_2) = (4, -7)$
$T(e_3) = (-5, 4)$

Q.6 Attempt the following. (Any Three) **09**

a) Determine whether the vector are dependent or independent
Let $v_1 = \begin{bmatrix}0\\0\\2\end{bmatrix}, v_2 = \begin{bmatrix}0\\5\\-8\end{bmatrix}, v_3 = \begin{bmatrix}-3\\4\\1\end{bmatrix}$

b) Show that $\{v_1, v_2, v_3\}$ is orthonormal basis for IR^3 where

$$v_1 = \begin{bmatrix}3/\sqrt{11}\\1/\sqrt{11}\\1/\sqrt{11}\end{bmatrix}, v_2 = \begin{bmatrix}-1/\sqrt{6}\\2/\sqrt{6}\\1/\sqrt{6}\end{bmatrix}, v_3 = \begin{bmatrix}1/\sqrt{66}\\-4/\sqrt{66}\\7/\sqrt{66}\end{bmatrix}$$

c) Describe all solution of $Ax = b$ where

$$A = \begin{bmatrix} 3 & 5 & -4 \\ -3 & -2 & 4 \\ 6 & 1 & 8 \end{bmatrix} b = \begin{bmatrix} 7 \\ -1 \\ 4 \end{bmatrix}$$

d) Find the Eigen values of $A = \begin{bmatrix} 2 & 3 \\ 3 & -6 \end{bmatrix}$

e) Let $b_1 = \begin{bmatrix} 2 \\ 1 \end{bmatrix}, b_2 = \begin{bmatrix} -1 \\ 1 \end{bmatrix}, X = \begin{bmatrix} 4 \\ 5 \end{bmatrix}, B = \{b_1, b_2\}$ find the co-ordinate vector$[X]_B$ of X relative to B.

Q.7 Attempt the following. (Any Two) **10**

a) Find the numerically largest Eigen value of matrix A by power method

$$A = \begin{bmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}, \qquad x_0 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$

b) Diagonalizable the matrix A $\quad A = \begin{bmatrix} 4 & 2 & 2 \\ 2 & 4 & 2 \\ 2 & 2 & 4 \end{bmatrix}$

c) Find the least square solution of inconsistent system $AX = b$ for

$$A = \begin{bmatrix} 4 & 0 \\ 0 & 2 \\ 1 & 1 \end{bmatrix} \quad b = \begin{bmatrix} 2 \\ 0 \\ 11 \end{bmatrix}$$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Inner Product of two vector u & u are orthogonal if and only if _____.
a) $u.v = 1$ b) $u.v = 2$
c) $u.v = 0$ d) None of these

2) Least square error in Least square solution $Ax = b$ is _____.
a) $\|b - A\hat{x}\|^2$ b) $\|b + A\hat{x}\|$
c) $\|b - A\hat{x}\|$ d) $b - A\hat{x}$

3) If all Eigen values are positive, then quadratic farm is _____.
a) Positive definite b) Negative definite
c) Positive & Negative definite d) Indefinite

4) $v.v = \|v\|^2$
a) True b) False

5) Newton-Raphson Method Fails when _____.
a) $f'(x)$ is Negative b) $f'(x)$ is positive
c) $f'(x)$ is zero d) None of these

6) As Soon as new value of variable is found by iteration, it is used immediately in the following equation. This Method is called _____.
a) Gauss Seidel b) Gauss elimination
c) Gauss Jacobi d) None of these

7) An equation represented by as $x^2 + \sin x - 5 = 0$ is _____.
a) Algebraic b) Transcendental
c) Both a & b d) None of these

8) If $\frac{dy}{dx} = 2x - y$ & $y(1) = 3$ then by Picard's method first approximation y is _____.

a) 0 b) $x^3 - 3x + 5$

c) x^2 d) None of these

9) The quantity k, obtained by Runge-Kutta Method of Fourth order for differential equation

$\frac{dy}{dx} = x + y, \qquad y(0) = 1, h = 0.2$

a) 0.2 b) 0.4

c) 2 d) None of these

10) Error in Simpson's $3/8^{\text{th}}$ rule is of order _____.

a) h^7 b) h^5

c) h^4 d) h^2

11) Romberg's Method is used to solve _____.

a) Ordinary differential equation b) Integration

c) Partial differential equation d) All of these

12) If system of equation has no free variable, then it has _____.

a) Unique Solution b) No Solution

c) Infinite Solution d) None of these

13) If A is given matrix. The columns of A are linearly independent if and only if the equation $AX = 0$ _____.

a) Non trivial Solution b) No Solution

c) Only trivial Solution d) None of these

14) Eigen values of matrix are $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 5 \end{bmatrix}$

a) $1, 2, 3$ b) $4, 5, 6$

c) $1, 3$ d) $1, 3, 5$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Three) **09**

a) Find the Positive root of $x^4 - x - 10 = 0$ correct to three decimal places using Newton-Raphson Method.
Take $x_0 = 2$ as initial approximation.

b) Evaluate $I = \int_0^1 \frac{1}{1+x^2} dx$ by Trapezoidal rule taking $h = 0.25$

c) Solve the following System of equation by Gauss-Seidel Method.

$$10x + y + z = 12$$
$$2x + 10y + z = 13$$
$$2x + 2y + 10z = 14$$

d) Apply method Runge Kutta of fourth order to find an approximate value of y when $x = 0.1$ given that

$$\frac{dx}{dy} = x + y \ \& \ y(0) = 1$$

e) Derive Newton iterative formula for $f(x) = \sqrt{N}$

Q.3 Attempt the following. (Any Three) **09**

a) Solve the equation $x^3 - 2x - 5 = 0$ Regula - Falsi Method starting with $a = 2, b = 3$ correct to three decimal places.

b) Solve $\frac{dy}{dx} = 1 + xy, y(2) = 0$ by Picard's method upto second approximate.

c) Solve the system by Gauss-Elimination method

$$x + 2y + z = 3;\ 2x + 3y + 3z = 10;\ 3x - y + 2z = 13$$

d) Using three point Gaussian Quadrature, evaluate $\int_0^1 \frac{1}{1+x} dx$

e) Find the double root of $x^3 - x^2 - x + 1 = 0$ choosing $x_0 = 0.8$

Q.4 Attempt the following. (Any Two) **10**

a) Solve by factorization method the system of equation.

$$x + 5y + z = 14$$
$$2x + y + 3z = 13$$
$$3x + y + 4z = 17$$

b) Solve the non linear equation by Newton method upto two iteration $x^2 + y = 11,\ x + y^2 = 7$, with initial approximation $x_0 = 3.5,\ y_0 = -1.8$

c) Solve the differential equation $\frac{dy}{dx} = 1 + xz, \frac{dz}{dx} = -xy$ for $x = 0.3$ Using fourth order Runge-Kutta method. Take initial values $x_0 = 0, y_0 = 0, z_0 = 1$

SECTION – II

Q.5 Attempt the following. (Any Three) **09**

a) Determine the following system of equation having non trivial solution, then describe the solution set
$3x_1 + 5x_2 - 4x_3 = 0, -3x_1 - 2x_2 + 4x_3 = 0, 6x_1 + x_2 - 8x_3 = 0$

b) Let $v_1 = \begin{bmatrix}1\\2\\3\end{bmatrix}, v_2 = \begin{bmatrix}4\\5\\6\end{bmatrix}, v_3 = \begin{bmatrix}2\\1\\0\end{bmatrix}$ check whether the vector are linearly independent or dependent.

c) Let $A = \begin{bmatrix}2 & 1\\-4 & -2\end{bmatrix}$ and $u = \begin{bmatrix}-1\\2\end{bmatrix}$ determine u belongs to NULL of A.

d) Compute Quadratic form $X'AX$ for $A = \begin{bmatrix}3 & 2 & 0\\2 & 2 & 2\\0 & 2 & 1\end{bmatrix}$ and $x = \begin{bmatrix}x\\y\\z\end{bmatrix}$

e) Assume that T is linear transformation find standard matrix of $T: R^3 \to R^2$ defined by $T(e_1) = (1, 3)$
$T(e_2) = (4, -7)$
$T(e_3) = (-5, 4)$

Q.6 Attempt the following. (Any Three) **09**

a) Determine whether the vector are dependent or independent
Let $v_1 = \begin{bmatrix}0\\0\\2\end{bmatrix}, v_2 = \begin{bmatrix}0\\5\\-8\end{bmatrix}, v_3 = \begin{bmatrix}-3\\4\\1\end{bmatrix}$

b) Show that $\{v_1, v_2, v_3\}$ is orthonormal basis for IR^3 where

$$v_1 = \begin{bmatrix}3/\sqrt{11}\\1/\sqrt{11}\\1/\sqrt{11}\end{bmatrix}, v_2 = \begin{bmatrix}-1/\sqrt{6}\\2/\sqrt{6}\\1/\sqrt{6}\end{bmatrix}, v_3 = \begin{bmatrix}1/\sqrt{66}\\-4/\sqrt{66}\\7/\sqrt{66}\end{bmatrix}$$

c) Describe all solution of $Ax = b$ where

$$A = \begin{bmatrix} 3 & 5 & -4 \\ -3 & -2 & 4 \\ 6 & 1 & 8 \end{bmatrix} b = \begin{bmatrix} 7 \\ -1 \\ 4 \end{bmatrix}$$

d) Find the Eigen values of $A = \begin{bmatrix} 2 & 3 \\ 3 & -6 \end{bmatrix}$

e) Let $b_1 = \begin{bmatrix} 2 \\ 1 \end{bmatrix}, b_2 = \begin{bmatrix} -1 \\ 1 \end{bmatrix}, X = \begin{bmatrix} 4 \\ 5 \end{bmatrix}, B = \{b_1, b_2\}$ find the co-ordinate vector$[X]_B$ of X relative to B.

Q.7 Attempt the following. (Any Two) **10**

a) Find the numerically largest Eigen value of matrix A by power method

$$A = \begin{bmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}, \qquad x_0 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$

b) Diagonalizable the matrix A $\quad A = \begin{bmatrix} 4 & 2 & 2 \\ 2 & 4 & 2 \\ 2 & 2 & 4 \end{bmatrix}$

c) Find the least square solution of inconsistent system $AX = b$ for

$$A = \begin{bmatrix} 4 & 0 \\ 0 & 2 \\ 1 & 1 \end{bmatrix} \quad b = \begin{bmatrix} 2 \\ 0 \\ 11 \end{bmatrix}$$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Error in Simpson's $^{3}/_{8}^{\text{th}}$ rule is of order _____.
a) h^7 b) h^5
c) h^4 d) h^2

2) Romberg's Method is used to solve _____.
a) Ordinary differential equation b) Integration
c) Partial differential equation d) All of these

3) If system of equation has no free variable, then it has _____.
a) Unique Solution b) No Solution
c) Infinite Solution d) None of these

4) If A is given matrix. The columns of A are linearly independent if and only if the equation $AX = 0$ _____.
a) Non trivial Solution b) No Solution
c) Only trivial Solution d) None of these

5) Eigen values of matrix are $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 5 \end{bmatrix}$
a) $1, 2, 3$ b) $4, 5, 6$
c) $1, 3$ d) $1, 3, 5$

6) Inner Product of two vector u & u are orthogonal if and only if _____.
a) $u.v = 1$ b) $u.v = 2$
c) $u.v = 0$ d) None of these

7) Least square error in Least square solution $Ax = b$ is _____.

a) $\|b - A\hat{x}\|^2$ b) $\|b + A\hat{x}\|$

c) $\|b - A\hat{x}\|$ d) $b - A\hat{x}$

8) If all Eigen values are positive, then quadratic farm is _____.

a) Positive definite b) Negative definite

c) Positive & Negative definite d) Indefinite

9) $v.v = \|v\|^2$

a) True b) False

10) Newton-Raphson Method Fails when _____.

a) $f'(x)$ is Negative b) $f'(x)$ is positive

c) $f'(x)$ is zero d) None of these

11) As Soon as new value of variable is found by iteration, it is used immediately in the following equation. This Method is called _____.

a) Gauss Seidel b) Gauss elimination

c) Gauss Jacobi d) None of these

12) An equation represented by as $x^2 + \sin x - 5 = 0$ is _____.

a) Algebraic b) Transcendental

c) Both a & b d) None of these

13) If $\frac{dy}{dx} = 2x - y$ & $y(1) = 3$ then by Picard's method first approximation y is _____.

a) 0 b) $x^3 - 3x + 5$

c) x^2 d) None of these

14) The quantity k, obtained by Runge-Kutta Method of Fourth order for differential equation

$$\frac{dy}{dx} = x + y, \qquad y(0) = 1, h = 0.2$$

a) 0.2 b) 0.4

c) 2 d) None of these

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Numerical Methods and Linear Algebra (BTN07401)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Three) **09**

a) Find the Positive root of $x^4 - x - 10 = 0$ correct to three decimal places using Newton-Raphson Method.
Take $x_0 = 2$ as initial approximation.

b) Evaluate $I = \int_0^1 \frac{1}{1+x^2} dx$ by Trapezoidal rule taking $h = 0.25$

c) Solve the following System of equation by Gauss-Seidel Method.

$$10x + y + z = 12$$
$$2x + 10y + z = 13$$
$$2x + 2y + 10z = 14$$

d) Apply method Runge Kutta of fourth order to find an approximate value of y when $x = 0.1$ given that

$$\frac{dx}{dy} = x + y \ \& \ y(0) = 1$$

e) Derive Newton iterative formula for $f(x) = \sqrt{N}$

Q.3 Attempt the following. (Any Three) **09**

a) Solve the equation $x^3 - 2x - 5 = 0$ Regula - Falsi Method starting with $a = 2, b = 3$ correct to three decimal places.

b) Solve $\frac{dy}{dx} = 1 + xy, y(2) = 0$ by Picard's method upto second approximate.

c) Solve the system by Gauss-Elimination method

$$x + 2y + z = 3;\ 2x + 3y + 3z = 10;\ 3x - y + 2z = 13$$

d) Using three point Gaussian Quadrature, evaluate $\int_0^1 \frac{1}{1+x} dx$

e) Find the double root of $x^3 - x^2 - x + 1 = 0$ choosing $x_0 = 0.8$

Q.4 Attempt the following. (Any Two) **10**

a) Solve by factorization method the system of equation.

$$x + 5y + z = 14$$
$$2x + y + 3z = 13$$
$$3x + y + 4z = 17$$

b) Solve the non linear equation by Newton method upto two iteration $x^2 + y = 11,\ x + y^2 = 7$, with initial approximation $x_0 = 3.5,\ y_0 = -1.8$

c) Solve the differential equation $\frac{dy}{dx} = 1 + xz, \frac{dz}{dx} = -xy$ for $x = 0.3$ Using fourth order Runge-Kutta method. Take initial values $x_0 = 0, y_0 = 0, z_0 = 1$

SECTION – II

Q.5 Attempt the following. (Any Three) **09**

a) Determine the following system of equation having non trivial solution, then describe the solution set
$3x_1 + 5x_2 - 4x_3 = 0, -3x_1 - 2x_2 + 4x_3 = 0, 6x_1 + x_2 - 8x_3 = 0$

b) Let $v_1 = \begin{bmatrix}1\\2\\3\end{bmatrix}, v_2 = \begin{bmatrix}4\\5\\6\end{bmatrix}, v_3 = \begin{bmatrix}2\\1\\0\end{bmatrix}$ check whether the vector are linearly independent or dependent.

c) Let $A = \begin{bmatrix}2 & 1\\-4 & -2\end{bmatrix}$ and $u = \begin{bmatrix}-1\\2\end{bmatrix}$ determine u belongs to NULL of A.

d) Compute Quadratic form $X'AX$ for $A = \begin{bmatrix}3 & 2 & 0\\2 & 2 & 2\\0 & 2 & 1\end{bmatrix}$ and $x = \begin{bmatrix}x\\y\\z\end{bmatrix}$

e) Assume that T is linear transformation find standard matrix of $T: R^3 \to R^2$ defined by $T(e_1) = (1, 3)$
$T(e_2) = (4, -7)$
$T(e_3) = (-5, 4)$

Q.6 Attempt the following. (Any Three) **09**

a) Determine whether the vector are dependent or independent
Let $v_1 = \begin{bmatrix}0\\0\\2\end{bmatrix}, v_2 = \begin{bmatrix}0\\5\\-8\end{bmatrix}, v_3 = \begin{bmatrix}-3\\4\\1\end{bmatrix}$

b) Show that $\{v_1, v_2, v_3\}$ is orthonormal basis for IR^3 where

$$v_1 = \begin{bmatrix}3/\sqrt{11}\\1/\sqrt{11}\\1/\sqrt{11}\end{bmatrix}, v_2 = \begin{bmatrix}-1/\sqrt{6}\\2/\sqrt{6}\\1/\sqrt{6}\end{bmatrix}, v_3 = \begin{bmatrix}1/\sqrt{66}\\-4/\sqrt{66}\\7/\sqrt{66}\end{bmatrix}$$

c) Describe all solution of $Ax = b$ where

$$A = \begin{bmatrix} 3 & 5 & -4 \\ -3 & -2 & 4 \\ 6 & 1 & 8 \end{bmatrix} b = \begin{bmatrix} 7 \\ -1 \\ 4 \end{bmatrix}$$

d) Find the Eigen values of $A = \begin{bmatrix} 2 & 3 \\ 3 & -6 \end{bmatrix}$

e) Let $b_1 = \begin{bmatrix} 2 \\ 1 \end{bmatrix}, b_2 = \begin{bmatrix} -1 \\ 1 \end{bmatrix}, X = \begin{bmatrix} 4 \\ 5 \end{bmatrix}, B = \{b_1, b_2\}$ find the co-ordinate vector$[X]_B$ of X relative to B.

Q.7 Attempt the following. (Any Two) **10**

a) Find the numerically largest Eigen value of matrix A by power method

$$A = \begin{bmatrix} 1 & 6 & 1 \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}, \qquad x_0 = \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$$

b) Diagonalizable the matrix A $\quad A = \begin{bmatrix} 4 & 2 & 2 \\ 2 & 4 & 2 \\ 2 & 2 & 4 \end{bmatrix}$

c) Find the least square solution of inconsistent system $AX = b$ for

$$A = \begin{bmatrix} 4 & 0 \\ 0 & 2 \\ 1 & 1 \end{bmatrix} \quad b = \begin{bmatrix} 2 \\ 0 \\ 11 \end{bmatrix}$$

SLR-QH-161

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Network Analysis (EEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of no-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Write the correct answer. **14**

1) A super node is formed when _____.
a) Two voltage sources are in parallel
b) A voltage source is connected between two non-reference nodes
c) A current source is connected between two nodes
d) A resistor is shorted

2) Linearly dependent sources are _____.
a) Independent of other sources
b) Controlled by other circuit variables
c) Always voltage sources
d) Always current sources

3) For AC circuit analysis using mesh or nodal methods, we use _____.
a) Differential equations
b) Integral equations
c) Phasor representations
d) Time-domain values directly

4) The Reciprocity theorem is valid only for circuits that _____.
a) contain at least one dependent source
b) have a single voltage or current source
c) are bilateral and contain a single independent source
d) have multiple independent sources

5) Norton's Theorem is the dual of _____.
a) Superposition Theorem b) Reciprocity Theorem
c) Thevenin's Theorem d) Compensation Theorem

6) Maximum power transfer in AC occurs when _____.
a) Load impedance equals source impedance
b) Load resistance equals source resistance
c) Load reactance equals source reactance
d) Load impedance is zero

7) The branches not included in the tree are called _____.
a) Twigs
b) Links
c) Nodes
d) Co-tree elements

8) What does the initial condition in a network refer to?
a) The value of the source voltage
b) The steady-state response
c) The final value of current
d) The state of energy storage elements at $t = 0^{-}$

9) The transient response of an R-C circuit is governed by _____.
a) Inductor voltage
b) Resistor current
c) Capacitor voltage
d) Source resistance

10) The Laplace transform converts a time-domain differential equation into _____.
a) A polynomial equation
b) An algebraic equation
c) A trigonometric equation
d) A matrix equation

11) In an R-C circuit, the Laplace domain equation for voltage across capacitor is _____.
a) $V(s) = I(s) \cdot 1/sC$
b) $V(s) = I(s) \cdot sC$
c) $V(s) = I(s) \cdot R$
d) $V(s) = I(s) \cdot C$

12) In solving R-L-C circuits using Laplace transform, the solution is obtained by _____.
a) Applying KVL in time domain
b) Using Fourier series
c) Using phasor analysis
d) Solving algebraic equations in s-domain

13) Transmission parameters are also called _____.
a) ABCD parameters
b) Z parameters
c) H parameters
d) Y parameters

14) Which parameter set is most suitable for transistor modeling?
a) Z-parameters
b) Y-parameters
c) H-parameters
d) ABCD parameters

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Network Analysis (EEPCC-05)

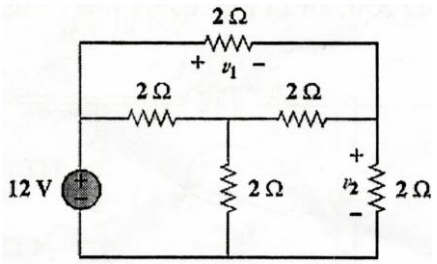
Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.
4) Assume suitable data, if necessary.

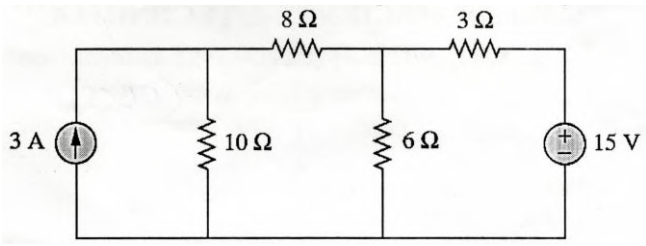
Section – I

Q.2 Solve Any Four. **16**

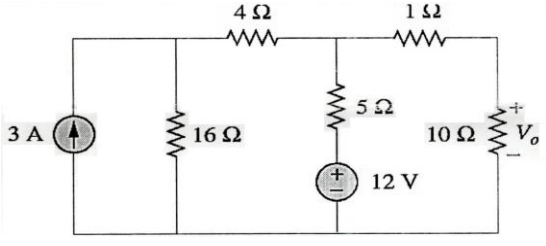
a) Determine v_1 and v_2 using mesh analysis in the circuit of Fig.



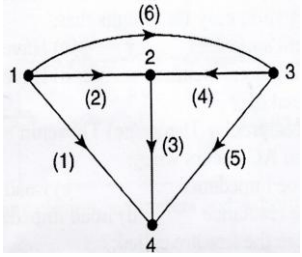
b) Use source transformation to determine the current and power absorbed by the 8Ω resistor.



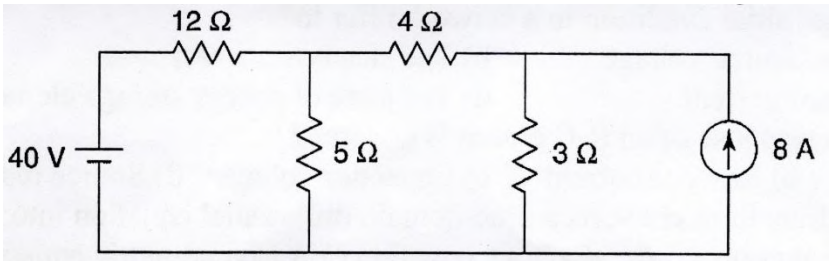
c) Apply Thevenin's theorem to find in the circuit of Fig.



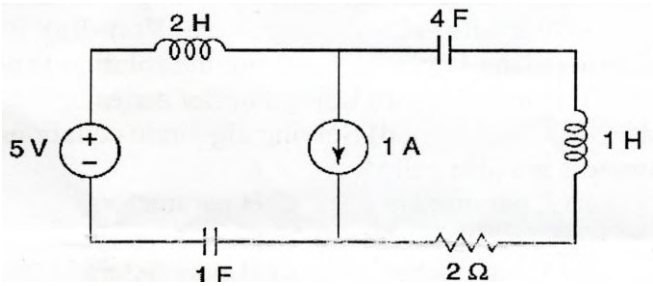
d) Write the complete incidence matrix for the graph shown in Fig



e) Use superposition theorem to find the current through the 4Ω resistor in Fig.



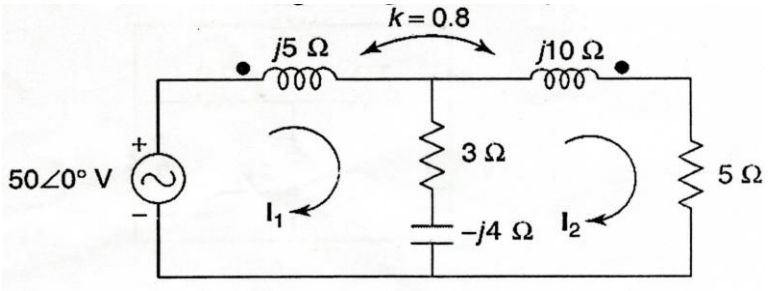
f) Draw the dual of the network shown in Fig.



Q.3 Solve Any Two. **12**

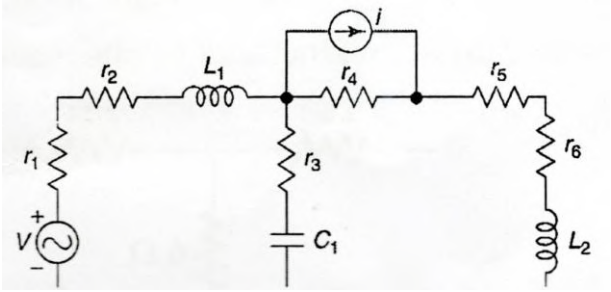
a) State maximum power transfer theorem. Derive the condition for the maximum power transfer theorem for ac circuits.

b) Find the voltage across the 5Ω resistor in Fig. using mesh analysis.



c) For the circuit shown in Fig., draw the oriented and graph and write

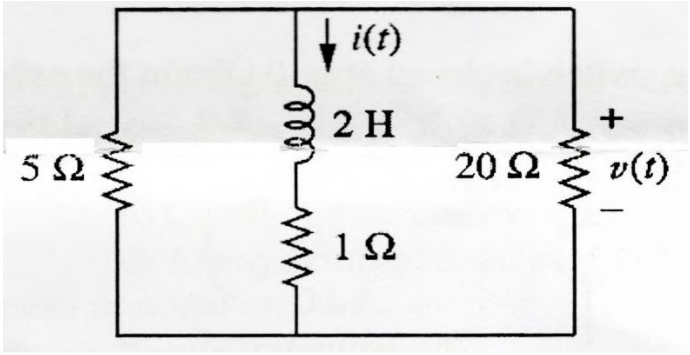
i) incidence matrix
ii) tieset matrix and
iii) cutset matrix



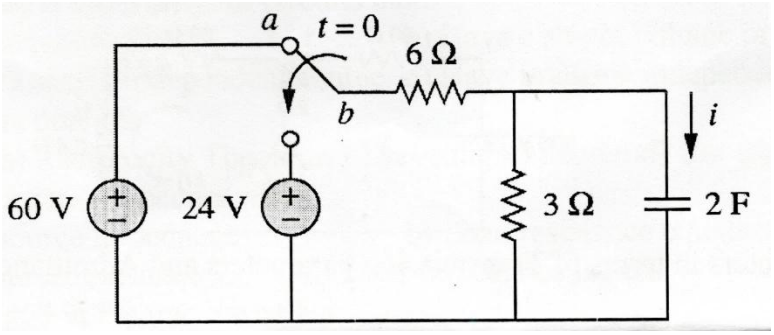
Section – II

Q.4 Solve Any Four. **16**

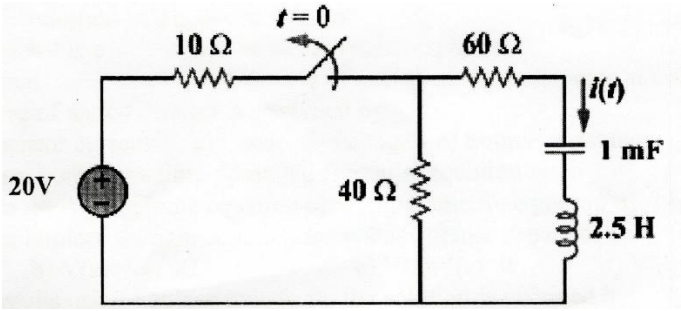
a) Find $i(t)$ and $v(t)$ for $t > 0$ in the circuit of Fig. if $i(0) = 10\ A$



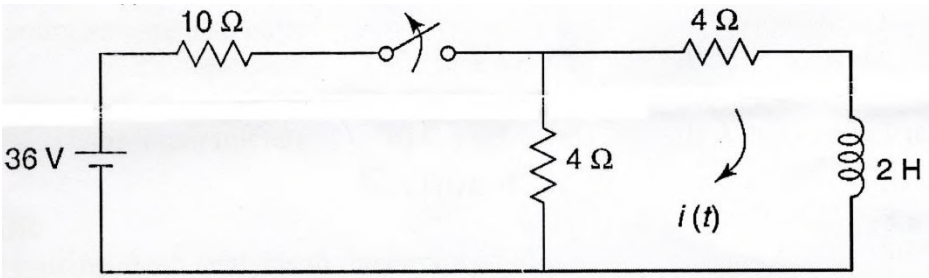
b) The switch in Fig. has been in position 'a' for a long time. At $t = 0$, it moves to position 'b'. Calculate $i(t)$ for all $t > 0$



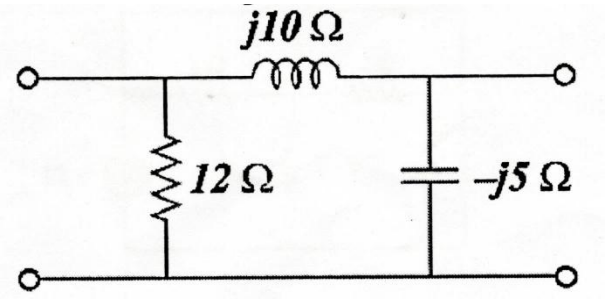
c) Find $i(t)$ for $t > 0$ in the circuit of Fig. using Laplace transform.



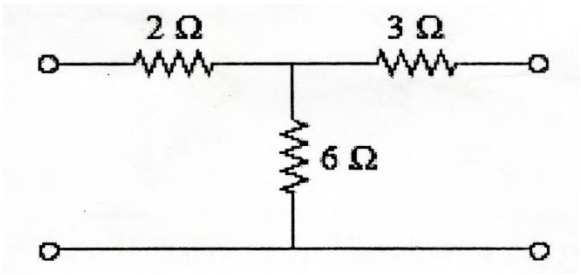
d) The network shown in Fig. has acquired steady-state with the switch closed for $t < 0$. At $t = 0$, the switch is opened. Obtain $i(t)$ for $t > 0$.



e) Calculate the Z parameters for the circuit in Fig.

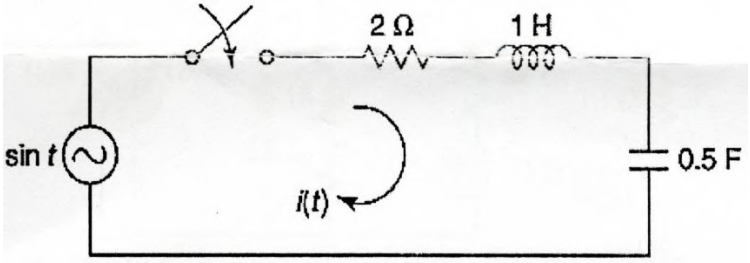


f) Find the hybrid parameters for the two-port network of Fig.

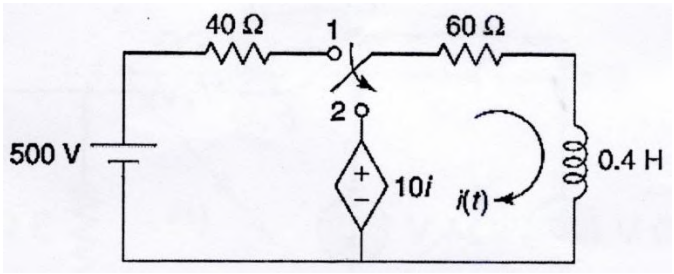


Q.5 Solve Any Two. **12**

a) In the network of Fig., the switch is closed at $t = 0$ Obtain the expression for current $i(t)$ for $t > 0$.



b) For the network shown in Fig., find the current $i(t)$ when the switch is changed from the position 1 to 2 at $t = 0$.



c) Derive Z parameters in terms of Transmission parameters and Admittance parameters.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Network Analysis (EEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of no-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Write the correct answer. **14**

1) What does the initial condition in a network refer to?
a) The value of the source voltage
b) The steady-state response
c) The final value of current
d) The state of energy storage elements at $t = 0^-$

2) The transient response of an R-C circuit is governed by _____.
a) Inductor voltage b) Resistor current
c) Capacitor voltage d) Source resistance

3) The Laplace transform converts a time-domain differential equation into _____.
a) A polynomial equation b) An algebraic equation
c) A trigonometric equation d) A matrix equation

4) In an R-C circuit, the Laplace domain equation for voltage across capacitor is _____.
a) $V(s) = I(s) \cdot 1/sC$ b) $V(s) = I(s) \cdot sC$
c) $V(s) = I(s) \cdot R$ d) $V(s) = I(s) \cdot C$

5) In solving R-L-C circuits using Laplace transform, the solution is obtained by _____.
a) Applying KVL in time domain
b) Using Fourier series
c) Using phasor analysis
d) Solving algebraic equations in s-domain

6) Transmission parameters are also called _____.
   a) ABCD parameters b) Z parameters
   c) H parameters d) Y parameters

7) Which parameter set is most suitable for transistor modeling?
   a) Z-parameters b) Y-parameters
   c) H-parameters d) ABCD parameters

8) A super node is formed when _____.
   a) Two voltage sources are in parallel
   b) A voltage source is connected between two non-reference nodes
   c) A current source is connected between two nodes
   d) A resistor is shorted

9) Linearly dependent sources are _____.
   a) Independent of other sources
   b) Controlled by other circuit variables
   c) Always voltage sources
   d) Always current sources

10) For AC circuit analysis using mesh or nodal methods, we use _____.
   a) Differential equations
   b) Integral equations
   c) Phasor representations
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11) The Reciprocity theorem is valid only for circuits that _____.
   a) contain at least one dependent source
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12) Norton's Theorem is the dual of _____.
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13) Maximum power transfer in AC occurs when _____.
   a) Load impedance equals source impedance
   b) Load resistance equals source resistance
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14) The branches not included in the tree are called _____.
   a) Twigs b) Links
   c) Nodes d) Co-tree elements

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Network Analysis (EEPCC-05)

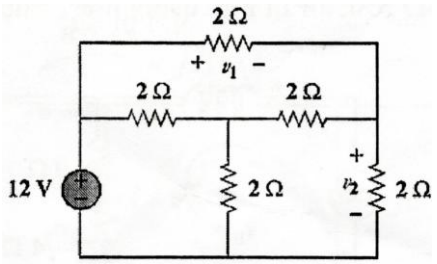
Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.
4) Assume suitable data, if necessary.

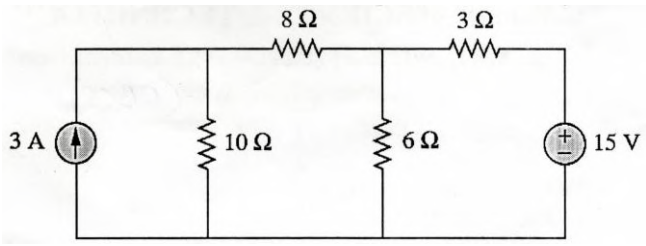
Section – I

Q.2 Solve Any Four. **16**

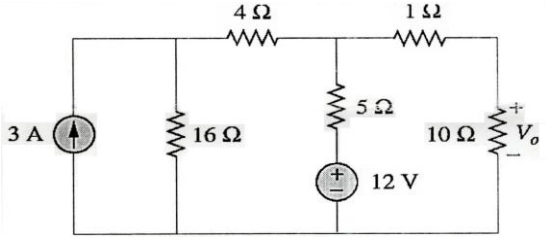
a) Determine v_1 and v_2 using mesh analysis in the circuit of Fig.



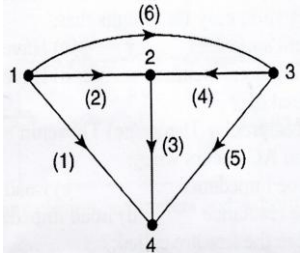
b) Use source transformation to determine the current and power absorbed by the 8Ω resistor.



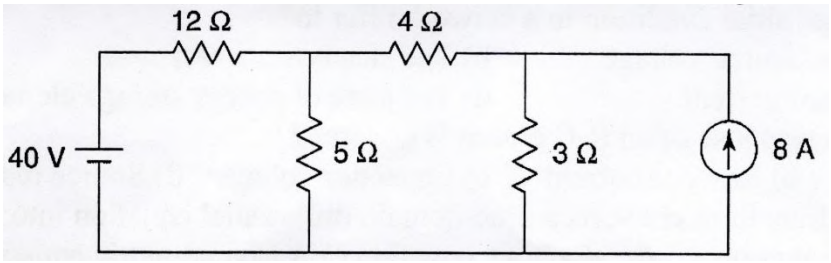
c) Apply Thevenin's theorem to find in the circuit of Fig.



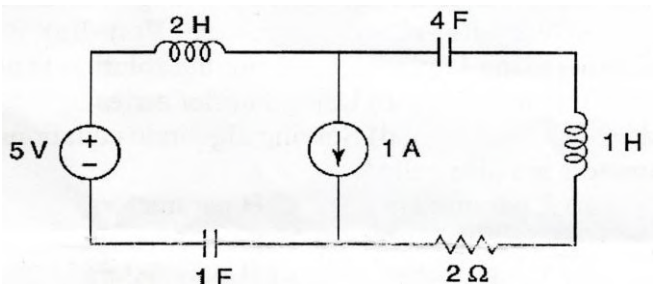
d) Write the complete incidence matrix for the graph shown in Fig



e) Use superposition theorem to find the current through the 4Ω resistor in Fig.



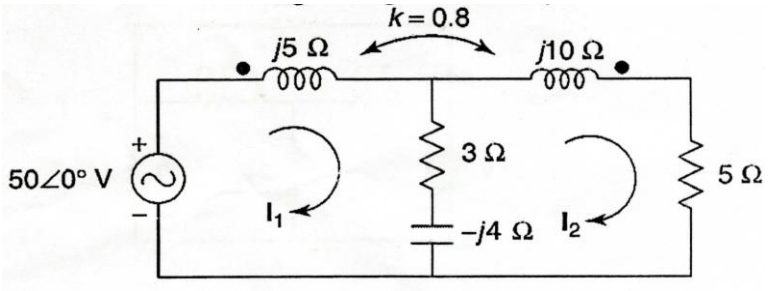
f) Draw the dual of the network shown in Fig.



Q.3 Solve Any Two. **12**

a) State maximum power transfer theorem. Derive the condition for the maximum power transfer theorem for ac circuits.

b) Find the voltage across the 5Ω resistor in Fig. using mesh analysis.



c) For the circuit shown in Fig., draw the oriented and graph and write

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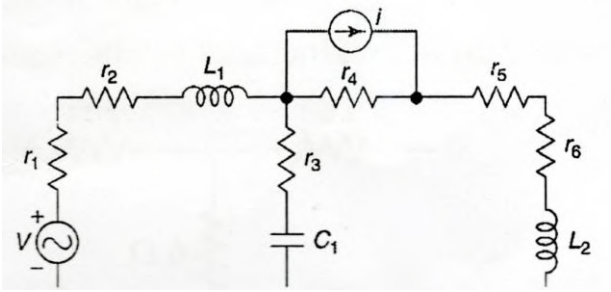
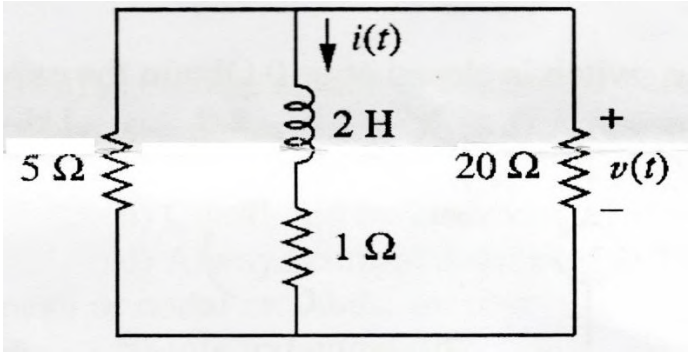


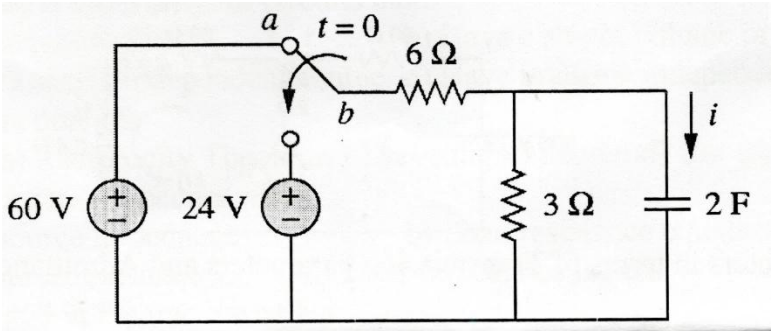
Section – II

Q.4 Solve Any Four. **16**

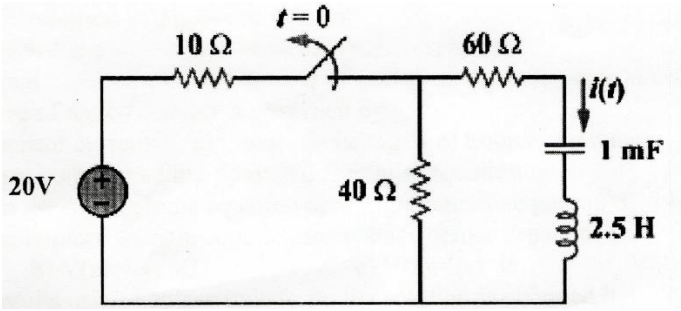
a) Find $i(t)$ and $v(t)$ for $t > 0$ in the circuit of Fig. if $i(0) = 10\ A$



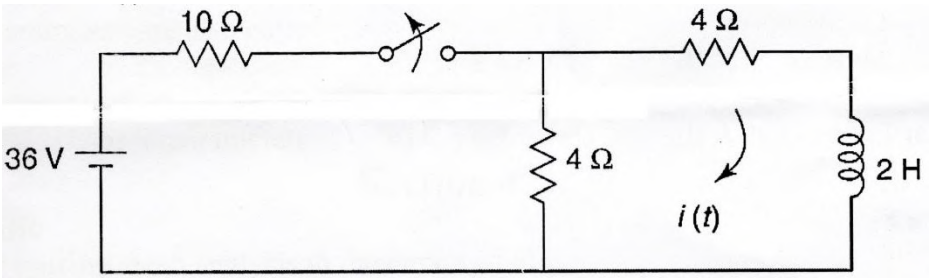
b) The switch in Fig. has been in position 'a' for a long time. At $t = 0$, it moves to position 'b'. Calculate $i(t)$ for all $t > 0$



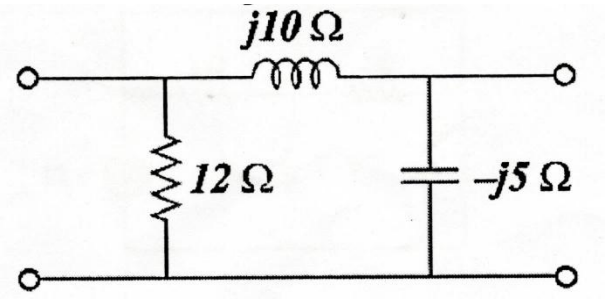
c) Find $i(t)$ for $t > 0$ in the circuit of Fig. using Laplace transform.



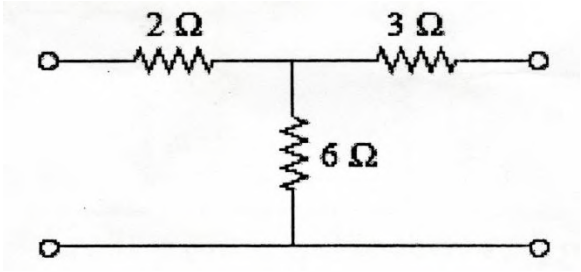
d) The network shown in Fig. has acquired steady-state with the switch closed for $t < 0$. At $t = 0$, the switch is opened. Obtain $i(t)$ for $t > 0$.



e) Calculate the Z parameters for the circuit in Fig.

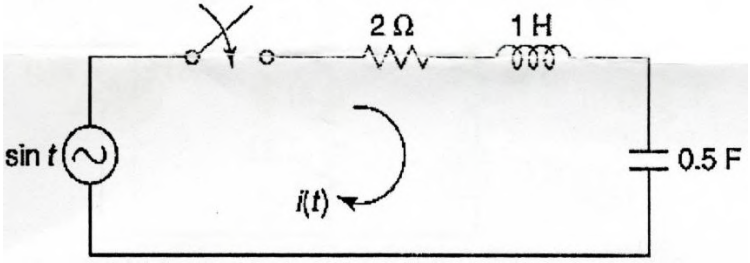


f) Find the hybrid parameters for the two-port network of Fig.

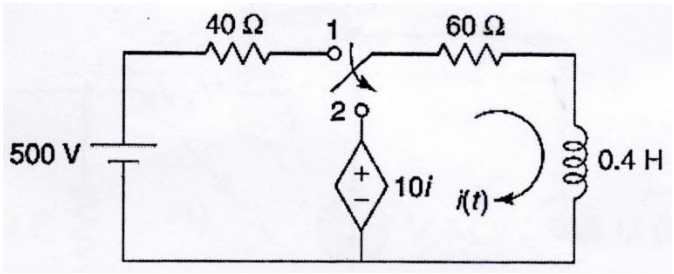


Q.5 Solve Any Two. **12**

a) In the network of Fig., the switch is closed at $t = 0$ Obtain the expression for current $i(t)$ for $t > 0$.



b) For the network shown in Fig., find the current $i(t)$ when the switch is changed from the position 1 to 2 at $t = 0$.



c) Derive Z parameters in terms of Transmission parameters and Admittance parameters.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Network Analysis (EEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of no-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Write the correct answer. **14**

1) In an R-C circuit, the Laplace domain equation for voltage across capacitor is _____.
a) $V(s) = I(s) \cdot 1/sC$ b) $V(s) = I(s) \cdot sC$
c) $V(s) = I(s) \cdot R$ d) $V(s) = I(s) \cdot C$

2) In solving R-L-C circuits using Laplace transform, the solution is obtained by _____.
a) Applying KVL in time domain
b) Using Fourier series
c) Using phasor analysis
d) Solving algebraic equations in s-domain

3) Transmission parameters are also called _____.
a) ABCD parameters b) Z parameters
c) H parameters d) Y parameters

4) Which parameter set is most suitable for transistor modeling?
a) Z-parameters b) Y-parameters
c) H-parameters d) ABCD parameters

5) A super node is formed when _____.
a) Two voltage sources are in parallel
b) A voltage source is connected between two non-reference nodes
c) A current source is connected between two nodes
d) A resistor is shorted

6) Linearly dependent sources are _____.
   a) Independent of other sources
   b) Controlled by other circuit variables
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7) For AC circuit analysis using mesh or nodal methods, we use _____.
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8) The Reciprocity theorem is valid only for circuits that _____.
   a) contain at least one dependent source
   b) have a single voltage or current source
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9) Norton's Theorem is the dual of _____.
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10) Maximum power transfer in AC occurs when _____.
   a) Load impedance equals source impedance
   b) Load resistance equals source resistance
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11) The branches not included in the tree are called _____.
   a) Twigs b) Links
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12) What does the initial condition in a network refer to?
   a) The value of the source voltage
   b) The steady-state response
   c) The final value of current
   d) The state of energy storage elements at $t = 0^{-}$

13) The transient response of an R-C circuit is governed by _____.
   a) Inductor voltage b) Resistor current
   c) Capacitor voltage d) Source resistance

14) The Laplace transform converts a time-domain differential equation into _____.
   a) A polynomial equation b) An algebraic equation
   c) A trigonometric equation d) A matrix equation

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Network Analysis (EEPCC-05)

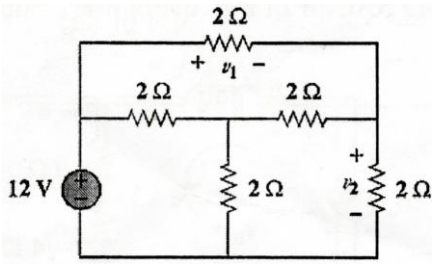
Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculator is allowed.
4) Assume suitable data, if necessary.

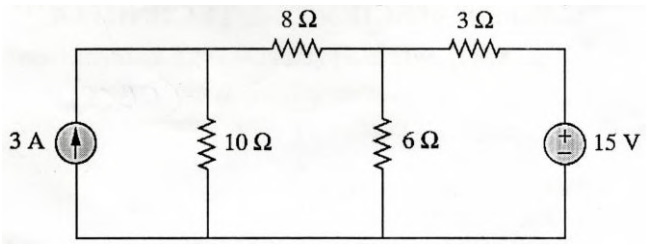
Section – I

Q.2 Solve Any Four. **16**

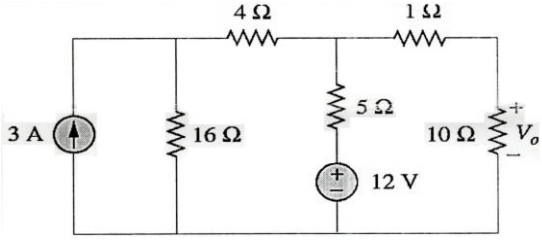
a) Determine v_1 and v_2 using mesh analysis in the circuit of Fig.



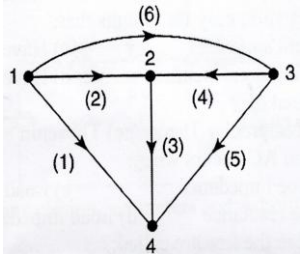
b) Use source transformation to determine the current and power absorbed by the 8Ω resistor.



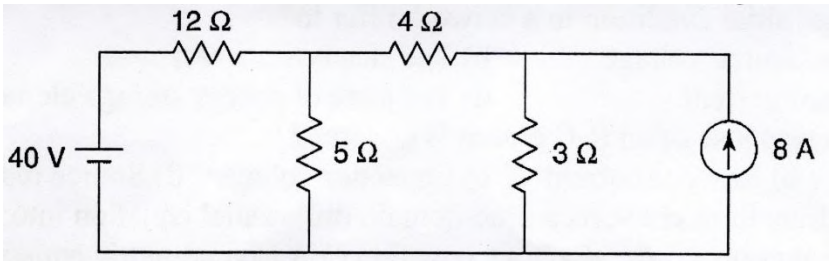
c) Apply Thevenin's theorem to find in the circuit of Fig.



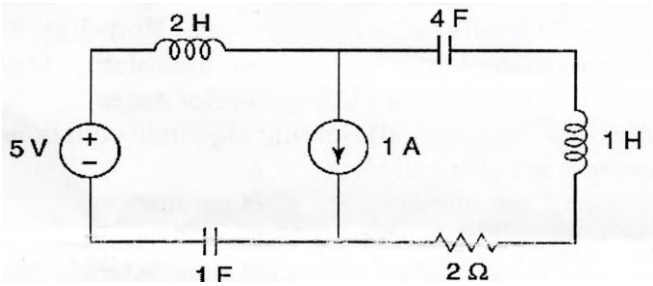
d) Write the complete incidence matrix for the graph shown in Fig



e) Use superposition theorem to find the current through the 4Ω resistor in Fig.



f) Draw the dual of the network shown in Fig.



Q.3 Solve Any Two. **12**

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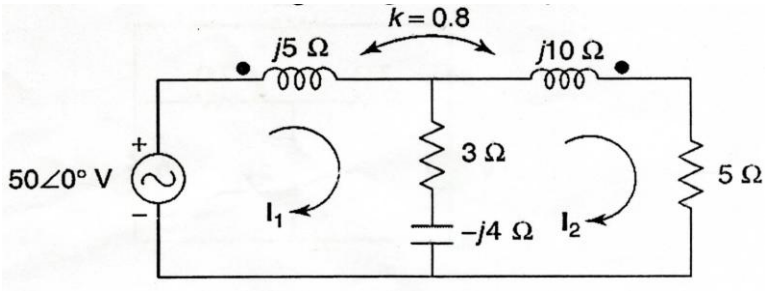
b) Find the voltage across the 5Ω resistor in Fig. using mesh analysis.



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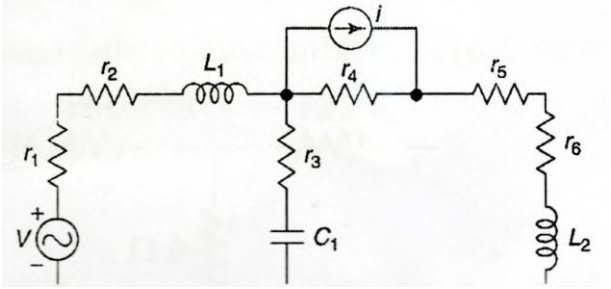
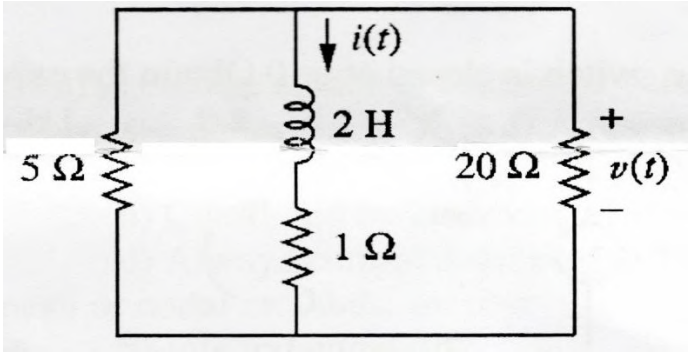


Section – II

Q.4 Solve Any Four. **16**

a) Find $i(t)$ and $v(t)$ for $t > 0$ in the circuit of Fig. if $i(0) = 10\ A$



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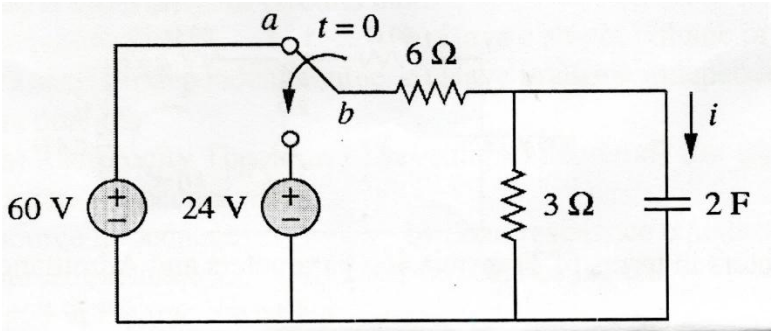
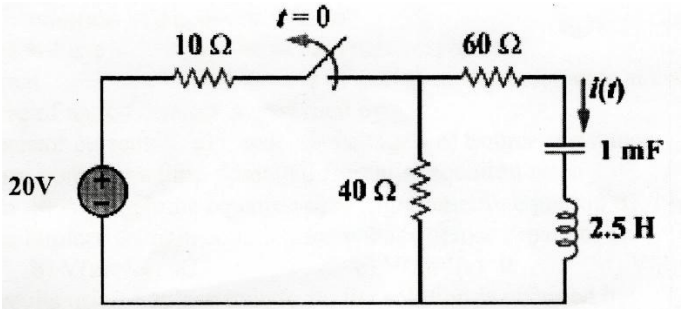


c) Find $i(t)$ for $t > 0$ in the circuit of Fig. using Laplace transform.



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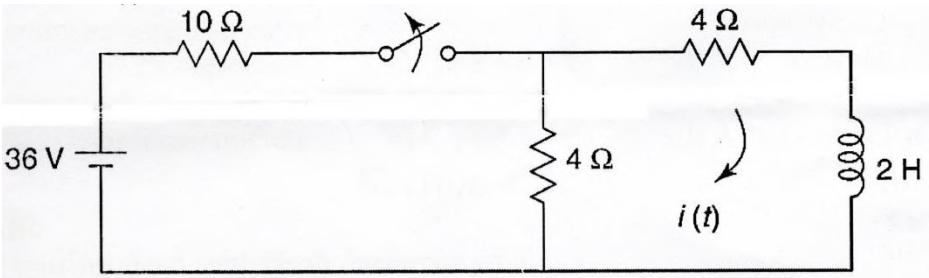
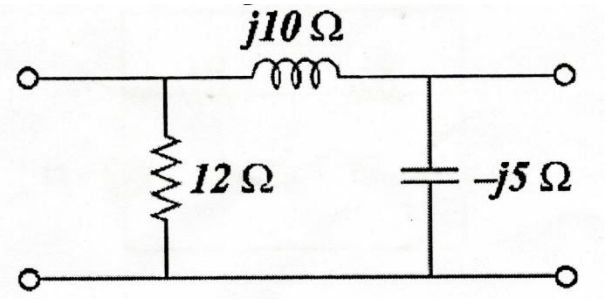
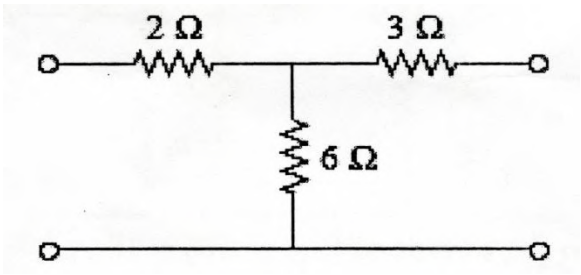


e) Calculate the Z parameters for the circuit in Fig.



f) Find the hybrid parameters for the two-port network of Fig.



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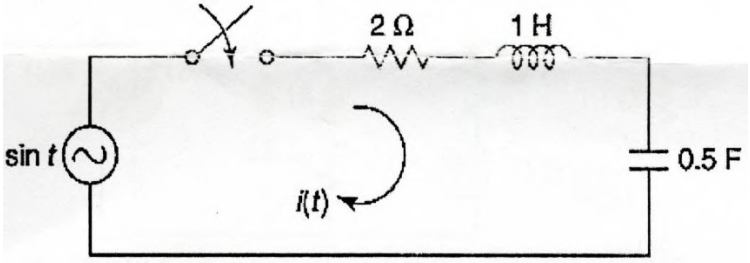
a) In the network of Fig., the switch is closed at $t = 0$ Obtain the expression for current $i(t)$ for $t > 0$.



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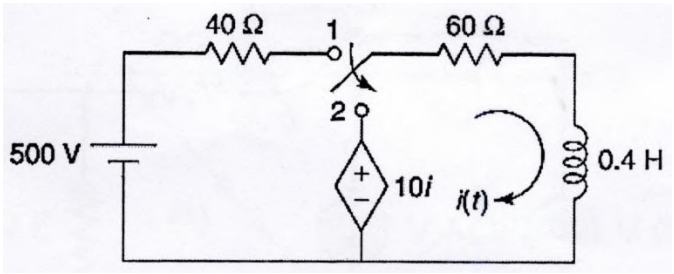

c) Derive Z parameters in terms of Transmission parameters and Admittance parameters.

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Network Analysis (EEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Write the correct answer. **14**

1) Maximum power transfer in AC occurs when _____.
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b) Load resistance equals source resistance
c) Load reactance equals source reactance
d) Load impedance is zero

2) The branches not included in the tree are called _____.
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3) What does the initial condition in a network refer to?
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b) The steady-state response
c) The final value of current
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Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Network Analysis (EEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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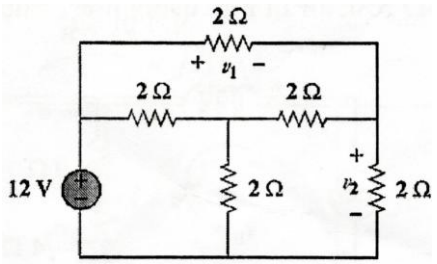
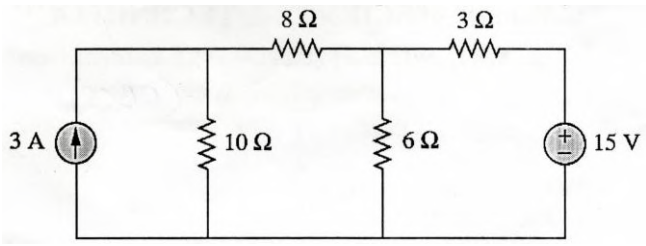
Section – I

Q.2 Solve Any Four. **16**

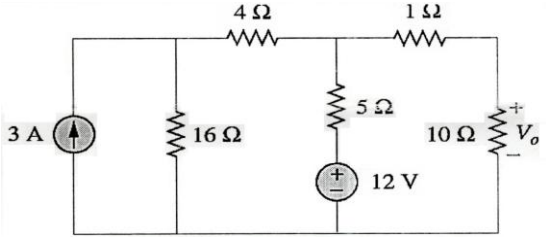
a) Determine v_1 and v_2 using mesh analysis in the circuit of Fig.



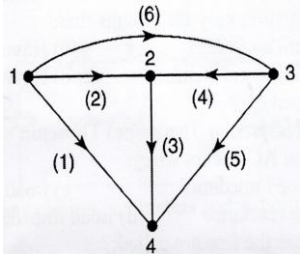
b) Use source transformation to determine the current and power absorbed by the 8Ω resistor.



c) Apply Thevenin's theorem to find in the circuit of Fig.



d) Write the complete incidence matrix for the graph shown in Fig



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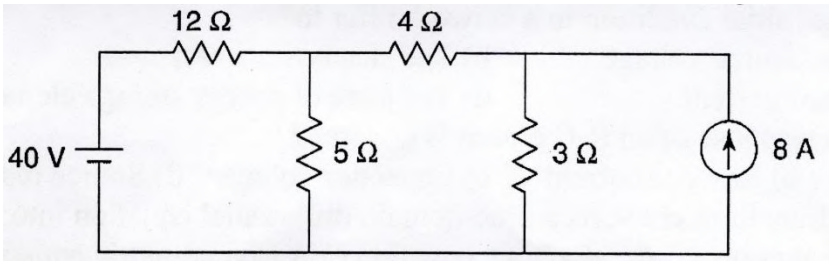
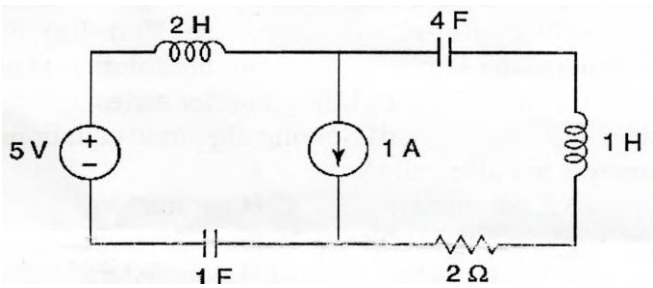


f) Draw the dual of the network shown in Fig.



Q.3 Solve Any Two. **12**

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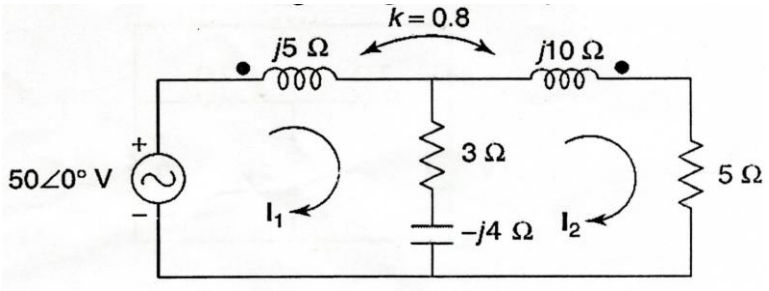

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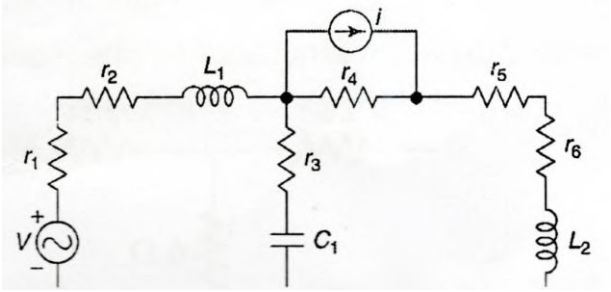
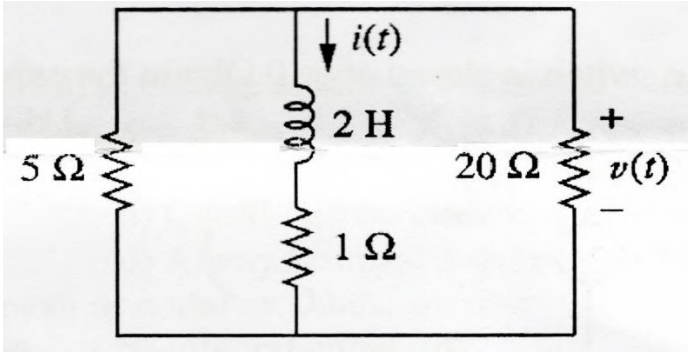


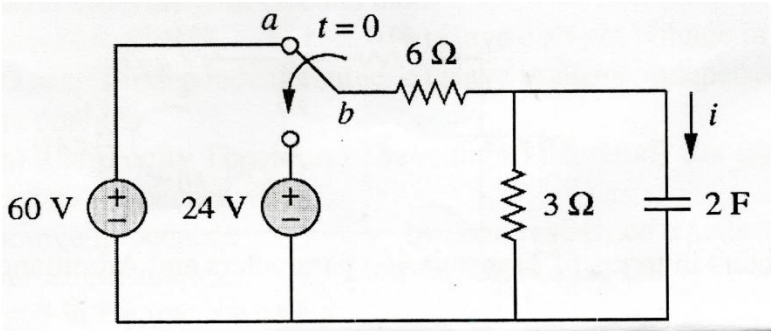
Section – II

Q.4 Solve Any Four. **16**

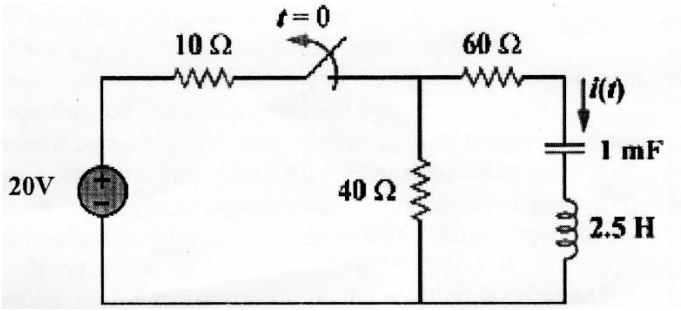
a) Find $i(t)$ and $v(t)$ for $t > 0$ in the circuit of Fig. if $i(0) = 10\ A$



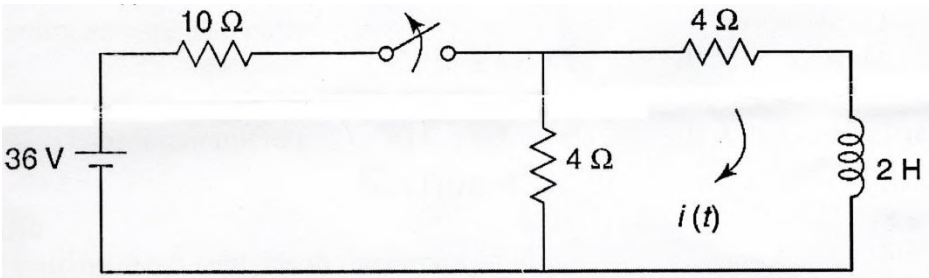
b) The switch in Fig. has been in position 'a' for a long time. At $t = 0$, it moves to position 'b'. Calculate $i(t)$ for all $t > 0$



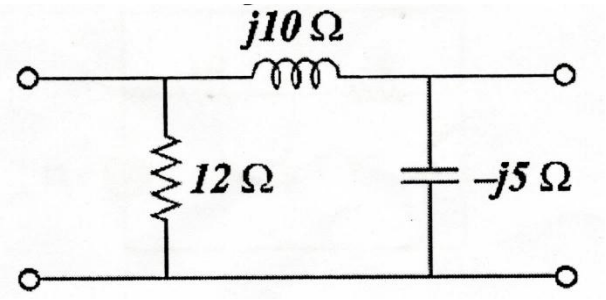
c) Find $i(t)$ for $t > 0$ in the circuit of Fig. using Laplace transform.



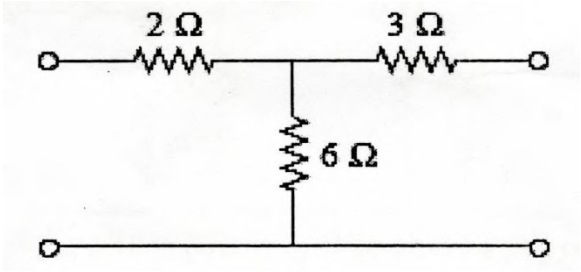
d) The network shown in Fig. has acquired steady-state with the switch closed for $t < 0$. At $t = 0$, the switch is opened. Obtain $i(t)$ for $t > 0$.



e) Calculate the Z parameters for the circuit in Fig.

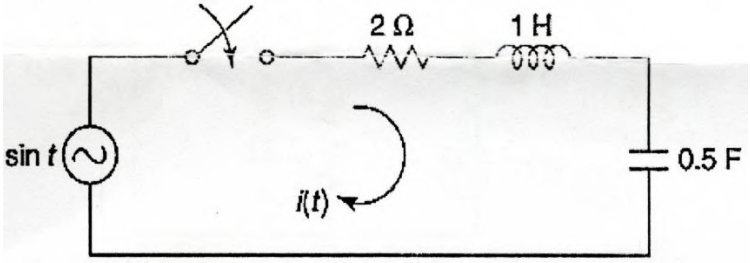


f) Find the hybrid parameters for the two-port network of Fig.

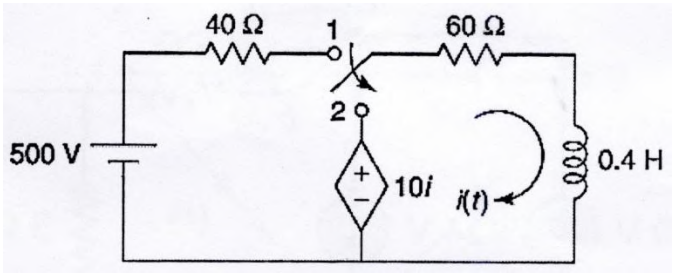


Q.5 Solve Any Two. **12**

a) In the network of Fig., the switch is closed at $t = 0$ Obtain the expression for current $i(t)$ for $t > 0$.



b) For the network shown in Fig., find the current $i(t)$ when the switch is changed from the position 1 to 2 at $t = 0$.



c) Derive Z parameters in terms of Transmission parameters and Admittance parameters.

SLR-QH-162

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Machines - II (BTN07402)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct Answer. **14**

1) In squirrel-cage induction motors the rotor slots are slightly skewed to _____.
a) increase the mechanical strength of rotor bars
b) reduce the cost of construction
c) reduce the magnetic hum and locking tendency of rotor
d) provide balancing

2) The torque developed by an induction motor is _____.
a) directly proportional to the square of the rotor resistance
b) directly proportional to the square of the rotor reactance
c) directly proportional to the square of the supply voltage
d) directly proportional to the square of the slip

3) If the rotor resistance is increased in a slip-ring induction motor, then _____.
a) both starting torque and pf will increase
b) both starting torque and pf will decrease
c) starting torque decreases but pf increases
d) starting torque increases but pf decreases

4) In V/f speed control technique _____.
a) power developed is kept constant
b) air gap flux is kept constant
c) torque developed is kept constant
d) rotor speed is kept constant

5) The power input in blocked-rotor test performed on a 3-phase induction motor is approximately equal to _____.
a) iron loss in the core
b) hysteresis loss in the core
c) eddy current loss in the core
d) copper loss in the windings

6) The magnitude of rotating flux _____ at all instants of time.
a) changes
b) remains constant
c) pulsates
d) Any of the mentioned

7) Under locked rotor condition, the rotor circuit frequency of a 3-phase induction motor connected to a 50 Hz supply will be _____.
a) 3 Hz
b) 30 Hz
c) 50 Hz
d) 60 Hz

8) The direction of rotation of a split-phase induction motor can be reversed by _____.
a) reversing the connections of the supply terminals
b) reversing the connections of the main winding only
c) reversing the connections of the starting winding only
d) either (b) or (c)

9) For a three-phase, 4-pole alternator the winding is placed in 96 slots. The No. of slots/pole/phase will be _____.
a) 2
b) 4
c) 8
d) 16

10) Short circuit test on an I.M. cannot be used to determine _____.
a) Windage losses
b) Cu losses
c) Transformation ratio
d) Power scale of circle diagram

11) Alternators are usually designed to generate _____.
a) Definite currents
b) Definite power factor
c) Variable frequencies
d) Definite frequencies

12) In an alternator, the armature reaction will be completely magnetizing in case the load power factor is _____.
a) Zero lagging
b) Zero leading
c) 0.866
d) Unity

13) The field winding of a three phase synchronous machine is excited by _____.
a) Single-phase ac supply
b) Three- phase ac supply
c) DC supply
d) Supply obtained from an inverter

14) Maximum power developed in a synchronous motor occurs at a coupling angle of _____.

a) 0°
b) 60°
c) 90°
d) 120°

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Machines - II (BTN07402)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Explain working operation 3-Phase induction motor.

b) Explain, with the help of sketches, the construction of a 3-phase phase-wound induction motor.

c) Explain with the help of suitable diagram, how rotating magnetic field is developed in a 3-phase winding when 3-phase AC supply is given to it.

d) Derive the condition for maximum torque of 3-phase Induction Motor.

e) Explain the working operation of Direct-On-Line starter with diagram.

f) Explain slip power recovery scheme of speed control of three-phase slip-ring induction motors.

Q.3 Attempt of the following. **12**

a) A 50 H.P., 3-f, 6-pole induction motor delivers full load output at 960 rpm at 0.8 p.f. when supplied with 400V, 50Hz supply. Losses due to windage and friction come out to be 2 H.P. and stator losses are 2 kW. Find out:
i) total rotor Cu loss;
ii) Efficiency and
iii) line current.

b) The following readings were obtained when no-load and blocked rotor tests were performed on a 3-phase, 400 V, 14.9 kW induction motor:
No-load test: 400 V, 1250 W, 9 A
Blocked rotor test: 150 V, 4000 W, 38 A
Find full-load current and power factor of the motor using circle diagram.

OR

b) Explain torque-slip characteristics of 3 phase Induction Motor. Also explain the effect of change in rotor resistance on torque-slip characteristics of 3 phase Induction Motor.

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) With a neat circuit diagram and vector diagram explain capacitor start Capacitor run single phase IM.

b) Derive the EMF equation of the alternator with short pitch coil and distributed windings.

c) Explain why the 1-ph induction motor is not self-starting. How to make it self-start?

d) Explain the MMF method of calculating the voltage regulation of an alternator when the power factor is lagging.

e) Explain the Hunting phenomenon of a synchronous motor. State its causes and remedies.

f) Explain the constructional features of an alternator.

Q.5 Attempt Any Two of the following. **12**

a) What is armature reaction? Explain the effect of armature reaction on the terminal voltage of an alternator at various power factors

b) Explain in detail the double-field revolving and cross-field revolving theory related to single-phase induction motors.

c) Explain the V and inverted V curves of a synchronous motor.

SLR-QH-162

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Machines - II (BTN07402)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct Answer. 14

1) The direction of rotation of a split-phase induction motor can be reversed by _____.
a) reversing the connections of the supply terminals
b) reversing the connections of the main winding only
c) reversing the connections of the starting winding only
d) either (b) or (c)

2) For a three-phase, 4-pole alternator the winding is placed in 96 slots. The No. of slots/pole/phase will be _____.
a) 2 b) 4
c) 8 d) 16

3) Short circuit test on an I.M. cannot be used to determine _____.
a) Windage losses
b) Cu losses
c) Transformation ratio
d) Power scale of circle diagram

4) Alternators are usually designed to generate _____.
a) Definite currents b) Definite power factor
c) Variable frequencies d) Definite frequencies

5) In an alternator, the armature reaction will be completely magnetizing in case the load power factor is _____.
a) Zero lagging b) Zero leading
c) 0.866 d) Unity

6) The field winding of a three phase synchronous machine is excited by _____.
   a) Single-phase ac supply
   b) Three- phase ac supply
   c) DC supply
   d) Supply obtained from an inverter

7) Maximum power developed in a synchronous motor occurs at a coupling angle of _____.
   a) 0° b) 60°
   c) 90° d) 120°

8) In squirrel-cage induction motors the rotor slots are slightly skewed to _____.
   a) increase the mechanical strength of rotor bars
   b) reduce the cost of construction
   c) reduce the magnetic hum and locking tendency of rotor
   d) provide balancing

9) The torque developed by an induction motor is _____.
   a) directly proportional to the square of the rotor resistance
   b) directly proportional to the square of the rotor reactance
   c) directly proportional to the square of the supply voltage
   d) directly proportional to the square of the slip

10) If the rotor resistance is increased in a slip-ring induction motor, then _____.
   a) both starting torque and pf will increase
   b) both starting torque and pf will decrease
   c) starting torque decreases but pf increases
   d) starting torque increases but pf decreases

11) In V/f speed control technique _____.
   a) power developed is kept constant
   b) air gap flux is kept constant
   c) torque developed is kept constant
   d) rotor speed is kept constant

12) The power input in blocked-rotor test performed on a 3-phase induction motor is approximately equal to _____.
   a) iron loss in the core b) hysteresis loss in the core
   c) eddy current loss in the core d) copper loss in the windings

13) The magnitude of rotating flux _____ at all instants of time.
   a) changes b) remains constant
   c) pulsates d) Any of the mentioned

14) Under locked rotor condition, the rotor circuit frequency of a 3-phase induction motor connected to a 50 Hz supply will be _____.

a) 3 Hz
b) 30 Hz
c) 50 Hz
d) 60 Hz

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Machines - II (BTN07402)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Explain working operation 3-Phase induction motor.

b) Explain, with the help of sketches, the construction of a 3-phase phase-wound induction motor.

c) Explain with the help of suitable diagram, how rotating magnetic field is developed in a 3-phase winding when 3-phase AC supply is given to it.

d) Derive the condition for maximum torque of 3-phase Induction Motor.

e) Explain the working operation of Direct-On-Line starter with diagram.

f) Explain slip power recovery scheme of speed control of three-phase slip-ring induction motors.

Q.3 Attempt of the following. **12**

a) A 50 H.P., 3-f, 6-pole induction motor delivers full load output at 960 rpm at 0.8 p.f. when supplied with 400V, 50Hz supply. Losses due to windage and friction come out to be 2 H.P. and stator losses are 2 kW. Find out:
i) total rotor Cu loss;
ii) Efficiency and
iii) line current.

b) The following readings were obtained when no-load and blocked rotor tests were performed on a 3-phase, 400 V, 14.9 kW induction motor:
No-load test: 400 V, 1250 W, 9 A
Blocked rotor test: 150 V, 4000 W, 38 A
Find full-load current and power factor of the motor using circle diagram.

OR

b) Explain torque-slip characteristics of 3 phase Induction Motor. Also explain the effect of change in rotor resistance on torque-slip characteristics of 3 phase Induction Motor.

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) With a neat circuit diagram and vector diagram explain capacitor start Capacitor run single phase IM.

b) Derive the EMF equation of the alternator with short pitch coil and distributed windings.

c) Explain why the 1-ph induction motor is not self-starting. How to make it self-start?

d) Explain the MMF method of calculating the voltage regulation of an alternator when the power factor is lagging.

e) Explain the Hunting phenomenon of a synchronous motor. State its causes and remedies.

f) Explain the constructional features of an alternator.

Q.5 Attempt Any Two of the following. **12**

a) What is armature reaction? Explain the effect of armature reaction on the terminal voltage of an alternator at various power factors

b) Explain in detail the double-field revolving and cross-field revolving theory related to single-phase induction motors.

c) Explain the V and inverted V curves of a synchronous motor.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Machines - II (BTN07402)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct Answer. **14**

1) Alternators are usually designed to generate _____.
a) Definite currents b) Definite power factor
c) Variable frequencies d) Definite frequencies

2) In an alternator, the armature reaction will be completely magnetizing in case the load power factor is _____.
a) Zero lagging b) Zero leading
c) 0.866 d) Unity

3) The field winding of a three phase synchronous machine is excited by _____.
a) Single-phase ac supply
b) Three- phase ac supply
c) DC supply
d) Supply obtained from an inverter

4) Maximum power developed in a synchronous motor occurs at a coupling angle of _____.
a) 0° b) 60°
c) 90° d) 120°

5) In squirrel-cage induction motors the rotor slots are slightly skewed to _____.
a) increase the mechanical strength of rotor bars
b) reduce the cost of construction
c) reduce the magnetic hum and locking tendency of rotor
d) provide balancing

6) The torque developed by an induction motor is _____.
   a) directly proportional to the square of the rotor resistance
   b) directly proportional to the square of the rotor reactance
   c) directly proportional to the square of the supply voltage
   d) directly proportional to the square of the slip

7) If the rotor resistance is increased in a slip-ring induction motor, then _____.
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   c) starting torque decreases but pf increases
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8) In V/f speed control technique _____.
   a) power developed is kept constant
   b) air gap flux is kept constant
   c) torque developed is kept constant
   d) rotor speed is kept constant

9) The power input in blocked-rotor test performed on a 3-phase induction motor is approximately equal to _____.
   a) iron loss in the core
   b) hysteresis loss in the core
   c) eddy current loss in the core
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10) The magnitude of rotating flux _____ at all instants of time.
   a) changes
   b) remains constant
   c) pulsates
   d) Any of the mentioned

11) Under locked rotor condition, the rotor circuit frequency of a 3-phase induction motor connected to a 50 Hz supply will be _____.
   a) 3 Hz
   b) 30 Hz
   c) 50 Hz
   d) 60 Hz

12) The direction of rotation of a split-phase induction motor can be reversed by _____.
   a) reversing the connections of the supply terminals
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   c) reversing the connections of the starting winding only
   d) either (b) or (c)

13) For a three-phase, 4-pole alternator the winding is placed in 96 slots. The No. of slots/pole/phase will be _____.
   a) 2
   b) 4
   c) 8
   d) 16

14) Short circuit test on an I.M. cannot be used to determine _____.

a) Windage losses
b) Cu losses
c) Transformation ratio
d) Power scale of circle diagram

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Machines - II (BTN07402)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Explain working operation 3-Phase induction motor.

b) Explain, with the help of sketches, the construction of a 3-phase phase-wound induction motor.

c) Explain with the help of suitable diagram, how rotating magnetic field is developed in a 3-phase winding when 3-phase AC supply is given to it.

d) Derive the condition for maximum torque of 3-phase Induction Motor.

e) Explain the working operation of Direct-On-Line starter with diagram.

f) Explain slip power recovery scheme of speed control of three-phase slip-ring induction motors.

Q.3 Attempt of the following. **12**

a) A 50 H.P., 3-f, 6-pole induction motor delivers full load output at 960 rpm at 0.8 p.f. when supplied with 400V, 50Hz supply. Losses due to windage and friction come out to be 2 H.P. and stator losses are 2 kW. Find out:
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Find full-load current and power factor of the motor using circle diagram.

OR

b) Explain torque-slip characteristics of 3 phase Induction Motor. Also explain the effect of change in rotor resistance on torque-slip characteristics of 3 phase Induction Motor.

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) With a neat circuit diagram and vector diagram explain capacitor start Capacitor run single phase IM.

b) Derive the EMF equation of the alternator with short pitch coil and distributed windings.

c) Explain why the 1-ph induction motor is not self-starting. How to make it self-start?

d) Explain the MMF method of calculating the voltage regulation of an alternator when the power factor is lagging.

e) Explain the Hunting phenomenon of a synchronous motor. State its causes and remedies.

f) Explain the constructional features of an alternator.

Q.5 Attempt Any Two of the following. **12**

a) What is armature reaction? Explain the effect of armature reaction on the terminal voltage of an alternator at various power factors

b) Explain in detail the double-field revolving and cross-field revolving theory related to single-phase induction motors.

c) Explain the V and inverted V curves of a synchronous motor.

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Machines - II (BTN07402)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct Answer. **14**

1) The magnitude of rotating flux _____ at all instants of time.
a) changes b) remains constant
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2) Under locked rotor condition, the rotor circuit frequency of a 3-phase induction motor connected to a 50 Hz supply will be _____.
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3) The direction of rotation of a split-phase induction motor can be reversed by _____.
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   c) DC supply
   d) Supply obtained from an inverter

9) Maximum power developed in a synchronous motor occurs at a coupling angle of _____.
   a) 0°
   b) 60°
   c) 90°
   d) 120°

10) In squirrel-cage induction motors the rotor slots are slightly skewed to _____.
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   c) torque developed is kept constant
   d) rotor speed is kept constant

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b) hysteresis loss in the core
c) eddy current loss in the core
d) copper loss in the windings

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
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SECTION – I

Q.2 Attempt Any Four of the following. **16**

a) Explain working operation 3-Phase induction motor.

b) Explain, with the help of sketches, the construction of a 3-phase phase-wound induction motor.

c) Explain with the help of suitable diagram, how rotating magnetic field is developed in a 3-phase winding when 3-phase AC supply is given to it.

d) Derive the condition for maximum torque of 3-phase Induction Motor.

e) Explain the working operation of Direct-On-Line starter with diagram.

f) Explain slip power recovery scheme of speed control of three-phase slip-ring induction motors.

Q.3 Attempt of the following. **12**

a) A 50 H.P., 3-f, 6-pole induction motor delivers full load output at 960 rpm at 0.8 p.f. when supplied with 400V, 50Hz supply. Losses due to windage and friction come out to be 2 H.P. and stator losses are 2 kW. Find out:
i) total rotor Cu loss;
ii) Efficiency and
iii) line current.

b) The following readings were obtained when no-load and blocked rotor tests were performed on a 3-phase, 400 V, 14.9 kW induction motor:
No-load test: 400 V, 1250 W, 9 A
Blocked rotor test: 150 V, 4000 W, 38 A
Find full-load current and power factor of the motor using circle diagram.

OR

b) Explain torque-slip characteristics of 3 phase Induction Motor. Also explain the effect of change in rotor resistance on torque-slip characteristics of 3 phase Induction Motor.

SECTION – II

Q.4 Attempt Any Four of the following. **16**

a) With a neat circuit diagram and vector diagram explain capacitor start Capacitor run single phase IM.

b) Derive the EMF equation of the alternator with short pitch coil and distributed windings.

c) Explain why the 1-ph induction motor is not self-starting. How to make it self-start?

d) Explain the MMF method of calculating the voltage regulation of an alternator when the power factor is lagging.

e) Explain the Hunting phenomenon of a synchronous motor. State its causes and remedies.

f) Explain the constructional features of an alternator.

Q.5 Attempt Any Two of the following. **12**

a) What is armature reaction? Explain the effect of armature reaction on the terminal voltage of an alternator at various power factors

b) Explain in detail the double-field revolving and cross-field revolving theory related to single-phase induction motors.

c) Explain the V and inverted V curves of a synchronous motor.

SLR-QH-163

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
AC Machines (EEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The slip of an induction motor normally does not depend on _____.
a) rotor speed
b) synchronous speed
c) shaft torque
d) core-loss component

2) Maximum torque in an induction motor is proportional to _____.
a) The square of the rotor-induced EMF at standstill
b) The rotor reactance
c) The rotor resistance
d) All of the above

3) For a three-phase slip-ring induction motor, the starting torque is maximum when _____.
a) Rotor reactance = Rotor resistance
b) Rotor reactance = 0
c) Rotor resistance = 0
d) Rotor reactance > Rotor resistance

4) How does increasing the rotor resistance affect the torque-speed characteristics of an induction motor?
a) Shifts the maximum torque point to a lower slip region
b) Increases the maximum torque
c) Decreases the ratio of full load torque to maximum torque
d) Shifts the maximum torque point to a higher slip region

5) What is the primary reason for reduced rotor iron losses in an induction motor?
a) Very low frequency of induced emf in the rotor
b) Very low emf induced in the rotor
c) Very low flux density in rotor parts
d) Use of laminated core

6) The maximum torque of an induction motor can be determined from the circle diagram by _____.
   a) Drawing a vertical line from the origin
   b) Finding the point where the tangent from the origin is perpendicular to the torque line
   c) Using the highest point on the circle
   d) Finding the point where the curve reaches its highest power output

7) Changing the number of poles of a motor directly affects its _____.
   a) Slip
   b) Rotor resistance
   c) Synchronous speed
   d) Power factor

8) Single phase ac motors are classified on the basis of _____.
   a) Size
   b) Construction
   c) starting methods
   d) both construction and starting methods

9) When a single-phase induction motor is excited with single phase ac voltage, the magnetic field set up is equivalent to _____.
   a) two fields, rotating in opposite directions with different speeds
   b) two fields, rotating at synchronous speed in opposite directions
   c) two fields, rotating at synchronous speed
   d) two fields, rotating in the same direction but at different speeds

10) For a short-pitched synchronous machine, the winding factor (Kw) is _____.
   a) Greater than 1
   b) Equal to 1
   c) Less than 1
   d) Zero

11) If the flux per pole (Φ) in a synchronous generator is doubled, what happens to the induced EMF?
   a) It is halved
   b) It remains the same
   c) It doubles
   d) It quadruples

12) In the equivalent circuit of a synchronous motor, what does the back EMF (Eb) represent?
   a) The applied terminal voltage
   b) The voltage drops across the armature resistance
   c) The voltage drops across the synchronous reactance
   d) The generated EMF due to the rotor field

13) Synchronous motor delivers lagging power at _____.
   a) leading pf
   b) lagging pf
   c) zero pf
   d) unity pf

14) When the load on an alternator is varied, its terminal voltage also changes due to _____.

a) armature resistance
b) leakage reactance
c) armature reaction
d) all of the mentioned

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
AC Machines (EEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain with the help of suitable diagram, how rotating magnetic field is developed in a 3-phase winding when 3-phase AC supply is given to it.

b) A 746 KW, 3-phase, 50Hz, 16-pole induction motor has a rotor impedance of (0.02 + j 0.15) Ohm at standstill. Full load torque is obtained at 360 rpm. Calculate,
i) the ratio of maximum to full-load torque
ii) the speed of maximum torque

c) A 3 phase, 6 pole, 50 Hz induction motor has a slip of 1 % at no load and 3% at full load. Determine:
i) Synchronous speed and No load speed
ii) Full load speed
iii) Frequency of rotor current at stand still
iv) Frequency of rotor current at full load

d) Draw and explain power flow diagram in case of 3 phase induction motor.

e) Explain speed control of three-phase slip-ring induction motor by changing rotor resistance.

Q.3 Attempt the following. (Any Two) **12**

a) Draw and explain torque-slip characteristics of three phase induction motor. Derive the condition for maximum torque of three phase induction motor.

b) Explain the procedure to construct the circle diagram of induction motor. Also discuss hoe slip and rotor current can be calculated at full load condition using circle diagram.

c) The following readings were obtained when no-load and blocked rotor tests were performed on a 3-phase, 400 V, 14.9 kW induction motor:
No-load test: 400 V, 1250 W, 9 A
Blocked rotor test: 150 V, 4000 W, 38 A
Find full-load current and power factor of the motor using circle diagram.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain double revolving field theory of single phase shaded pole motor.

b) Name different methods of starting a synchronous motor, explain any one in detailed.

c) Explain the methods of synchronization of an alternator.

d) A 3-phase, 50Hz, star connected alternator runs at 600 rpm has 60 stator slots with 4 conductors per slot. Flux per pole is 0.06 Wb. Determine the phase and line e.m.f.

e) Explain the operation of synchronous motor with constant load and over excitation with phasor diagram.

Q.5 Attempt the following. (Any Two) **12**

a) Draw and explain how equivalent circuit of single-phase induction motor can be obtained.

b) Explain how voltage regulation can be computed by MMF method in alternator.

c) Explain the operation of synchronous motor with constant load and following type of excitation with phasor diagram.

i) Under excitation

ii) Over excitation

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
AC Machines (EEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Single phase ac motors are classified on the basis of _____.
a) Size
b) Construction
c) starting methods
d) both construction and starting methods

2) When a single-phase induction motor is excited with single phase ac voltage, the magnetic field set up is equivalent to _____.
a) two fields, rotating in opposite directions with different speeds
b) two fields, rotating at synchronous speed in opposite directions
c) two fields, rotating at synchronous speed
d) two fields, rotating in the same direction but at different speeds

3) For a short-pitched synchronous machine, the winding factor (Kw) is _____.
a) Greater than 1
b) Equal to 1
c) Less than 1
d) Zero

4) If the flux per pole (Φ) in a synchronous generator is doubled, what happens to the induced EMF?
a) It is halved
b) It remains the same
c) It doubles
d) It quadruples

5) In the equivalent circuit of a synchronous motor, what does the back EMF (Eb) represent?
a) The applied terminal voltage
b) The voltage drops across the armature resistance
c) The voltage drops across the synchronous reactance
d) The generated EMF due to the rotor field

6) Synchronous motor delivers lagging power at _____.
   a) leading pf
   b) lagging pf
   c) zero pf
   d) unity pf

7) When the load on an alternator is varied, its terminal voltage also changes due to _____.
   a) armature resistance
   b) leakage reactance
   c) armature reaction
   d) all of the mentioned

8) The slip of an induction motor normally does not depend on _____.
   a) rotor speed
   b) synchronous speed
   c) shaft torque
   d) core-loss component

9) Maximum torque in an induction motor is proportional to _____.
   a) The square of the rotor-induced EMF at standstill
   b) The rotor reactance
   c) The rotor resistance
   d) All of the above

10) For a three-phase slip-ring induction motor, the starting torque is maximum when _____.
   a) Rotor reactance = Rotor resistance
   b) Rotor reactance = 0
   c) Rotor resistance = 0
   d) Rotor reactance > Rotor resistance

11) How does increasing the rotor resistance affect the torque-speed characteristics of an induction motor?
   a) Shifts the maximum torque point to a lower slip region
   b) Increases the maximum torque
   c) Decreases the ratio of full load torque to maximum torque
   d) Shifts the maximum torque point to a higher slip region

12) What is the primary reason for reduced rotor iron losses in an induction motor?
   a) Very low frequency of induced emf in the rotor
   b) Very low emf induced in the rotor
   c) Very low flux density in rotor parts
   d) Use of laminated core

13) The maximum torque of an induction motor can be determined from the circle diagram by _____.
   a) Drawing a vertical line from the origin
   b) Finding the point where the tangent from the origin is perpendicular to the torque line
   c) Using the highest point on the circle
   d) Finding the point where the curve reaches its highest power output

14) Changing the number of poles of a motor directly affects its _____.

a) Slip
b) Rotor resistance
c) Synchronous speed
d) Power factor

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
AC Machines (EEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain with the help of suitable diagram, how rotating magnetic field is developed in a 3-phase winding when 3-phase AC supply is given to it.

b) A 746 KW, 3-phase, 50Hz, 16-pole induction motor has a rotor impedance of (0.02 + j 0.15) Ohm at standstill. Full load torque is obtained at 360 rpm. Calculate,
i) the ratio of maximum to full-load torque
ii) the speed of maximum torque

c) A 3 phase, 6 pole, 50 Hz induction motor has a slip of 1 % at no load and 3% at full load. Determine:
i) Synchronous speed and No load speed
ii) Full load speed
iii) Frequency of rotor current at stand still
iv) Frequency of rotor current at full load

d) Draw and explain power flow diagram in case of 3 phase induction motor.

e) Explain speed control of three-phase slip-ring induction motor by changing rotor resistance.

Q.3 Attempt the following. (Any Two) **12**

a) Draw and explain torque-slip characteristics of three phase induction motor. Derive the condition for maximum torque of three phase induction motor.

b) Explain the procedure to construct the circle diagram of induction motor. Also discuss hoe slip and rotor current can be calculated at full load condition using circle diagram.

c) The following readings were obtained when no-load and blocked rotor tests were performed on a 3-phase, 400 V, 14.9 kW induction motor:
No-load test: 400 V, 1250 W, 9 A
Blocked rotor test: 150 V, 4000 W, 38 A
Find full-load current and power factor of the motor using circle diagram.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain double revolving field theory of single phase shaded pole motor.

b) Name different methods of starting a synchronous motor, explain any one in detailed.

c) Explain the methods of synchronization of an alternator.

d) A 3-phase, 50Hz, star connected alternator runs at 600 rpm has 60 stator slots with 4 conductors per slot. Flux per pole is 0.06 Wb. Determine the phase and line e.m.f.

e) Explain the operation of synchronous motor with constant load and over excitation with phasor diagram.

Q.5 Attempt the following. (Any Two) **12**

a) Draw and explain how equivalent circuit of single-phase induction motor can be obtained.

b) Explain how voltage regulation can be computed by MMF method in alternator.

c) Explain the operation of synchronous motor with constant load and following type of excitation with phasor diagram.

i) Under excitation

ii) Over excitation

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
AC Machines (EEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) If the flux per pole (Φ) in a synchronous generator is doubled, what happens to the induced EMF?
a) It is halved b) It remains the same
c) It doubles d) It quadruples

2) In the equivalent circuit of a synchronous motor, what does the back EMF (Eb) represent?
a) The applied terminal voltage
b) The voltage drops across the armature resistance
c) The voltage drops across the synchronous reactance
d) The generated EMF due to the rotor field

3) Synchronous motor delivers lagging power at _____.
a) leading pf b) lagging pf
c) zero pf d) unity pf

4) When the load on an alternator is varied, its terminal voltage also changes due to _____.
a) armature resistance b) leakage reactance
c) armature reaction d) all of the mentioned

5) The slip of an induction motor normally does not depend on _____.
a) rotor speed b) synchronous speed
c) shaft torque d) core-loss component

6) Maximum torque in an induction motor is proportional to _____.
a) The square of the rotor-induced EMF at standstill
b) The rotor reactance
c) The rotor resistance
d) All of the above

7) For a three-phase slip-ring induction motor, the starting torque is maximum when _____.
   a) Rotor reactance = Rotor resistance
   b) Rotor reactance = 0
   c) Rotor resistance = 0
   d) Rotor reactance > Rotor resistance

8) How does increasing the rotor resistance affect the torque-speed characteristics of an induction motor?
   a) Shifts the maximum torque point to a lower slip region
   b) Increases the maximum torque
   c) Decreases the ratio of full load torque to maximum torque
   d) Shifts the maximum torque point to a higher slip region

9) What is the primary reason for reduced rotor iron losses in an induction motor?
   a) Very low frequency of induced emf in the rotor
   b) Very low emf induced in the rotor
   c) Very low flux density in rotor parts
   d) Use of laminated core

10) The maximum torque of an induction motor can be determined from the circle diagram by _____.
   a) Drawing a vertical line from the origin
   b) Finding the point where the tangent from the origin is perpendicular to the torque line
   c) Using the highest point on the circle
   d) Finding the point where the curve reaches its highest power output

11) Changing the number of poles of a motor directly affects its _____.
   a) Slip
   b) Rotor resistance
   c) Synchronous speed
   d) Power factor

12) Single phase ac motors are classified on the basis of _____.
   a) Size
   b) Construction
   c) starting methods
   d) both construction and starting methods

13) When a single-phase induction motor is excited with single phase ac voltage, the magnetic field set up is equivalent to _____.
   a) two fields, rotating in opposite directions with different speeds
   b) two fields, rotating at synchronous speed in opposite directions
   c) two fields, rotating at synchronous speed
   d) two fields, rotating in the same direction but at different speeds

14) For a short-pitched synchronous machine, the winding factor (Kw) is _____.

a) Greater than 1
b) Equal to 1
c) Less than 1
d) Zero

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
AC Machines (EEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain with the help of suitable diagram, how rotating magnetic field is developed in a 3-phase winding when 3-phase AC supply is given to it.

b) A 746 KW, 3-phase, 50Hz, 16-pole induction motor has a rotor impedance of (0.02 + j 0.15) Ohm at standstill. Full load torque is obtained at 360 rpm. Calculate,
i) the ratio of maximum to full-load torque
ii) the speed of maximum torque

c) A 3 phase, 6 pole, 50 Hz induction motor has a slip of 1 % at no load and 3% at full load. Determine:
i) Synchronous speed and No load speed
ii) Full load speed
iii) Frequency of rotor current at stand still
iv) Frequency of rotor current at full load

d) Draw and explain power flow diagram in case of 3 phase induction motor.

e) Explain speed control of three-phase slip-ring induction motor by changing rotor resistance.

Q.3 Attempt the following. (Any Two) **12**

a) Draw and explain torque-slip characteristics of three phase induction motor. Derive the condition for maximum torque of three phase induction motor.

b) Explain the procedure to construct the circle diagram of induction motor. Also discuss hoe slip and rotor current can be calculated at full load condition using circle diagram.

c) The following readings were obtained when no-load and blocked rotor tests were performed on a 3-phase, 400 V, 14.9 kW induction motor:
No-load test: 400 V, 1250 W, 9 A
Blocked rotor test: 150 V, 4000 W, 38 A
Find full-load current and power factor of the motor using circle diagram.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain double revolving field theory of single phase shaded pole motor.

b) Name different methods of starting a synchronous motor, explain any one in detailed.

c) Explain the methods of synchronization of an alternator.

d) A 3-phase, 50Hz, star connected alternator runs at 600 rpm has 60 stator slots with 4 conductors per slot. Flux per pole is 0.06 Wb. Determine the phase and line e.m.f.

e) Explain the operation of synchronous motor with constant load and over excitation with phasor diagram.

Q.5 Attempt the following. (Any Two) **12**

a) Draw and explain how equivalent circuit of single-phase induction motor can be obtained.

b) Explain how voltage regulation can be computed by MMF method in alternator.

c) Explain the operation of synchronous motor with constant load and following type of excitation with phasor diagram.

i) Under excitation

ii) Over excitation

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
AC Machines (EEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The maximum torque of an induction motor can be determined from the circle diagram by _____.
a) Drawing a vertical line from the origin
b) Finding the point where the tangent from the origin is perpendicular to the torque line
c) Using the highest point on the circle
d) Finding the point where the curve reaches its highest power output

2) Changing the number of poles of a motor directly affects its _____.
a) Slip b) Rotor resistance
c) Synchronous speed d) Power factor

3) Single phase ac motors are classified on the basis of _____.
a) Size
b) Construction
c) starting methods
d) both construction and starting methods

4) When a single-phase induction motor is excited with single phase ac voltage, the magnetic field set up is equivalent to _____.
a) two fields, rotating in opposite directions with different speeds
b) two fields, rotating at synchronous speed in opposite directions
c) two fields, rotating at synchronous speed
d) two fields, rotating in the same direction but at different speeds

5) For a short-pitched synchronous machine, the winding factor (Kw) is _____.
a) Greater than 1 b) Equal to 1
c) Less than 1 d) Zero

6) If the flux per pole (Φ) in a synchronous generator is doubled, what happens to the induced EMF?
a) It is halved
b) It remains the same
c) It doubles
d) It quadruples

7) In the equivalent circuit of a synchronous motor, what does the back EMF (Eb) represent?
a) The applied terminal voltage
b) The voltage drops across the armature resistance
c) The voltage drops across the synchronous reactance
d) The generated EMF due to the rotor field

8) Synchronous motor delivers lagging power at _____.
a) leading pf
b) lagging pf
c) zero pf
d) unity pf

9) When the load on an alternator is varied, its terminal voltage also changes due to _____.
a) armature resistance
b) leakage reactance
c) armature reaction
d) all of the mentioned

10) The slip of an induction motor normally does not depend on _____.
a) rotor speed
b) synchronous speed
c) shaft torque
d) core-loss component

11) Maximum torque in an induction motor is proportional to _____.
a) The square of the rotor-induced EMF at standstill
b) The rotor reactance
c) The rotor resistance
d) All of the above

12) For a three-phase slip-ring induction motor, the starting torque is maximum when _____.
a) Rotor reactance $=$ Rotor resistance
b) Rotor reactance $= 0$
c) Rotor resistance $= 0$
d) Rotor reactance $>$ Rotor resistance

13) How does increasing the rotor resistance affect the torque-speed characteristics of an induction motor?
a) Shifts the maximum torque point to a lower slip region
b) Increases the maximum torque
c) Decreases the ratio of full load torque to maximum torque
d) Shifts the maximum torque point to a higher slip region

14) What is the primary reason for reduced rotor iron losses in an induction motor?

a) Very low frequency of induced emf in the rotor
b) Very low emf induced in the rotor
c) Very low flux density in rotor parts
d) Use of laminated core

SLR-QH-163

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
AC Machines (EEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain with the help of suitable diagram, how rotating magnetic field is developed in a 3-phase winding when 3-phase AC supply is given to it.

b) A 746 KW, 3-phase, 50Hz, 16-pole induction motor has a rotor impedance of (0.02 + j 0.15) Ohm at standstill. Full load torque is obtained at 360 rpm. Calculate,
i) the ratio of maximum to full-load torque
ii) the speed of maximum torque

c) A 3 phase, 6 pole, 50 Hz induction motor has a slip of 1 % at no load and 3% at full load. Determine:
i) Synchronous speed and No load speed
ii) Full load speed
iii) Frequency of rotor current at stand still
iv) Frequency of rotor current at full load

d) Draw and explain power flow diagram in case of 3 phase induction motor.

e) Explain speed control of three-phase slip-ring induction motor by changing rotor resistance.

Q.3 Attempt the following. (Any Two) **12**

a) Draw and explain torque-slip characteristics of three phase induction motor. Derive the condition for maximum torque of three phase induction motor.

b) Explain the procedure to construct the circle diagram of induction motor. Also discuss hoe slip and rotor current can be calculated at full load condition using circle diagram.

c) The following readings were obtained when no-load and blocked rotor tests were performed on a 3-phase, 400 V, 14.9 kW induction motor:
No-load test: 400 V, 1250 W, 9 A
Blocked rotor test: 150 V, 4000 W, 38 A
Find full-load current and power factor of the motor using circle diagram.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain double revolving field theory of single phase shaded pole motor.

b) Name different methods of starting a synchronous motor, explain any one in detailed.

c) Explain the methods of synchronization of an alternator.

d) A 3-phase, 50Hz, star connected alternator runs at 600 rpm has 60 stator slots with 4 conductors per slot. Flux per pole is 0.06 Wb. Determine the phase and line e.m.f.

e) Explain the operation of synchronous motor with constant load and over excitation with phasor diagram.

Q.5 Attempt the following. (Any Two) **12**

a) Draw and explain how equivalent circuit of single-phase induction motor can be obtained.

b) Explain how voltage regulation can be computed by MMF method in alternator.

c) Explain the operation of synchronous motor with constant load and following type of excitation with phasor diagram.

i) Under excitation

ii) Over excitation

SLR-QH-164

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Power System – II (BTN07403)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options and rewrite the sentence. **14**

1) In triangular configuration, inductance and capacitance values are _____ and _____ respectively.
a) less, less
b) higher, higher
c) less, higher
d) higher, less

2) What is the purpose of bedding on the underground cables?
a) To avoid leakage of current
b) To protect the sheath against corrosion
c) To protect the sheath from mechanical injury due to armoring
d) Both b) and c)

3) The cable best suited for the transmission of voltages from 33 kV to 66 kV is _____.
a) Belted cables
b) Screened cables
c) Pressure cables
d) None of these

4) What does capacitance grade of cables mean?
a) Use of dielectrics in different concentrations
b) Introduction of capacitance at various lengths of cable to the effect of inductance
c) Use of dielectrics of different permittivity's
d) Grading according to capacitance per km length of the cable

5) In long transmission lines Resistance and Capacitance parameters of lines are connected in _____.
a) Series, shunt
b) Series, series
c) Shunt, shunt
d) Shunt, parallel

6) In nominal$-\pi$ method of solution of medium transmission line, capacitance is assumed to be _____.
   a) Distributed uniformly from sending end to receiving end
   b) Divided into two halves
   c) Lumped at the generation end
   d) Lumped at middle of generation and load end

7) Which of the following distribution system is more reliable?
   a) Radial system
   b) Tree system
   c) Ring main system
   d) All are equally reliable

8) The sag of a transmission line depends upon _____.
   a) Weight of conductor and directly proportional to span length
   b) Weight of conductor and inversely proportional to span length
   c) Weight of conductor and directly proportional to the square of span length
   d) Weight of conductor and inversely proportional to the square of span length

9) The maximum tension in a section of overhead line conductor between two supports of unequal height occurs at _____.
   a) The higher support
   b) The lower point
   c) The midpoint of the conductor
   d) None of the above

10) Corona is accompanied by _____.
   a) violet visible light
   b) hissing sound
   c) power loss and interference
   d) all of the above

11) Transmission line constants are _____.
   a) Capacitance
   b) Inductance
   c) Resistance
   d) All of these

12) The inductance of line is minimum when _____.
   a) G M D is high
   b) G M R is high
   c) Both G M D and G M R are high
   d) G M D is low but G M R is high

13) When two conductors between each of radius ‘r’ are at a distance D, the capacitance between the two is Proportional to _____.
   a) Loge (D/r)
   b) loge (r/ D)
   c) 1/loge (D/r)
   d) 1/ loge(r/D)

14) Find the inductance per km of a 3- phase transmission line using 1.24 cm diameter conductors when these are placed at the corners of an equilateral triangle of each side 2 m _____.
   a) 3.2 mH/Km
   b) 2.1 mH/Km
   c) 1.205 mH/Km
   d) 2.3 mH/Km

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Power System – II (BTN07403)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Define corona discharge; enlist the methods of reducing the corona effect.

b) Calculate the loop inductance per km of a single-phase overhead line consisting of two conductors each 1 cm diameter and 1.2 m apart.

c) What is meant by sag? Derive an expression for sag in a transmission line having equal level of supports.

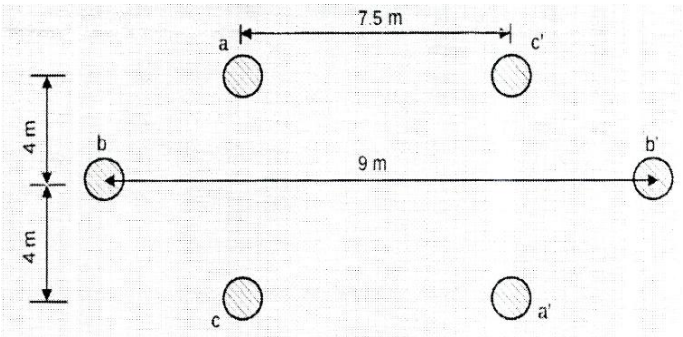
d) Explain the following methods of cable grading:
i) Capacitance grading
ii) Inters heath grading

e) Find the line to line capacitance per km of a three phase transmission line using 1.24 cm diameter conductor when these are placed at the corners of an equilateral triangle of each side 2m.

Q.3 Attempt the following. (Any Two) **12**

a) Derive the expression for inductance of 3-ph single circuit overhead triangular configuration of transmission line for symmetrical spacing.

b) The double circuit three-phase line has the configuration shown in figure the distance between conductor a and c' is 7.5 between b and b' is 9 m and between a and c is 8 m. Find inductance per kilometer per phase. The radius of each conductor is 1.25 cm



c) Derive the expression for Insulation resistance of a cable.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Describe with diagram
   i) Radial system
   ii) Ring main system

b) Derive an expression for voltage regulation and efficiency of short transmission line.

c) Explain in detail effect of Power Factor on Voltage regulation, Losses, efficiency in case of transmission line.

d) Define and explain terms: feeders, distributor and service mains with neat schematic diagram.

e) Explain various types equipment in substation with neat symbol.

Q.5 Attempt the following. (Any Two) **12**

a) What is mean by Neutral grounding and explain with neat circuit diagram various methods of Neutral grounding.
   i) Resistance grounding
   ii) Reactance grounding
   iii) Solid grounding

b) With neat diagram derive the expression for A, B, C, D constants of medium transmission line using nominal T method.

c) A single-phase overhead transmission line delivers 1100 kW at 33KV at 0.8p. f lagging. The total resistance and inductive reactance of the line are 10 Ω and 15 Ω respectively.
Determine:
   i) Sending end voltage
   ii) Sending end power factor
   iii) Transmission Efficiency

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Power System – II (BTN07403)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options and rewrite the sentence. **14**

1) The sag of a transmission line depends upon _____.
a) Weight of conductor and directly proportional to span length
b) Weight of conductor and inversely proportional to span length
c) Weight of conductor and directly proportional to the square of span length
d) Weight of conductor and inversely proportional to the square of span length

2) The maximum tension in a section of overhead line conductor between two supports of unequal height occurs at _____.
a) The higher support b) The lower point
c) The midpoint of the conductor d) None of the above

3) Corona is accompanied by _____.
a) violet visible light b) hissing sound
c) power loss and interference d) all of the above

4) Transmission line constants are _____.
a) Capacitance b) Inductance
c) Resistance d) All of these

5) The inductance of line is minimum when _____.
a) G M D is high
b) G M R is high
c) Both G M D and G M R are high
d) G M D is low but G M R is high

6) When two conductors between each of radius 'r' are at a distance D, the capacitance between the two is Proportional to _____.

a) Loge (D/r) b) loge (r/ D)
c) 1/loge (D/r) d) 1/ loge(r/D)

7) Find the inductance per km of a 3- phase transmission line using 1.24 cm diameter conductors when these are placed at the corners of an equilateral triangle of each side 2 m _____.

a) 3.2 mH/Km b) 2.1 mH/Km
c) 1.205 mH/Km d) 2.3 mH/Km

8) In triangular configuration, inductance and capacitance values are _____ and _____ respectively.

a) less, less b) higher, higher
c) less, higher d) higher, less

9) What is the purpose of bedding on the underground cables?

a) To avoid leakage of current
b) To protect the sheath against corrosion
c) To protect the sheath from mechanical injury due to armoring
d) Both b) and c)

10) The cable best suited for the transmission of voltages from 33 kV to 66 kV is _____.

a) Belted cables b) Screened cables
c) Pressure cables d) None of these

11) What does capacitance grade of cables mean?

a) Use of dielectrics in different concentrations
b) Introduction of capacitance at various lengths of cable to the effect of inductance
c) Use of dielectrics of different permittivity's
d) Grading according to capacitance per km length of the cable

12) In long transmission lines Resistance and Capacitance parameters of lines are connected in _____.

a) Series, shunt b) Series, series
c) Shunt, shunt d) Shunt, parallel

13) In nominal$-\pi$ method of solution of medium transmission line, capacitance is assumed to be _____.

a) Distributed uniformly from sending end to receiving end
b) Divided into two halves
c) Lumped at the generation end
d) Lumped at middle of generation and load end

14) Which of the following distribution system is more reliable?

a) Radial system b) Tree system
c) Ring main system d) All are equally reliable

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Power System – II (BTN07403)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Define corona discharge; enlist the methods of reducing the corona effect.

b) Calculate the loop inductance per km of a single-phase overhead line consisting of two conductors each 1 cm diameter and 1.2 m apart.

c) What is meant by sag? Derive an expression for sag in a transmission line having equal level of supports.

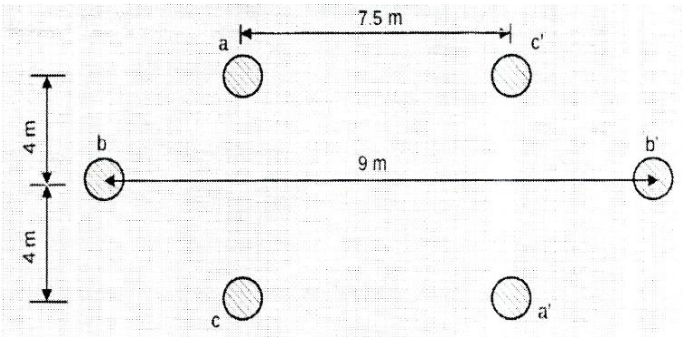
d) Explain the following methods of cable grading:
i) Capacitance grading
ii) Inters heath grading

e) Find the line to line capacitance per km of a three phase transmission line using 1.24 cm diameter conductor when these are placed at the corners of an equilateral triangle of each side 2m.

Q.3 Attempt the following. (Any Two) **12**

a) Derive the expression for inductance of 3-ph single circuit overhead triangular configuration of transmission line for symmetrical spacing.

b) The double circuit three-phase line has the configuration shown in figure the distance between conductor a and c' is 7.5 between b and b' is 9 m and between a and c is 8 m. Find inductance per kilometer per phase. The radius of each conductor is 1.25 cm



c) Derive the expression for Insulation resistance of a cable.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Describe with diagram
   i) Radial system
   ii) Ring main system

b) Derive an expression for voltage regulation and efficiency of short transmission line.

c) Explain in detail effect of Power Factor on Voltage regulation, Losses, efficiency in case of transmission line.

d) Define and explain terms: feeders, distributor and service mains with neat schematic diagram.

e) Explain various types equipment in substation with neat symbol.

Q.5 Attempt the following. (Any Two) **12**

a) What is mean by Neutral grounding and explain with neat circuit diagram various methods of Neutral grounding.
   i) Resistance grounding
   ii) Reactance grounding
   iii) Solid grounding

b) With neat diagram derive the expression for A, B, C, D constants of medium transmission line using nominal T method.

c) A single-phase overhead transmission line delivers 1100 kW at 33KV at 0.8p. f lagging. The total resistance and inductive reactance of the line are 10 Ω and 15 Ω respectively.
Determine:
   i) Sending end voltage
   ii) Sending end power factor
   iii) Transmission Efficiency

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Power System – II (BTN07403)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options and rewrite the sentence. 14

1) Transmission line constants are _____.
a) Capacitance b) Inductance
c) Resistance d) All of these

2) The inductance of line is minimum when _____.
a) G M D is high
b) G M R is high
c) Both G M D and G M R are high
d) G M D is low but G M R is high

3) When two conductors between each of radius 'r' are at a distance D, the capacitance between the two is Proportional to _____.
a) Loge (D/r) b) loge (r/ D)
c) 1/loge (D/r) d) 1/ loge(r/D)

4) Find the inductance per km of a 3- phase transmission line using 1.24 cm diameter conductors when these are placed at the corners of an equilateral triangle of each side 2 m _____.
a) 3.2 mH/Km b) 2.1 mH/Km
c) 1.205 mH/Km d) 2.3 mH/Km

5) In triangular configuration, inductance and capacitance values are _____ and _____ respectively.
a) less, less b) higher, higher
c) less, higher d) higher, less

6) What is the purpose of bedding on the underground cables?
   a) To avoid leakage of current
   b) To protect the sheath against corrosion
   c) To protect the sheath from mechanical injury due to armoring
   d) Both b) and c)

7) The cable best suited for the transmission of voltages from 33 kV to 66 kV is _____.
   a) Belted cables
   b) Screened cables
   c) Pressure cables
   d) None of these

8) What does capacitance grade of cables mean?
   a) Use of dielectrics in different concentrations
   b) Introduction of capacitance at various lengths of cable to the effect of inductance
   c) Use of dielectrics of different permittivity's
   d) Grading according to capacitance per km length of the cable

9) In long transmission lines Resistance and Capacitance parameters of lines are connected in _____.
   a) Series, shunt
   b) Series, series
   c) Shunt, shunt
   d) Shunt, parallel

10) In nominal$-\pi$ method of solution of medium transmission line, capacitance is assumed to be _____.
   a) Distributed uniformly from sending end to receiving end
   b) Divided into two halves
   c) Lumped at the generation end
   d) Lumped at middle of generation and load end

11) Which of the following distribution system is more reliable?
   a) Radial system
   b) Tree system
   c) Ring main system
   d) All are equally reliable

12) The sag of a transmission line depends upon _____.
   a) Weight of conductor and directly proportional to span length
   b) Weight of conductor and inversely proportional to span length
   c) Weight of conductor and directly proportional to the square of span length
   d) Weight of conductor and inversely proportional to the square of span length

13) The maximum tension in a section of overhead line conductor between two supports of unequal height occurs at _____.
   a) The higher support
   b) The lower point
   c) The midpoint of the conductor
   d) None of the above

14) Corona is accompanied by _____.

a) violet visible light
b) hissing sound
c) power loss and interference
d) all of the above

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Power System – II (BTN07403)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Define corona discharge; enlist the methods of reducing the corona effect.

b) Calculate the loop inductance per km of a single-phase overhead line consisting of two conductors each 1 cm diameter and 1.2 m apart.

c) What is meant by sag? Derive an expression for sag in a transmission line having equal level of supports.

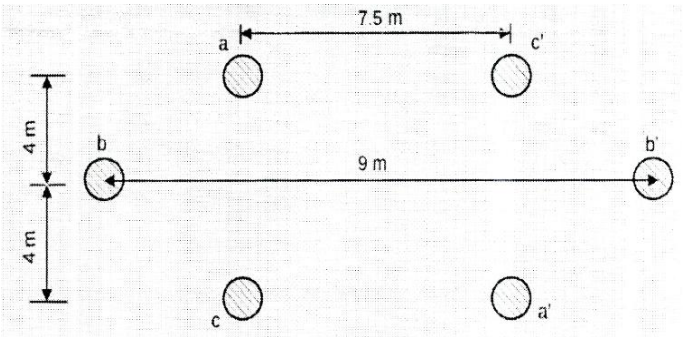
d) Explain the following methods of cable grading:
i) Capacitance grading
ii) Inters heath grading

e) Find the line to line capacitance per km of a three phase transmission line using 1.24 cm diameter conductor when these are placed at the corners of an equilateral triangle of each side 2m.

Q.3 Attempt the following. (Any Two) **12**

a) Derive the expression for inductance of 3-ph single circuit overhead triangular configuration of transmission line for symmetrical spacing.

b) The double circuit three-phase line has the configuration shown in figure the distance between conductor a and c' is 7.5 between b and b' is 9 m and between a and c is 8 m. Find inductance per kilometer per phase. The radius of each conductor is 1.25 cm



c) Derive the expression for Insulation resistance of a cable.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Describe with diagram
   i) Radial system
   ii) Ring main system

b) Derive an expression for voltage regulation and efficiency of short transmission line.

c) Explain in detail effect of Power Factor on Voltage regulation, Losses, efficiency in case of transmission line.

d) Define and explain terms: feeders, distributor and service mains with neat schematic diagram.

e) Explain various types equipment in substation with neat symbol.

Q.5 Attempt the following. (Any Two) **12**

a) What is mean by Neutral grounding and explain with neat circuit diagram various methods of Neutral grounding.
   i) Resistance grounding
   ii) Reactance grounding
   iii) Solid grounding

b) With neat diagram derive the expression for A, B, C, D constants of medium transmission line using nominal T method.

c) A single-phase overhead transmission line delivers 1100 kW at 33KV at 0.8p. f lagging. The total resistance and inductive reactance of the line are 10 Ω and 15 Ω respectively.
Determine:
   i) Sending end voltage
   ii) Sending end power factor
   iii) Transmission Efficiency

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Power System – II (BTN07403)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the given options and rewrite the sentence. **14**

1) In nominal$-\pi$ method of solution of medium transmission line, capacitance is assumed to be _____.
a) Distributed uniformly from sending end to receiving end
b) Divided into two halves
c) Lumped at the generation end
d) Lumped at middle of generation and load end

2) Which of the following distribution system is more reliable?
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c) Ring main system d) All are equally reliable

3) The sag of a transmission line depends upon _____.
a) Weight of conductor and directly proportional to span length
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c) Weight of conductor and directly proportional to the square of span length
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4) The maximum tension in a section of overhead line conductor between two supports of unequal height occurs at _____.
a) The higher support b) The lower point
c) The midpoint of the conductor d) None of the above

5) Corona is accompanied by _____.
a) violet visible light b) hissing sound
c) power loss and interference d) all of the above

6) Transmission line constants are _____.
   a) Capacitance
   b) Inductance
   c) Resistance
   d) All of these

7) The inductance of line is minimum when _____.
   a) G M D is high
   b) G M R is high
   c) Both G M D and G M R are high
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8) When two conductors between each of radius 'r' are at a distance D, the capacitance between the two is Proportional to _____.
   a) Loge (D/r)
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   c) 1/loge (D/r)
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9) Find the inductance per km of a 3- phase transmission line using 1.24 cm diameter conductors when these are placed at the corners of an equilateral triangle of each side 2 m _____.
   a) 3.2 mH/Km
   b) 2.1 mH/Km
   c) 1.205 mH/Km
   d) 2.3 mH/Km

10) In triangular configuration, inductance and capacitance values are _____ and _____ respectively.
   a) less, less
   b) higher, higher
   c) less, higher
   d) higher, less

11) What is the purpose of bedding on the underground cables?
   a) To avoid leakage of current
   b) To protect the sheath against corrosion
   c) To protect the sheath from mechanical injury due to armoring
   d) Both b) and c)

12) The cable best suited for the transmission of voltages from 33 kV to 66 kV is _____.
   a) Belted cables
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   d) None of these

13) What does capacitance grade of cables mean?
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14) In long transmission lines Resistance and Capacitance parameters of lines are connected in _____.
   a) Series, shunt
   b) Series, series
   c) Shunt, shunt
   d) Shunt, parallel

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Power System – II (BTN07403)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Define corona discharge; enlist the methods of reducing the corona effect.

b) Calculate the loop inductance per km of a single-phase overhead line consisting of two conductors each 1 cm diameter and 1.2 m apart.

c) What is meant by sag? Derive an expression for sag in a transmission line having equal level of supports.

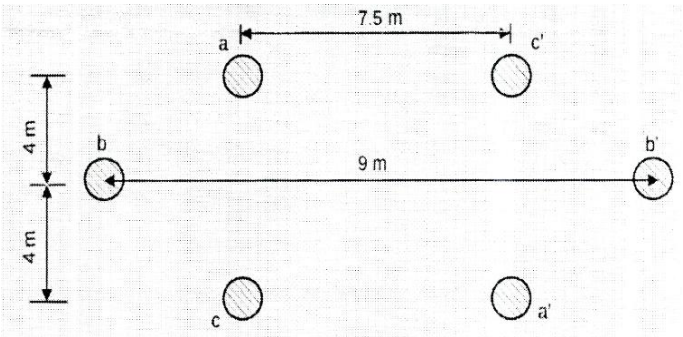
d) Explain the following methods of cable grading:
i) Capacitance grading
ii) Inters heath grading

e) Find the line to line capacitance per km of a three phase transmission line using 1.24 cm diameter conductor when these are placed at the corners of an equilateral triangle of each side 2m.

Q.3 Attempt the following. (Any Two) **12**

a) Derive the expression for inductance of 3-ph single circuit overhead triangular configuration of transmission line for symmetrical spacing.

b) The double circuit three-phase line has the configuration shown in figure the distance between conductor a and c' is 7.5 between b and b' is 9 m and between a and c is 8 m. Find inductance per kilometer per phase. The radius of each conductor is 1.25 cm



c) Derive the expression for Insulation resistance of a cable.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Describe with diagram
   i) Radial system
   ii) Ring main system

b) Derive an expression for voltage regulation and efficiency of short transmission line.

c) Explain in detail effect of Power Factor on Voltage regulation, Losses, efficiency in case of transmission line.

d) Define and explain terms: feeders, distributor and service mains with neat schematic diagram.

e) Explain various types equipment in substation with neat symbol.

Q.5 Attempt the following. (Any Two) **12**

a) What is mean by Neutral grounding and explain with neat circuit diagram various methods of Neutral grounding.
   i) Resistance grounding
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   iii) Solid grounding

b) With neat diagram derive the expression for A, B, C, D constants of medium transmission line using nominal T method.

c) A single-phase overhead transmission line delivers 1100 kW at 33KV at 0.8p. f lagging. The total resistance and inductive reactance of the line are 10 Ω and 15 Ω respectively.
Determine:
   i) Sending end voltage
   ii) Sending end power factor
   iii) Transmission Efficiency

SLR-QH-165

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Innovation provides _____.
a) Stability b) Competitive advantage
c) Similarity d) Confusion

2) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

3) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

4) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

5) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

6) Six Thinking Hats tool was developed by _____.
a) Peter Drucker
b) Steve Jobs
c) Edward de Bono
d) Clayton Christensen

7) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

8) Which is not a type of innovation strategy?
a) Pioneering
b) Imitative
c) Disruptive
d) Delaying

9) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

10) Continuous learning is essential for _____.
a) Innovation growth
b) Routine operations
c) Cost reduction
d) Project closure

11) Failure in innovation can occur due to _____.
a) Over-regulation
b) Poor planning
c) Lack of feedback
d) All of these

12) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

13) Legal consideration in entrepreneurship includes _____.
a) Product packaging
b) Compliance and regulations
c) Floor layout
d) Office color

14) Entrepreneurial process starts with _____.
a) HR hiring
b) Opportunity identification
c) Revenue calculation
d) Market monopoly

SLR-QH-165

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-165

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
c) Disruptive d) Delaying

2) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

3) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

4) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

5) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

6) Legal consideration in entrepreneurship includes _____.
a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

7) Entrepreneurial process starts with _____.
a) HR hiring
b) Opportunity identification
c) Revenue calculation
d) Market monopoly

8) Innovation provides _____.
a) Stability
b) Competitive advantage
c) Similarity
d) Confusion

9) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

10) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

11) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

12) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

13) Six Thinking Hats tool was developed by _____.
a) Peter Drucker
b) Steve Jobs
c) Edward de Bono
d) Clayton Christensen

14) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

SLR-QH-165

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-165

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

2) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

3) Legal consideration in entrepreneurship includes _____.
a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

4) Entrepreneurial process starts with _____.
a) HR hiring b) Opportunity identification
c) Revenue calculation d) Market monopoly

5) Innovation provides _____.
a) Stability b) Competitive advantage
c) Similarity d) Confusion

6) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

7) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

8) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

9) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

10) Six Thinking Hats tool was developed by _____.
a) Peter Drucker b) Steve Jobs
c) Edward de Bono d) Clayton Christensen

11) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

12) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
c) Disruptive d) Delaying

13) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

14) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

SLR-QH-165

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-165

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Six Thinking Hats tool was developed by _____.
a) Peter Drucker b) Steve Jobs
c) Edward de Bono d) Clayton Christensen

2) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

3) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
c) Disruptive d) Delaying

4) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

5) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

6) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

7) Crafting a business model involves _____.
   a) Ignoring customers
   b) Defining value, segments, and revenue streams
   c) Random investments
   d) Borrowing

8) Legal consideration in entrepreneurship includes _____.
   a) Product packaging
   b) Compliance and regulations
   c) Floor layout
   d) Office color

9) Entrepreneurial process starts with _____.
   a) HR hiring
   b) Opportunity identification
   c) Revenue calculation
   d) Market monopoly

10) Innovation provides _____.
   a) Stability
   b) Competitive advantage
   c) Similarity
   d) Confusion

11) Managerial competency involves _____.
   a) Fundraising only
   b) Communication, planning, and leadership
   c) Imitation
   d) None

12) Entrepreneurship as a style of management focuses on _____.
   a) Routine activities
   b) Risk avoidance
   c) Innovation and opportunity recognition
   d) Only HR

13) A corporate entrepreneur is _____.
   a) Owner of small business
   b) Government employee
   c) Innovator within an organization
   d) None

14) Technology transfer occurs when _____.
   a) Knowledge is shared from research to application
   b) Patents expire
   c) Innovation fails
   d) Licenses are revoked

SLR-QH-165

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-167

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: 14

1) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

2) What is a key characteristic of solar energy?
a) Utilizes sunlight for power generation
b) Requires fossil fuels for operation
c) Has no environmental benefits
d) ls non-renewable

3) Which renewable energy is best suited for coastal areas?
a) Biomass energy b) Geothermal energy
c) Wave and tidal energy d) Oil shale energy

4) What is solar radiation?
a) Radiation from the Earth b) Radiation from the Moon
c) Radiation from the Sun d) None of the above

5) What is solar radiation measured in?
a) Kilograms
b) Liters
c) Watts per square meter (W/m^2)
d) Newtons

6) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

7) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

8) What happens when electricity demand is higher than generation?
   a) Energy storage can provide additional power
   b) Renewable energy sources produce more electricity
   c) Power plants automatically increase supply
   d) Transmission lines store energy

9) Which of the following sectors benefits the most from energy storage?
   a) Agriculture
   b) Construction
   c) Transport
   d) Power generation

10) What does the efficiency of an energy storage device indicate?
   a) The time taken to store energy
   b) The total cost of the device
   c) The percentage of stored energy that can be retrieved
   d) The size of the storage system

11) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
   a) Penstock
   b) Reservoir
   c) Fore bay
   d) Spillways

12) Tidal energy is caused primarily by the _____.
   a) Moon's gravity
   b) Sun's gravity
   c) Earth's rotation
   d) Ocean currents

13) Green hydrogen is produced by _____.
   a) Coal gasification
   b) Methane reforming
   c) Water electrolysis using renewable energy
   d) Nuclear fission

14) Which is the cleanest method of hydrogen production?
   a) Electrolysis using solar/wind energy
   b) Coal gasification
   c) Nuclear thermal splitting
   d) Steam methane reforming

SLR-QH-167

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) What happens when electricity demand is higher than generation?
a) Energy storage can provide additional power
b) Renewable energy sources produce more electricity
c) Power plants automatically increase supply
d) Transmission lines store energy

2) Which of the following sectors benefits the most from energy storage?
a) Agriculture b) Construction
c) Transport d) Power generation

3) What does the efficiency of an energy storage device indicate?
a) The time taken to store energy
b) The total cost of the device
c) The percentage of stored energy that can be retrieved
d) The size of the storage system

4) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock b) Reservoir
c) Fore bay d) Spillways

5) Tidal energy is caused primarily by the _____.
a) Moon's gravity b) Sun's gravity
c) Earth's rotation d) Ocean currents

6) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

7) Which is the cleanest method of hydrogen production?
   a) Electrolysis using solar/wind energy
   b) Coal gasification
   c) Nuclear thermal splitting
   d) Steam methane reforming

8) Which of the following is a key goal of sustainable development?
   a) Increase in fossil fuel consumption
   b) Balanced use of resources
   c) Maximum economic growth only
   d) Eliminating renewable energy use

9) What is a key characteristic of solar energy?
   a) Utilizes sunlight for power generation
   b) Requires fossil fuels for operation
   c) Has no environmental benefits
   d) ls non-renewable

10) Which renewable energy is best suited for coastal areas?
   a) Biomass energy
   b) Geothermal energy
   c) Wave and tidal energy
   d) Oil shale energy

11) What is solar radiation?
   a) Radiation from the Earth
   b) Radiation from the Moon
   c) Radiation from the Sun
   d) None of the above

12) What is solar radiation measured in?
   a) Kilograms
   b) Liters
   c) Watts per square meter (W/m^2)
   d) Newtons

13) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

14) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock b) Reservoir
c) Fore bay d) Spillways

2) Tidal energy is caused primarily by the _____.
a) Moon's gravity b) Sun's gravity
c) Earth's rotation d) Ocean currents

3) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

4) Which is the cleanest method of hydrogen production?
a) Electrolysis using solar/wind energy
b) Coal gasification
c) Nuclear thermal splitting
d) Steam methane reforming

5) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

6) What is a key characteristic of solar energy?
   a) Utilizes sunlight for power generation
   b) Requires fossil fuels for operation
   c) Has no environmental benefits
   d) ls non-renewable

7) Which renewable energy is best suited for coastal areas?
   a) Biomass energy
   b) Geothermal energy
   c) Wave and tidal energy
   d) Oil shale energy

8) What is solar radiation?
   a) Radiation from the Earth
   b) Radiation from the Moon
   c) Radiation from the Sun
   d) None of the above

9) What is solar radiation measured in?
   a) Kilograms
   b) Liters
   c) Watts per square meter (W/m^2)
   d) Newtons

10) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

11) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

12) What happens when electricity demand is higher than generation?
   a) Energy storage can provide additional power
   b) Renewable energy sources produce more electricity
   c) Power plants automatically increase supply
   d) Transmission lines store energy

13) Which of the following sectors benefits the most from energy storage?
   a) Agriculture
   b) Construction
   c) Transport
   d) Power generation

14) What does the efficiency of an energy storage device indicate?
   a) The time taken to store energy
   b) The total cost of the device
   c) The percentage of stored energy that can be retrieved
   d) The size of the storage system

SLR-QH-167

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

SLR-QH-167

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) What is the primary difference between pyrolysis and gasification?
a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
b) Pyrolysis produces syngas, while gasification produces bio-oil
c) Gasification is a biochemical process, while pyrolysis is thermo chemical
d) Pyrolysis requires higher temperatures than gasification

2) Which of the following is a disadvantage of biomass energy?
a) Reduces waste
b) Can lead to deforestation
c) Low carbon footprint
d) Independent of weather conditions

3) What happens when electricity demand is higher than generation?
a) Energy storage can provide additional power
b) Renewable energy sources produce more electricity
c) Power plants automatically increase supply
d) Transmission lines store energy

4) Which of the following sectors benefits the most from energy storage?
a) Agriculture b) Construction
c) Transport d) Power generation

5) What does the efficiency of an energy storage device indicate?
a) The time taken to store energy
b) The total cost of the device
c) The percentage of stored energy that can be retrieved
d) The size of the storage system

6) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock
b) Reservoir
c) Fore bay
d) Spillways

7) Tidal energy is caused primarily by the _____.
a) Moon's gravity
b) Sun's gravity
c) Earth's rotation
d) Ocean currents

8) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

9) Which is the cleanest method of hydrogen production?
a) Electrolysis using solar/wind energy
b) Coal gasification
c) Nuclear thermal splitting
d) Steam methane reforming

10) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

11) What is a key characteristic of solar energy?
a) Utilizes sunlight for power generation
b) Requires fossil fuels for operation
c) Has no environmental benefits
d) ls non-renewable

12) Which renewable energy is best suited for coastal areas?
a) Biomass energy
b) Geothermal energy
c) Wave and tidal energy
d) Oil shale energy

13) What is solar radiation?
a) Radiation from the Earth
b) Radiation from the Moon
c) Radiation from the Sun
d) None of the above

14) What is solar radiation measured in?
a) Kilograms
b) Liters
c) Watts per square meter (W/m^2)
d) Newtons

SLR-QH-167

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

SLR-QH-168

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

2) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

3) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

4) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

5) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

6) In a DSO, the input signals are _____.
   a) directly applied to oscilloscope
   b) multiplexed, converted to digital form and stored and applied to oscilloscope
   c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
   d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

7) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
   a) n wattmeters
   b) (n + 1) wattmeters
   c) (n - 2) wattmeters
   d) (n - 1) wattmeters

8) Which transducer does not require any external power supply for working?
   a) Strain gauge transducer
   b) Piezoelectric Crystals
   c) Hydraulic transducer
   d) Pneumatic transducer

9) Piezoelectric accelerometer converts _____ energy to _____ energy.
   a) mechanical, sound
   b) mechanical, electrical
   c) sound, electrical
   d) None of these

10) Which factor affects the least while selection of sensor?
   a) Size
   b) Accuracy
   c) Colour
   d) Durability

11) Which sensor should be used for calculating pressure?
   a) DHT11
   b) LM335Z/NOPB
   c) HC-SR04
   d) MPX10DP

12) Which of the following represents range of frequency measured by ADC?
   a) Bandwidth
   b) Threshold frequency
   c) Peak frequency
   d) None of the mentioned

13) Thermistor is a _____.
   a) sensor
   b) ADC
   c) transducer
   d) micro controller

14) Which of the following type output is provided by ADC?
   a) Serial type
   b) Parallel type
   c) Both serial and parallel type
   d) None of the mentioned

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) Which transducer does not require any external power supply for working?
a) Strain gauge transducer b) Piezoelectric Crystals
c) Hydraulic transducer d) Pneumatic transducer

2) Piezoelectric accelerometer converts _____ energy to _____ energy.
a) mechanical, sound b) mechanical, electrical
c) sound, electrical d) None of these

3) Which factor affects the least while selection of sensor?
a) Size b) Accuracy
c) Colour d) Durability

4) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

5) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

6) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

7) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

8) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

9) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

10) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

11) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

12) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

13) In a DSO, the input signals are _____.
a) directly applied to oscilloscope
b) multiplexed, converted to digital form and stored and applied to oscilloscope
c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

14) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
a) n wattmeters b) (n + 1) wattmeters
c) (n - 2) wattmeters d) (n - 1) wattmeters

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

2) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

3) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

4) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

5) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

6) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
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7) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

8) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.

a) Substitution
b) Loss of charge
c) Wheatstone bridge
d) Kelvin's double bridge

9) Instrument transformers are _____.

a) Potential transformers
b) Current transformers
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10) In a DSO, the input signals are _____.

a) directly applied to oscilloscope
b) multiplexed, converted to digital form and stored and applied to oscilloscope
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11) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.

a) n wattmeters
b) (n + 1) wattmeters
c) (n - 2) wattmeters
d) (n - 1) wattmeters

12) Which transducer does not require any external power supply for working?

a) Strain gauge transducer
b) Piezoelectric Crystals
c) Hydraulic transducer
d) Pneumatic transducer

13) Piezoelectric accelerometer converts _____ energy to _____ energy.

a) mechanical, sound
b) mechanical, electrical
c) sound, electrical
d) None of these

14) Which factor affects the least while selection of sensor?

a) Size
b) Accuracy
c) Colour
d) Durability

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

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SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
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4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) In a DSO, the input signals are _____.
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c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
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2) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
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c) (n - 2) wattmeters d) (n - 1) wattmeters

3) Which transducer does not require any external power supply for working?
a) Strain gauge transducer b) Piezoelectric Crystals
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4) Piezoelectric accelerometer converts _____ energy to _____ energy.
a) mechanical, sound b) mechanical, electrical
c) sound, electrical d) None of these

5) Which factor affects the least while selection of sensor?
a) Size b) Accuracy
c) Colour d) Durability

6) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

7) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

8) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

9) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

10) Which of the following is not a type of systematic error?
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14) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

SLR-QH-169

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

2) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
c) Simplex Method d) Integer Programming

3) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

4) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (-1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

5) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
c) Faster Solution d) Slower Solution

6) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

7) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

8) At the Break-Even Point _____.
a) Profit > Loss
b) Profit < Loss
c) Profit = Loss
d) None of these

9) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource
b) Reconciliation
c) Reconsideration
d) Review

10) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum
b) Average
c) Safety
d) Standard

11) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

12) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

13) In a project network, the critical path _____.
a) may be the shortest path
b) is the longest path
c) may be the longest path
d) is the shortest path

14) The inventory carrying costs are also called as _____.
a) Procurement costs
b) Set-up costs
c) Storage costs
d) None of the above

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
	to	tm	tp
$1-2$	1	1	7
$1-3$	1	4	7
$1-4$	2	2	8
$2-5$	1	1	1
$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) At the Break-Even Point _____.
a) Profit > Loss b) Profit < Loss
c) Profit = Loss d) None of these

2) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

3) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

4) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

5) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

6) In a project network, the critical path _____.
a) may be the shortest path b) is the longest path
c) may be the longest path d) is the shortest path

7) The inventory carrying costs are also called as _____.
a) Procurement costs b) Set-up costs
c) Storage costs d) None of the above

8) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

9) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
c) Simplex Method d) Integer Programming

10) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

11) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (−1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

12) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
c) Faster Solution d) Slower Solution

13) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

14) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
	to	tm	tp
$1-2$	1	1	7
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$1-4$	2	2	8
$2-5$	1	1	1
$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

SLR-QH-169

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

2) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

3) In a project network, the critical path _____.
a) may be the shortest path b) is the longest path
c) may be the longest path d) is the shortest path

4) The inventory carrying costs are also called as _____.
a) Procurement costs b) Set-up costs
c) Storage costs d) None of the above

5) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

6) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
c) Simplex Method d) Integer Programming

7) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

8) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (-1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

9) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
c) Faster Solution d) Slower Solution

10) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

11) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

12) At the Break-Even Point _____.
a) Profit $>$ Loss b) Profit $<$ Loss
c) Profit $=$ Loss d) None of these

13) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

14) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

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	to	tm	tp
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$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

2) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

3) At the Break-Even Point _____.
a) Profit > Loss b) Profit < Loss
c) Profit = Loss d) None of these

4) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

5) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
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6) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
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7) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
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8) In a project network, the critical path _____.
a) may be the shortest path
b) is the longest path
c) may be the longest path
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10) When total supply = total demand, the transportation problem is called _____.
a) Balanced
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11) Which technique is used to solve Assignment Model?
a) Hungarian Method
b) Graphical Method
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d) Integer Programming

12) Allocated cells in the IBFS are also called as _____.
a) Stone Cells
b) Water Cells
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13) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (-1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

14) Advantage of VAM of transportation is _____.
a) Near to optimal Solution
b) Least Cost
c) Faster Solution
d) Slower Solution

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
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2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
	to	tm	tp
$1-2$	1	1	7
$1-3$	1	4	7
$1-4$	2	2	8
$2-5$	1	1	1
$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

SLR-QH-170

Seat No.	

Set | **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

2) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

3) The Gauss-Seidel method is used for solving _____.
a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

4) Which of the following is a disadvantage of the Gauss-Jacobi method?
a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

5) The use of Romberg's method is _____.
a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

6) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

7) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

8) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

9) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

10) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

11) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

12) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

13) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

14) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

2) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

3) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

4) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

5) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

6) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

7) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

8) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

9) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

10) The Gauss-Seidel method is used for solving _____.
a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

11) Which of the following is a disadvantage of the Gauss-Jacobi method?
a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

12) The use of Romberg's method is _____.
a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

13) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

14) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

2) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

3) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

4) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

5) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

6) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.

a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

7) The Gauss-Seidel method is used for solving _____.

a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

8) Which of the following is a disadvantage of the Gauss-Jacobi method?

a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

9) The use of Romberg's method is _____.

a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

10) The order of convergence of Newton-Raphson method is _____.

a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

11) Power Method is used to find _____.

a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

12) To find the numerically largest Eigen value using iterative method we use the equation _____.

a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

13) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.

a) 0.905 b) 1.905
c) 2.905 d) None

14) Runge-Kutta method is self-starting method _____.

a) True b) False
c) We can't say d) None

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

2) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

3) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

4) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

5) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

6) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

7) In the power method, the vector is normalized in each iteration mainly to _____.
   a) increase the determinant
   b) prevent values from becoming too large
   c) eliminate eigen values
   d) make the matrix symmetric

8) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
   a) multiple of 2
   b) multiple of 3
   c) multiple of 4
   d) odd only

9) Picard's method is mainly used to solve _____.
   a) linear programming problems
   b) differential equations
   c) eigen value problems
   d) interpolation problems

10) A transcendental equation is an equation that involves _____.
   a) Only algebraic terms
   b) Only transcendental functions
   c) Both algebraic and transcendental functions
   d) Linear terms only

11) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
   a) $(1, 2)$
   b) $(0, 1)$
   c) $(2, 3)$
   d) $(3, 4)$

12) The Gauss-Seidel method is used for solving _____.
   a) Nonlinear equations
   b) Systems of linear equations
   c) Ordinary differential equations
   d) Partial differential equations

13) Which of the following is a disadvantage of the Gauss-Jacobi method?
   a) It converges faster than most direct methods
   b) It requires a large number of iterations for a good approximation
   c) It cannot be used for systems with more than two equations
   d) It works only for symmetric systems

14) The use of Romberg's method is _____.
   a) To solve simultaneous linear equation
   b) To find root of linear equation
   c) To evaluate definite integration
   d) To find the Eigen values

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

SLR-QH-171

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.
a) Decoding b) Encoding
c) Feedback d) Channeling

2) A message sent without words using facial expressions or gestures is called _____.
a) Written communication b) Verbal communication
c) Non-verbal communication d) Grapevine communication

3) Which channel characteristic most reduces chances of immediate feedback?
a) Face-to-face conversation b) Telephone call
c) Email d) Video conference

4) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.
a) Noise b) Semantic barrier
c) Perceptual barrier d) Channel barrier

5) Body language, eye contact and posture are examples of ____.
a) Verbal codes b) Non-verbal codes
c) Written codes d) Graphic communication

6) Upward communication flows from _____.
a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

7) An advantage of face-to-face communication over written communication is _____.
a) Permanent record
b) Easier legal reference
c) Immediate feedback
d) More formal tone

8) Which element is essential for an effective welcome speech?
a) Detailed technical data
b) Acknowledgement of guests
c) Long biographical note
d) Complex statistics

9) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
b) Summarize research findings
c) Express gratitude to contributors and audience
d) Present the event budget

10) Which is a best practice when delivering a professional presentation?
a) Reading every slide verbatim
b) Using too many small fonts
c) Maintaining eye contact and varying tone
d) Using no structure or flow

11) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
a) Enquiry letter
b) Complaint letter
c) Order letter
d) Quotation letter

12) A purchase order is principally used to _____.
a) Complain about defects
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c) Place an order for goods or services
d) Acknowledge receipt of payment

13) Which part of a business letter contains the main message or details the writer wants to communicate?
a) Heading
b) Salutation
c) Body
d) Signature block

14) Which report type is typically written to describe a workplace accident and recommend corrective actions?
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Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

SLR-QH-171

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

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13) Upward communication flows from _____.

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c) Workers to management
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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

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Time: 03:00 PM To 06:00 PM

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a) Define communication and explain its meaning in professional life.

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c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

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SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

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Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
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c) Order letter d) Quotation letter

2) A purchase order is principally used to _____.
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b) Request a quotation
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14) Which is a best practice when delivering a professional presentation?
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Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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SECTION – I

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b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

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b) Describe body language and its importance in communication.

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SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

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c) Explain purchase order, work order, and complaint letter.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Upward communication flows from _____.
a) Top management to workers
b) Peers to peers
c) Workers to management
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Seat No.	

Set | S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Solve following. (Any Two) **14**

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SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

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a) Explain the style and structure of a business letter.

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SLR-QH-172

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electric Motors and Controls for Electric Vehicle (EEHn-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option. **14**

1) Electrical motors are ideal for vehicle applications because of _____.
a) Torque speed characteristics b) VI Characteristics
c) Pd Characteristics d) alpha delta characteristics

2) Which type of Coupling happens in a series hybrid EV?
a) Hydraulic Coupling b) Mechanical Coupling
c) Electrical Coupling d) All of the above

3) In series hybrid vehicle _____ is coupled with the internal combustion engine to produce electricity for propulsion.
a) diesel engine b) generator
c) gas engine d) hydrogen engine

4) In Four Quadrant Operation of an electrical machine the second Operation is _____.
a) Forward Motoring b) Reverse Braking
c) Forward Braking d) Reverse Motoring

5) Which of the following is used to build a electric drive?
a) Source b) Motor
c) Control unit d) All of the above

6) How many thyristor are required for full converter?
a) 1 b) 2
c) 3 d) 4

7) In voltage source inverters (VSIs), the amplitude of the output voltage is _____.
a) independent of the load
b) dependent on the load
c) dependent only on Loads
d) none of the mentioned

8) Which of the following pair is not correctly matched?
a) MOSFET - unipolar device
b) BJT - switching power loss
c) MOSFET - high ON state conduction power loss
d) IGBT - voltage-controlled device

9) The Field Oriented Control (FOC) enables the induction machine being controlled alike the _____.
a) Separately excited DC machine
b) Permanent magnet DC machine
c) Switched reluctance machine option
d) Stepper motor

10) Which of the following is the correct abbreviation of IFOC?
a) Insight field oriented control
b) Indirect field oriented control
c) Inverter field oriented control
d) Isolated field oriented control

11) Which of following control loop used by Direct Torque Control?
a) Speed Control loop
b) torque control loop
c) both
d) none

12) _____ analysis of an IM allows decoupled analysis where the flux and torque component can be independently controlled.
a) Scalar Control
b) Vector Control
c) V/f Control
d) none

13) Following is not type of hybrid electric vehicle.
a) Series
b) Parallel
c) Vertical
d) Complex

14) Objective of hybrid car is _____.
a) reduce fuel consumption
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Seat No.	

Set **P**

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Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Solve Any Four. **16**

a) Discuss following various electric drive train topologies.
i) Series HEDT
ii) Parallel HEDT

b) With neat diagram explain Brushless DC Motor.

c) Explain the four-quadrant chopper control of dc motor using Dual converter.

d) Compare VSIs with CSIs.

e) Explain Control of Induction Motor by Voltage Source Inverter.

Q.3 Solve Any Two. **12**

a) With neat diagram discuss in detail about the power and torque characteristics of various motors suitable for EV application.

b) Describe the time control ratio and frequency modulation system.

c) Explain in closed loop control with cyclo converter-based Induction Motor drives.

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain in detail Indirect/feed forward vector control of Induction machine**.**

b) Describe Space vector modulation control in case of Induction machine.

c) Explain Different DTC control strategy.

d) Explain various method of Torque ripple reduction.

e) Explain Vehicle Supervisory Control in details.

Q.5 Solve Any Two. **12**

a) Explain Direct & Quadrature axis transformation method.

b) Explain Direct Torque control method of Induction Machine.

c) Explain different Mode Selection Strategy of control of electrical vehicle.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
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13) How many thyristor are required for full converter?
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Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
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b) Describe Space vector modulation control in case of Induction machine.

c) Explain Different DTC control strategy.

d) Explain various method of Torque ripple reduction.

e) Explain Vehicle Supervisory Control in details.

Q.5 Solve Any Two. **12**

a) Explain Direct & Quadrature axis transformation method.

b) Explain Direct Torque control method of Induction Machine.

c) Explain different Mode Selection Strategy of control of electrical vehicle.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electric Motors and Controls for Electric Vehicle (EEHn-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option. **14**

1) Which of following control loop used by Direct Torque Control?
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2) _____ analysis of an IM allows decoupled analysis where the flux and torque component can be independently controlled.
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c) Control unit
d) All of the above

10) How many thyristor are required for full converter?
a) 1
b) 2
c) 3
d) 4

11) In voltage source inverters (VSIs), the amplitude of the output voltage is _____.
a) independent of the load
b) dependent on the load
c) dependent only on Loads
d) none of the mentioned

12) Which of the following pair is not correctly matched?
a) MOSFET - unipolar device
b) BJT - switching power loss
c) MOSFET - high ON state conduction power loss
d) IGBT - voltage-controlled device

13) The Field Oriented Control (FOC) enables the induction machine being controlled alike the _____.
a) Separately excited DC machine
b) Permanent magnet DC machine
c) Switched reluctance machine option
d) Stepper motor

14) Which of the following is the correct abbreviation of IFOC?
a) Insight field oriented control
b) Indirect field oriented control
c) Inverter field oriented control
d) Isolated field oriented control

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electric Motors and Controls for Electric Vehicle (EEHn-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Discuss following various electric drive train topologies.
i) Series HEDT
ii) Parallel HEDT

b) With neat diagram explain Brushless DC Motor.

c) Explain the four-quadrant chopper control of dc motor using Dual converter.

d) Compare VSIs with CSIs.

e) Explain Control of Induction Motor by Voltage Source Inverter.

Q.3 Solve Any Two. **12**

a) With neat diagram discuss in detail about the power and torque characteristics of various motors suitable for EV application.

b) Describe the time control ratio and frequency modulation system.

c) Explain in closed loop control with cyclo converter-based Induction Motor drives.

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain in detail Indirect/feed forward vector control of Induction machine**.**

b) Describe Space vector modulation control in case of Induction machine.

c) Explain Different DTC control strategy.

d) Explain various method of Torque ripple reduction.

e) Explain Vehicle Supervisory Control in details.

Q.5 Solve Any Two. **12**

a) Explain Direct & Quadrature axis transformation method.

b) Explain Direct Torque control method of Induction Machine.

c) Explain different Mode Selection Strategy of control of electrical vehicle.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electric Motors and Controls for Electric Vehicle (EEHn-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct option. **14**

1) How many thyristor are required for full converter?
a) 1 b) 2
c) 3 d) 4

2) In voltage source inverters (VSIs), the amplitude of the output voltage is _____.
a) independent of the load b) dependent on the load
c) dependent only on Loads d) none of the mentioned

3) Which of the following pair is not correctly matched?
a) MOSFET - unipolar device
b) BJT - switching power loss
c) MOSFET - high ON state conduction power loss
d) IGBT - voltage-controlled device

4) The Field Oriented Control (FOC) enables the induction machine being controlled alike the _____.
a) Separately excited DC machine
b) Permanent magnet DC machine
c) Switched reluctance machine option
d) Stepper motor

5) Which of the following is the correct abbreviation of IFOC?
a) Insight field oriented control b) Indirect field oriented control
c) Inverter field oriented control d) Isolated field oriented control

6) Which of following control loop used by Direct Torque Control?
a) Speed Control loop b) torque control loop
c) both d) none

7) _____ analysis of an IM allows decoupled analysis where the flux and torque component can be independently controlled.
a) Scalar Control b) Vector Control
c) V/f Control d) none

8) Following is not type of hybrid electric vehicle.
a) Series b) Parallel
c) Vertical d) Complex

9) Objective of hybrid car is _____.
a) reduce fuel consumption b) reduction in emission
c) increased power and torque d) all

10) Electrical motors are ideal for vehicle applications because of _____.
a) Torque speed characteristics b) VI Characteristics
c) Pd Characteristics d) alpha delta characteristics

11) Which type of Coupling happens in a series hybrid EV?
a) Hydraulic Coupling b) Mechanical Coupling
c) Electrical Coupling d) All of the above

12) In series hybrid vehicle _____ is coupled with the internal combustion engine to produce electricity for propulsion.
a) diesel engine b) generator
c) gas engine d) hydrogen engine

13) In Four Quadrant Operation of an electrical machine the second Operation is _____.
a) Forward Motoring b) Reverse Braking
c) Forward Braking d) Reverse Motoring

14) Which of the following is used to build a electric drive?
a) Source b) Motor
c) Control unit d) All of the above

SLR-QH-172

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Electric Motors and Controls for Electric Vehicle (EEHn-02A)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Discuss following various electric drive train topologies.
i) Series HEDT
ii) Parallel HEDT

b) With neat diagram explain Brushless DC Motor.

c) Explain the four-quadrant chopper control of dc motor using Dual converter.

d) Compare VSIs with CSIs.

e) Explain Control of Induction Motor by Voltage Source Inverter.

Q.3 Solve Any Two. **12**

a) With neat diagram discuss in detail about the power and torque characteristics of various motors suitable for EV application.

b) Describe the time control ratio and frequency modulation system.

c) Explain in closed loop control with cyclo converter-based Induction Motor drives.

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain in detail Indirect/feed forward vector control of Induction machine**.**

b) Describe Space vector modulation control in case of Induction machine.

c) Explain Different DTC control strategy.

d) Explain various method of Torque ripple reduction.

e) Explain Vehicle Supervisory Control in details.

Q.5 Solve Any Two. **12**

a) Explain Direct & Quadrature axis transformation method.

b) Explain Direct Torque control method of Induction Machine.

c) Explain different Mode Selection Strategy of control of electrical vehicle.

SLR-QH-174

Seat No.		Set	P

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

2) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

3) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

4) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

5) The value of respect entails _____.
a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

6) Which value involves being accountable for one's decisions and actions?
a) Responsibility b) Flexibility
c) Confidence d) Arrogance

7) The value of integrity entails _____.
a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

8) Which value involves being considerate and thoughtful towards others?
a) Kindness
b) Determination
c) Independence
d) Indifference

9) The value of wisdom involves _____.
a) Making sound and informed judgments based on knowledge and experience
b) Pursuing personal interests at the expense of others
c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

10) Which value involves being truthful and sincere in one's actions and words?
a) Honesty
b) Tolerance
c) Flexibility
d) Arrogance

11) What is the primary goal of engineering ethics?
a) To maximize profits for companies
b) To ensure engineers work efficiently
c) To protect public safety and welfare
d) To follow industry standards

12) Which of the following is considered an ethical responsibility of an engineer?
a) Ignoring environmental concerns to meet deadlines
b) Ensuring the safety of the public
c) Disregarding laws and regulations
d) Making decisions based on personal interests

13) Ethical engineering practices promote _____.
a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
d) The minimization of safety regulations

14) Ethical engineers should consider which of the following when making decisions?
a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

15) Which of the following is NOT part of an engineer's ethical responsibility?
a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

16) Ethical engineering involves making decisions based on _____.
a) Personal opinions and values
b) Financial incentives and company pressure
c) Objective analysis, codes of ethics, and consideration for the public good
d) Trends in the field of engineering

17) What should an engineer do if they discover a colleague is involved in unethical practices?
a) Ignore the situation to avoid conflict
b) Report the unethical behavior to management or relevant authorities
c) Cover up the situation to protect the colleague
d) Allow the behavior to continue if it does not affect the project

18) Ethical engineering practices include _____.
a) Following industry standards and regulations
b) Ensuring profitability is the main priority
c) Cutting costs by any means necessary
d) Avoiding the reporting of safety hazards

19) What is the primary focus of Kohlberg's theory?
a) Cognitive development b) Social development
c) Moral development d) Emotional development

20) Which term refers to an agreement that is made through discussions and compromises among parties?
a) Conflict b) Consensus
c) Dispute d) Isolation

21) What is the primary goal of risk assessment?
a) To eliminate all risks
b) To identify and mitigate potential risks
c) To ignore potential risks
d) To transfer risks to others

22) What is the primary goal of safety protocols?
a) To increase productivity
b) To reduce costs
c) To prevent injuries and illnesses
d) To improve employee morale

23) What is the difference between a hazard and a risk?
a) A hazard is a potential risk, while a risk is a real danger
b) A hazard is a real danger, while a risk is a potential danger
c) A hazard is a physical danger, while a risk is a financial danger
d) A hazard is a financial danger, while a risk is a physical danger

24) What should you do if you identify a potential risk in the workplace?
a) Ignore it and hope it goes away
b) Report it to your supervisor or HR
c) Try to mitigate it on your own
d) Transfer the risk to someone else

25) According to the theory of ethical egoism, what should guide an individual's moral actions?
a) The well-being of others
b) The individual's own self-interest
c) Social norms and conventions
d) Universal moral principles

26) Collegiality in a professional setting refers to _____.
a) Loyalty to your employer
b) Cooperation and mutual respect among colleagues
c) Competing for individual success
d) Avoiding work conflicts

27) Professional loyalty involves _____.
a) Reporting colleagues' mistakes publicly
b) Protecting the interests of the team or organization
c) Ignoring safety violations to avoid
d) Disclosing confidential information for personal conflict gain

28) Employee rights include _____.
a) The right to work without discrimination
b) The right to disregard company policies
c) The right to personal opinion but not affecting work
d) The right to ignore workplace safety standards

29) Intellectual Property Rights (IPR) protect _____.
a) The financial interests of corporations
b) The ownership and use of creative ideas and inventions
c) The physical assets of a company
d) Workplace performance evaluations

30) *Risk assessment* is important because it helps in _____.
a) Evaluating the potential impact of hazards on health and safety
b) Minimizing workplace productivity
c) Defining job roles
d) Ignoring environmental issues

31) In risk management, mitigation strategies aim to _____.
a) Accept all risks in the workplace
b) Reduce or eliminate identified risks
c) Increase the likelihood of hazards
d) Focus only on maximizing profits

32) Which of the following is a potential consequence of *occupational crime?*
a) Increased workplace productivity
b) Legal consequences and loss of reputation
c) Improvement in company safety standards
d) Higher employee satisfaction

33) Risk reduction in engineering refers to _____.
a) Implementing measures to lower the work chances of accidents
b) Increasing the number of hazards in the work environment
c) Ignoring potential risks
d) Cutting costs by removing safety measures

34) Public safety regulations are primarily designed to _____.
a) Ensure the safety of the company's assets
b) Protect the general public from potential harm
c) Increase revenue for the government
d) Focus only on preventing natural disasters

35) Multinational corporations (MNCs) are characterized by _____.
a) Operations in multiple countries with a centralized headquarters
b) Operating only in their home country
c) Limited influence on global markets
d) No responsibility toward environmental concerns

36) Environmental ethics primarily deals with _____.
a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
d) Treating employees equally

37) Which of the following is NOT an example of environmental ethics?
a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

38) Computer ethics involves _____.
   a) Programming and coding without considering social consequences
   b) Understanding the moral implications of computing technologies
   c) Focusing only on technological innovation
   d) Ignoring privacy issues

39) Weapons development ethics deals with _____.
   a) The development of new technologies to enhance military capabilities
   b) Restricting the use of all technological advancements
   c) Focusing only on civilian safety
   d) Only addressing the legal aspects of weapon development

40) Engineers as managers are expected to _____.
   a) Focus solely on technical tasks
   b) Lead teams, make strategic decisions, and manage projects
   c) Ignore the business aspects of their work
   d) Avoid taking responsibility for team outcomes

41) Consulting engineers are hired to _____.
   a) Work on projects within the company they are employed
   b) Provide expert advice on technical and engineering problems
   c) Manage public relations for a company
   d) Conduct legal investigations

42) Engineers acting as expert witnesses typically _____.
   a) Present evidence and offer testimony in legal cases
   b) Focus on public relations during a case
   c) Manage engineering projects for legal firms
   d) Directly represent the interests of a company court

43) Sample Code of Ethics of professional organizations typically includes _____.
   a) Guidelines for acceptable behavior and decision-making
   b) Rules for maximizing profits at any cost
   c) Detailed technical specifications for projects
   d) Guidelines for political involvement in engineering

44) ASME stands for _____.
   a) American Society of Mechanical Engineers
   b) American Society of Management Engineers
   c) Association of Safety and Mechanical Engineers
   d) Association of Scientific and Mechanical Engineers

45) The ASCE Code of Ethics emphasizes _____.
a) Following only local regulations
b) Maintaining professional integrity and responsibility
c) Focusing on personal financial gain
d) Ignoring environmental impacts

46) The IEEE Code of Ethics is primarily concerned with _____.
a) Fostering professional competence and integrity
b) Protecting corporate secrets
c) Maximizing technological advancements at any cost
d) Developing weapons for defense purposes

47) Global issues in engineering ethics include _____.
a) Cultural differences in engineering practices
b) Lack of understanding between technical and ethical concerns
c) Addressing both local and international engineering challenges
d) All of the above

48) A key challenge faced by multinational corporations is _____.
a) Balancing profits with social and environmental
b) Competing only within their home country responsibilities
c) Focusing solely on domestic issues
d) Ignoring corporate social responsibility

49) Empathy is the ability to _____.
a) Solve problems logically
b) Understand and share the feelings of others
c) Be indifferent to others' emotions
d) Only care about your own well-being

50) The quality of "caring" includes _____.
a) Showing concern for others' well-being
b) Ignoring the needs of others
c) Only helping family and friends
d) Seeking praise for helping others

SLR-QH-174

Seat No.		Set	Q

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

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a) To increase productivity
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d) Only care about your own well-being

30) The quality of "caring" includes _____.
a) Showing concern for others' well-being
b) Ignoring the needs of others
c) Only helping family and friends
d) Seeking praise for helping others

31) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
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c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

32) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

33) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

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c) Confidence d) Arrogance

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c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

38) Which value involves being considerate and thoughtful towards others?

a) Kindness
b) Determination
c) Independence
d) Indifference

39) The value of wisdom involves _____.

a) Making sound and informed judgments based on knowledge and experience
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c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

40) Which value involves being truthful and sincere in one's actions and words?

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c) Flexibility
d) Arrogance

41) What is the primary goal of engineering ethics?

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b) To ensure engineers work efficiently
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d) To follow industry standards

42) Which of the following is considered an ethical responsibility of an engineer?

a) Ignoring environmental concerns to meet deadlines
b) Ensuring the safety of the public
c) Disregarding laws and regulations
d) Making decisions based on personal interests

43) Ethical engineering practices promote _____.

a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
d) The minimization of safety regulations

44) Ethical engineers should consider which of the following when making decisions?

a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

45) Which of the following is NOT part of an engineer's ethical responsibility?

a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

46) Ethical engineering involves making decisions based on _____.

a) Personal opinions and values
b) Financial incentives and company pressure
c) Objective analysis, codes of ethics, and consideration for the public good
d) Trends in the field of engineering

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d) Allow the behavior to continue if it does not affect the project

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c) Cutting costs by any means necessary
d) Avoiding the reporting of safety hazards

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c) Moral development d) Emotional development

50) Which term refers to an agreement that is made through discussions and compromises among parties?

a) Conflict b) Consensus
c) Dispute d) Isolation

SLR-QH-174

Seat No.		Set	R

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) Consulting engineers are hired to _____.
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c) Manage public relations for a company
d) Conduct legal investigations

2) Engineers acting as expert witnesses typically _____.
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b) Focus on public relations during a case
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a) American Society of Mechanical Engineers
b) American Society of Management Engineers
c) Association of Safety and Mechanical Engineers
d) Association of Scientific and Mechanical Engineers

5) The ASCE Code of Ethics emphasizes _____.
a) Following only local regulations
b) Maintaining professional integrity and responsibility
c) Focusing on personal financial gain
d) Ignoring environmental impacts

6) The IEEE Code of Ethics is primarily concerned with _____.
a) Fostering professional competence and integrity
b) Protecting corporate secrets
c) Maximizing technological advancements at any cost
d) Developing weapons for defense purposes

7) Global issues in engineering ethics include _____.
a) Cultural differences in engineering practices
b) Lack of understanding between technical and ethical concerns
c) Addressing both local and international engineering challenges
d) All of the above

8) A key challenge faced by multinational corporations is _____.
a) Balancing profits with social and environmental
b) Competing only within their home country responsibilities
c) Focusing solely on domestic issues
d) Ignoring corporate social responsibility

9) Empathy is the ability to _____.
a) Solve problems logically
b) Understand and share the feelings of others
c) Be indifferent to others' emotions
d) Only care about your own well-being

10) The quality of "caring" includes _____.
a) Showing concern for others' well-being
b) Ignoring the needs of others
c) Only helping family and friends
d) Seeking praise for helping others

11) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

12) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

13) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

14) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

15) The value of respect entails _____.
a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

16) Which value involves being accountable for one's decisions and actions?
a) Responsibility b) Flexibility
c) Confidence d) Arrogance

17) The value of integrity entails _____.
a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

18) Which value involves being considerate and thoughtful towards others?
a) Kindness b) Determination
c) Independence d) Indifference

19) The value of wisdom involves _____.
a) Making sound and informed judgments based on knowledge and experience
b) Pursuing personal interests at the expense of others
c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

20) Which value involves being truthful and sincere in one's actions and words?
a) Honesty b) Tolerance
c) Flexibility d) Arrogance

21) What is the primary goal of engineering ethics?
a) To maximize profits for companies
b) To ensure engineers work efficiently
c) To protect public safety and welfare
d) To follow industry standards

22) Which of the following is considered an ethical responsibility of an engineer?
a) Ignoring environmental concerns to meet deadlines
b) Ensuring the safety of the public
c) Disregarding laws and regulations
d) Making decisions based on personal interests

23) Ethical engineering practices promote _____.
a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
d) The minimization of safety regulations

24) Ethical engineers should consider which of the following when making decisions?
a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

25) Which of the following is NOT part of an engineer's ethical responsibility?
a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

26) Ethical engineering involves making decisions based on _____.
a) Personal opinions and values
b) Financial incentives and company pressure
c) Objective analysis, codes of ethics, and consideration for the public good
d) Trends in the field of engineering

27) What should an engineer do if they discover a colleague is involved in unethical practices?
a) Ignore the situation to avoid conflict
b) Report the unethical behavior to management or relevant authorities
c) Cover up the situation to protect the colleague
d) Allow the behavior to continue if it does not affect the project

28) Ethical engineering practices include _____.
a) Following industry standards and regulations
b) Ensuring profitability is the main priority
c) Cutting costs by any means necessary
d) Avoiding the reporting of safety hazards

29) What is the primary focus of Kohlberg's theory?
a) Cognitive development b) Social development
c) Moral development d) Emotional development

30) Which term refers to an agreement that is made through discussions and compromises among parties?
a) Conflict b) Consensus
c) Dispute d) Isolation

31) What is the primary goal of risk assessment?
a) To eliminate all risks
b) To identify and mitigate potential risks
c) To ignore potential risks
d) To transfer risks to others

32) What is the primary goal of safety protocols?
a) To increase productivity
b) To reduce costs
c) To prevent injuries and illnesses
d) To improve employee morale

33) What is the difference between a hazard and a risk?
a) A hazard is a potential risk, while a risk is a real danger
b) A hazard is a real danger, while a risk is a potential danger
c) A hazard is a physical danger, while a risk is a financial danger
d) A hazard is a financial danger, while a risk is a physical danger

34) What should you do if you identify a potential risk in the workplace?
a) Ignore it and hope it goes away
b) Report it to your supervisor or HR
c) Try to mitigate it on your own
d) Transfer the risk to someone else

35) According to the theory of ethical egoism, what should guide an individual's moral actions?
a) The well-being of others
b) The individual's own self-interest
c) Social norms and conventions
d) Universal moral principles

36) Collegiality in a professional setting refers to _____.
a) Loyalty to your employer
b) Cooperation and mutual respect among colleagues
c) Competing for individual success
d) Avoiding work conflicts

37) Professional loyalty involves _____.
a) Reporting colleagues' mistakes publicly
b) Protecting the interests of the team or organization
c) Ignoring safety violations to avoid
d) Disclosing confidential information for personal conflict gain

38) Employee rights include _____.
a) The right to work without discrimination
b) The right to disregard company policies
c) The right to personal opinion but not affecting work
d) The right to ignore workplace safety standards

39) Intellectual Property Rights (IPR) protect _____.
- a) The financial interests of corporations
- b) The ownership and use of creative ideas and inventions
- c) The physical assets of a company
- d) Workplace performance evaluations

40) *Risk assessment* is important because it helps in _____.
- a) Evaluating the potential impact of hazards on health and safety
- b) Minimizing workplace productivity
- c) Defining job roles
- d) Ignoring environmental issues

41) In risk management, mitigation strategies aim to _____.
- a) Accept all risks in the workplace
- b) Reduce or eliminate identified risks
- c) Increase the likelihood of hazards
- d) Focus only on maximizing profits

42) Which of the following is a potential consequence of *occupational crime?*
- a) Increased workplace productivity
- b) Legal consequences and loss of reputation
- c) Improvement in company safety standards
- d) Higher employee satisfaction

43) Risk reduction in engineering refers to _____.
- a) Implementing measures to lower the work chances of accidents
- b) Increasing the number of hazards in the work environment
- c) Ignoring potential risks
- d) Cutting costs by removing safety measures

44) Public safety regulations are primarily designed to _____.
- a) Ensure the safety of the company's assets
- b) Protect the general public from potential harm
- c) Increase revenue for the government
- d) Focus only on preventing natural disasters

45) Multinational corporations (MNCs) are characterized by _____.
- a) Operations in multiple countries with a centralized headquarters
- b) Operating only in their home country
- c) Limited influence on global markets
- d) No responsibility toward environmental concerns

46) Environmental ethics primarily deals with _____.

a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
d) Treating employees equally

47) Which of the following is NOT an example of environmental ethics?

a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

48) Computer ethics involves _____.

a) Programming and coding without considering social consequences
b) Understanding the moral implications of computing technologies
c) Focusing only on technological innovation
d) Ignoring privacy issues

49) Weapons development ethics deals with _____.

a) The development of new technologies to enhance military capabilities
b) Restricting the use of all technological advancements
c) Focusing only on civilian safety
d) Only addressing the legal aspects of weapon development

50) Engineers as managers are expected to _____.

a) Focus solely on technical tasks
b) Lead teams, make strategic decisions, and manage projects
c) Ignore the business aspects of their work
d) Avoid taking responsibility for team outcomes

SLR-QH-174

Seat No.		Set	S

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) What is the primary goal of engineering ethics?
a) To maximize profits for companies
b) To ensure engineers work efficiently
c) To protect public safety and welfare
d) To follow industry standards

2) Which of the following is considered an ethical responsibility of an engineer?
a) Ignoring environmental concerns to meet deadlines
b) Ensuring the safety of the public
c) Disregarding laws and regulations
d) Making decisions based on personal interests

3) Ethical engineering practices promote _____.
a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
d) The minimization of safety regulations

4) Ethical engineers should consider which of the following when making decisions?
a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

5) Which of the following is NOT part of an engineer's ethical responsibility?
a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

6) Ethical engineering involves making decisions based on _____.

a) Personal opinions and values
b) Financial incentives and company pressure
c) Objective analysis, codes of ethics, and consideration for the public good
d) Trends in the field of engineering

7) What should an engineer do if they discover a colleague is involved in unethical practices?

a) Ignore the situation to avoid conflict
b) Report the unethical behavior to management or relevant authorities
c) Cover up the situation to protect the colleague
d) Allow the behavior to continue if it does not affect the project

8) Ethical engineering practices include _____.

a) Following industry standards and regulations
b) Ensuring profitability is the main priority
c) Cutting costs by any means necessary
d) Avoiding the reporting of safety hazards

9) What is the primary focus of Kohlberg's theory?

a) Cognitive development
b) Social development
c) Moral development
d) Emotional development

10) Which term refers to an agreement that is made through discussions and compromises among parties?

a) Conflict
b) Consensus
c) Dispute
d) Isolation

11) What is the primary goal of risk assessment?

a) To eliminate all risks
b) To identify and mitigate potential risks
c) To ignore potential risks
d) To transfer risks to others

12) What is the primary goal of safety protocols?

a) To increase productivity
b) To reduce costs
c) To prevent injuries and illnesses
d) To improve employee morale

13) What is the difference between a hazard and a risk?

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d) A hazard is a financial danger, while a risk is a physical danger

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15) According to the theory of ethical egoism, what should guide an individual's moral actions?
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d) Universal moral principles

16) Collegiality in a professional setting refers to _____.
a) Loyalty to your employer
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c) Competing for individual success
d) Avoiding work conflicts

17) Professional loyalty involves _____.
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b) Protecting the interests of the team or organization
c) Ignoring safety violations to avoid
d) Disclosing confidential information for personal conflict gain

18) Employee rights include _____.
a) The right to work without discrimination
b) The right to disregard company policies
c) The right to personal opinion but not affecting work
d) The right to ignore workplace safety standards

19) Intellectual Property Rights (IPR) protect _____.
a) The financial interests of corporations
b) The ownership and use of creative ideas and inventions
c) The physical assets of a company
d) Workplace performance evaluations

20) *Risk assessment* is important because it helps in _____.
a) Evaluating the potential impact of hazards on health and safety
b) Minimizing workplace productivity
c) Defining job roles
d) Ignoring environmental issues

21) In risk management, mitigation strategies aim to _____.
a) Accept all risks in the workplace
b) Reduce or eliminate identified risks
c) Increase the likelihood of hazards
d) Focus only on maximizing profits

22) Which of the following is a potential consequence of *occupational crime?*
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b) Legal consequences and loss of reputation
c) Improvement in company safety standards
d) Higher employee satisfaction

23) Risk reduction in engineering refers to _____.
a) Implementing measures to lower the work chances of accidents
b) Increasing the number of hazards in the work environment
c) Ignoring potential risks
d) Cutting costs by removing safety measures

24) Public safety regulations are primarily designed to _____.
a) Ensure the safety of the company's assets
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c) Increase revenue for the government
d) Focus only on preventing natural disasters

25) Multinational corporations (MNCs) are characterized by _____.
a) Operations in multiple countries with a centralized headquarters
b) Operating only in their home country
c) Limited influence on global markets
d) No responsibility toward environmental concerns

26) Environmental ethics primarily deals with _____.
a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
d) Treating employees equally

27) Which of the following is NOT an example of environmental ethics?
a) Reducing pollution and waste
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d) Sustainable development

28) Computer ethics involves _____.
a) Programming and coding without considering social consequences
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c) Focusing only on technological innovation
d) Ignoring privacy issues

29) Weapons development ethics deals with _____.
a) The development of new technologies to enhance military capabilities
b) Restricting the use of all technological advancements
c) Focusing only on civilian safety
d) Only addressing the legal aspects of weapon development

30) Engineers as managers are expected to _____.
a) Focus solely on technical tasks
b) Lead teams, make strategic decisions, and manage projects
c) Ignore the business aspects of their work
d) Avoid taking responsibility for team outcomes

31) Consulting engineers are hired to _____.
a) Work on projects within the company they are employed
b) Provide expert advice on technical and engineering problems
c) Manage public relations for a company
d) Conduct legal investigations

32) Engineers acting as expert witnesses typically _____.
a) Present evidence and offer testimony in legal cases
b) Focus on public relations during a case
c) Manage engineering projects for legal firms
d) Directly represent the interests of a company court

33) Sample Code of Ethics of professional organizations typically includes _____.
a) Guidelines for acceptable behavior and decision-making
b) Rules for maximizing profits at any cost
c) Detailed technical specifications for projects
d) Guidelines for political involvement in engineering

34) ASME stands for _____.
a) American Society of Mechanical Engineers
b) American Society of Management Engineers
c) Association of Safety and Mechanical Engineers
d) Association of Scientific and Mechanical Engineers

35) The ASCE Code of Ethics emphasizes _____.
a) Following only local regulations
b) Maintaining professional integrity and responsibility
c) Focusing on personal financial gain
d) Ignoring environmental impacts

36) The IEEE Code of Ethics is primarily concerned with _____.
a) Fostering professional competence and integrity
b) Protecting corporate secrets
c) Maximizing technological advancements at any cost
d) Developing weapons for defense purposes

37) Global issues in engineering ethics include _____.
a) Cultural differences in engineering practices
b) Lack of understanding between technical and ethical concerns
c) Addressing both local and international engineering challenges
d) All of the above

38) A key challenge faced by multinational corporations is _____.
a) Balancing profits with social and environmental
b) Competing only within their home country responsibilities
c) Focusing solely on domestic issues
d) Ignoring corporate social responsibility

39) Empathy is the ability to _____.
a) Solve problems logically
b) Understand and share the feelings of others
c) Be indifferent to others' emotions
d) Only care about your own well-being

40) The quality of "caring" includes _____.
a) Showing concern for others' well-being
b) Ignoring the needs of others
c) Only helping family and friends
d) Seeking praise for helping others

41) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

42) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

43) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

44) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

45) The value of respect entails _____.

a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

46) Which value involves being accountable for one's decisions and actions?

a) Responsibility b) Flexibility
c) Confidence d) Arrogance

47) The value of integrity entails _____.

a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

48) Which value involves being considerate and thoughtful towards others?

a) Kindness b) Determination
c) Independence d) Indifference

49) The value of wisdom involves _____.

a) Making sound and informed judgments based on knowledge and experience
b) Pursuing personal interests at the expense of others
c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

50) Which value involves being truthful and sincere in one's actions and words?

a) Honesty b) Tolerance
c) Flexibility d) Arrogance

SLR-QH-175

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Integrated Circuits (BTN07404)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Unity gain amplifier is also known as _____.
a) Difference amplifier b) Comparator
c) Single ended d) Voltage follower

2) For non-inverting amplifier, if $\mathrm{Rf} = 100\mathrm{k}\Omega$ and $\mathrm{Ri} = 1\mathrm{k}\Omega$ then closed loop gain is _____.
a) 1,00,000 b) $-1{,}000$
c) 101 d) -100

3) The large signal bandwidth of an op-amp is limited by its _____.
a) loop gain b) slew rate
c) output impedance d) input frequency

4) CMRR of a differential amplifier can be improved by increasing _____.
a) Differential voltage gain b) Common mode voltage gain
c) Both a) and b) d) None of the above.

5) A differential amplifier is capable of amplifying _____.
a) DC input signal only b) AC input signal only
c) AC & DC input signal d) None of the Mentioned

6) A feedback amplifier is also called as _____.
a) Open loop amplifier b) Closed loop amplifier
c) Feedback network amplifier d) Looped network amplifier

7) Integration amplifier produces _____.
   a) Output waveform as integration of input waveform
   b) Input waveform as integration of output waveform
   c) Output waveform as derivative of input waveform
   d) Input waveform as derivative of output waveform

8) Which of the following is NOT considered for forming groups in K-map?
   a) Rolling
   b) Diagonal
   c) Vertical
   d) Horizontal

9) The Boolean expression $Y = XY + ZX$ is in the _____ form.
   a) Product-of-Sum
   b) Sum-of-Products
   c) Linear
   d) None of the above

10) The flip flop is a _____ device.
   a) Unstable
   b) Bi-stable
   c) Both a) and b)
   d) None of the above

11) Which circuit doesn't have a memory unit?
   a) Combinational
   b) Sequential
   c) Both a) and b)
   d) None of the above

12) A register is defined as _____.
   a) The group of latches for storing one bit of information
   b) The group of latches for storing n-bit of information
   c) The group of flip-flops suitable for storing one bit of information
   d) The group of flip-flops suitable for storing binary information

13) The full form of SIPO is _____.
   a) Serial-in Parallel-out
   b) Serial in perpendicular out
   c) Serial-in past out
   d) Serial-In Peripheral-Out

14) Registers capable of shifting in one direction is _____.
   a) Universal shift register
   b) Unidirectional shift register
   c) Unipolar shift register
   d) Unique shift register

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Integrated Circuits (BTN07404)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four questions. **16**

a) Explain DC Analysis of differential amplifier (BIBO).

b) Explain the ideal characteristics of op-amp.

c) Explain the concept of virtual ground condition.

d) Explain voltage to current converter with floating load.

e) With neat circuit diagram explain working of integrator.

Q.3 Attempt Any Two questions. **12**

a) Explain three op amp instrumentation amplifiers.

b) Draw and explain equivalent circuit and ideal voltage transfer curve of op-amp.

c) Derive an expression for input resistance and output resistance for voltage series feedback amplifier.

SECTION – II

Q.4 Attempt Any Four questions. **16**

a) Explain S-R flip-flop with logical diagram and truth table.

b) Differentiate between synchronous and asynchronous counters.

c) Define the following terms in brief.
i) Maxterm
ii) Min term
iii) SOP
iv) POS

d) Explain full adder in details & realize it using basic logic gates.

e) Explain different modes of shift registers with suitable diagrams.

Q.5 Attempt Any Two questions. **12**

a) Reduce the following expression using K-map and implement reduced expression by using logic gates $(\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum m\,(1,2,5,8,11,13)$

b) Design a D flip-flop using JK flip flop.

c) Design a mod-10 asynchronous down counter using J-K flip flop.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Integrated Circuits (BTN07404)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) Which of the following is NOT considered for forming groups in K-map?
a) Rolling b) Diagonal
c) Vertical d) Horizontal

2) The Boolean expression $Y = XY + ZX$ is in the _____ form.
a) Product-of-Sum b) Sum-of-Products
c) Linear d) None of the above

3) The flip flop is a _____ device.
a) Unstable b) Bi-stable
c) Both a) and b) d) None of the above

4) Which circuit doesn't have a memory unit?
a) Combinational b) Sequential
c) Both a) and b) d) None of the above

5) A register is defined as _____.
a) The group of latches for storing one bit of information
b) The group of latches for storing n-bit of information
c) The group of flip-flops suitable for storing one bit of information
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6) The full form of SIPO is _____.
a) Serial-in Parallel-out b) Serial in perpendicular out
c) Serial-in past out d) Serial-In Peripheral-Out

7) Registers capable of shifting in one direction is _____.
a) Universal shift register b) Unidirectional shift register
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8) Unity gain amplifier is also known as _____.
   a) Difference amplifier
   b) Comparator
   c) Single ended
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9) For non-inverting amplifier, if $\mathrm{Rf} = 100\mathrm{k}\Omega$ and $\mathrm{Ri} = 1\mathrm{k}\Omega$ then closed loop gain is _____.
   a) 1,00,000
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10) The large signal bandwidth of an op-amp is limited by its _____.
   a) loop gain
   b) slew rate
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12) A differential amplifier is capable of amplifying _____.
   a) DC input signal only
   b) AC input signal only
   c) AC & DC input signal
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13) A feedback amplifier is also called as _____.
   a) Open loop amplifier
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   c) Feedback network amplifier
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14) Integration amplifier produces _____.
   a) Output waveform as integration of input waveform
   b) Input waveform as integration of output waveform
   c) Output waveform as derivative of input waveform
   d) Input waveform as derivative of output waveform

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Integrated Circuits (BTN07404)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four questions. **16**

a) Explain DC Analysis of differential amplifier (BIBO).

b) Explain the ideal characteristics of op-amp.

c) Explain the concept of virtual ground condition.

d) Explain voltage to current converter with floating load.

e) With neat circuit diagram explain working of integrator.

Q.3 Attempt Any Two questions. **12**

a) Explain three op amp instrumentation amplifiers.

b) Draw and explain equivalent circuit and ideal voltage transfer curve of op-amp.

c) Derive an expression for input resistance and output resistance for voltage series feedback amplifier.

SECTION – II

Q.4 Attempt Any Four questions. **16**

a) Explain S-R flip-flop with logical diagram and truth table.

b) Differentiate between synchronous and asynchronous counters.

c) Define the following terms in brief.
i) Maxterm
ii) Min term
iii) SOP
iv) POS

d) Explain full adder in details & realize it using basic logic gates.

e) Explain different modes of shift registers with suitable diagrams.

Q.5 Attempt Any Two questions. **12**

a) Reduce the following expression using K-map and implement reduced expression by using logic gates $(\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum m\,(1,2,5,8,11,13)$

b) Design a D flip-flop using JK flip flop.

c) Design a mod-10 asynchronous down counter using J-K flip flop.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Integrated Circuits (BTN07404)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Which circuit doesn't have a memory unit?
a) Combinational b) Sequential
c) Both a) and b) d) None of the above

2) A register is defined as _____.
a) The group of latches for storing one bit of information
b) The group of latches for storing n-bit of information
c) The group of flip-flops suitable for storing one bit of information
d) The group of flip-flops suitable for storing binary information

3) The full form of SIPO is _____.
a) Serial-in Parallel-out b) Serial in perpendicular out
c) Serial-in past out d) Serial-In Peripheral-Out

4) Registers capable of shifting in one direction is _____.
a) Universal shift register b) Unidirectional shift register
c) Unipolar shift register d) Unique shift register

5) Unity gain amplifier is also known as _____.
a) Difference amplifier b) Comparator
c) Single ended d) Voltage follower

6) For non-inverting amplifier, if $\mathrm{Rf} = 100\mathrm{k}\Omega$ and $\mathrm{Ri} = 1\mathrm{k}\Omega$ then closed loop gain is _____.
a) 1,00,000 b) $-1{,}000$
c) 101 d) -100

7) The large signal bandwidth of an op-amp is limited by its _____.
a) loop gain b) slew rate
c) output impedance d) input frequency

8) CMRR of a differential amplifier can be improved by increasing _____.
a) Differential voltage gain b) Common mode voltage gain
c) Both a) and b) d) None of the above.

9) A differential amplifier is capable of amplifying _____.
a) DC input signal only b) AC input signal only
c) AC & DC input signal d) None of the Mentioned

10) A feedback amplifier is also called as _____.
a) Open loop amplifier b) Closed loop amplifier
c) Feedback network amplifier d) Looped network amplifier

11) Integration amplifier produces _____.
a) Output waveform as integration of input waveform
b) Input waveform as integration of output waveform
c) Output waveform as derivative of input waveform
d) Input waveform as derivative of output waveform

12) Which of the following is NOT considered for forming groups in K-map?
a) Rolling b) Diagonal
c) Vertical d) Horizontal

13) The Boolean expression $Y = XY + ZX$ is in the _____ form.
a) Product-of-Sum b) Sum-of-Products
c) Linear d) None of the above

14) The flip flop is a _____ device.
a) Unstable b) Bi-stable
c) Both a) and b) d) None of the above

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Integrated Circuits (BTN07404)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four questions. **16**

a) Explain DC Analysis of differential amplifier (BIBO).

b) Explain the ideal characteristics of op-amp.

c) Explain the concept of virtual ground condition.

d) Explain voltage to current converter with floating load.

e) With neat circuit diagram explain working of integrator.

Q.3 Attempt Any Two questions. **12**

a) Explain three op amp instrumentation amplifiers.

b) Draw and explain equivalent circuit and ideal voltage transfer curve of op-amp.

c) Derive an expression for input resistance and output resistance for voltage series feedback amplifier.

SECTION – II

Q.4 Attempt Any Four questions. **16**

a) Explain S-R flip-flop with logical diagram and truth table.

b) Differentiate between synchronous and asynchronous counters.

c) Define the following terms in brief.
i) Maxterm
ii) Min term
iii) SOP
iv) POS

d) Explain full adder in details & realize it using basic logic gates.

e) Explain different modes of shift registers with suitable diagrams.

Q.5 Attempt Any Two questions. **12**

a) Reduce the following expression using K-map and implement reduced expression by using logic gates $(\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum m\,(1,2,5,8,11,13)$

b) Design a D flip-flop using JK flip flop.

c) Design a mod-10 asynchronous down counter using J-K flip flop.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Integrated Circuits (BTN07404)

Day & Date: Friday, 29-05-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) A feedback amplifier is also called as _____.
a) Open loop amplifier b) Closed loop amplifier
c) Feedback network amplifier d) Looped network amplifier

2) Integration amplifier produces _____.
a) Output waveform as integration of input waveform
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3) Which of the following is NOT considered for forming groups in K-map?
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5) The flip flop is a _____ device.
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6) Which circuit doesn't have a memory unit?
a) Combinational b) Sequential
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7) A register is defined as _____.
   a) The group of latches for storing one bit of information
   b) The group of latches for storing n-bit of information
   c) The group of flip-flops suitable for storing one bit of information
   d) The group of flip-flops suitable for storing binary information

8) The full form of SIPO is _____.
   a) Serial-in Parallel-out
   b) Serial in perpendicular out
   c) Serial-in past out
   d) Serial-In Peripheral-Out

9) Registers capable of shifting in one direction is _____.
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   b) Unidirectional shift register
   c) Unipolar shift register
   d) Unique shift register

10) Unity gain amplifier is also known as _____.
   a) Difference amplifier
   b) Comparator
   c) Single ended
   d) Voltage follower

11) For non-inverting amplifier, if $\mathrm{Rf} = 100\mathrm{k}\Omega$ and $\mathrm{Ri} = 1\mathrm{k}\Omega$ then closed loop gain is _____.
   a) 1,00,000
   b) $-1{,}000$
   c) 101
   d) -100

12) The large signal bandwidth of an op-amp is limited by its _____.
   a) loop gain
   b) slew rate
   c) output impedance
   d) input frequency

13) CMRR of a differential amplifier can be improved by increasing _____.
   a) Differential voltage gain
   b) Common mode voltage gain
   c) Both a) and b)
   d) None of the above.

14) A differential amplifier is capable of amplifying _____.
   a) DC input signal only
   b) AC input signal only
   c) AC & DC input signal
   d) None of the Mentioned

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Analog and Digital Integrated Circuits (BTN07404)

Day & Date: Friday, 29-05-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four questions. **16**

a) Explain DC Analysis of differential amplifier (BIBO).

b) Explain the ideal characteristics of op-amp.

c) Explain the concept of virtual ground condition.

d) Explain voltage to current converter with floating load.

e) With neat circuit diagram explain working of integrator.

Q.3 Attempt Any Two questions. **12**

a) Explain three op amp instrumentation amplifiers.

b) Draw and explain equivalent circuit and ideal voltage transfer curve of op-amp.

c) Derive an expression for input resistance and output resistance for voltage series feedback amplifier.

SECTION – II

Q.4 Attempt Any Four questions. **16**

a) Explain S-R flip-flop with logical diagram and truth table.

b) Differentiate between synchronous and asynchronous counters.

c) Define the following terms in brief.
i) Maxterm
ii) Min term
iii) SOP
iv) POS

d) Explain full adder in details & realize it using basic logic gates.

e) Explain different modes of shift registers with suitable diagrams.

Q.5 Attempt Any Two questions. **12**

a) Reduce the following expression using K-map and implement reduced expression by using logic gates $(\mathrm{A}, \mathrm{B}, \mathrm{C}, \mathrm{D}) = \sum m\,(1, 2, 5, 8, 11, 13)$

b) Design a D flip-flop using JK flip flop.

c) Design a mod-10 asynchronous down counter using J-K flip flop.

SLR-QH-176

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Techniques (ECEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) Which of the following is the binary equivalent of the decimal number 25?
a) 11000 b) 11001
c) 11100 d) 10101

2) The Boolean expression $A + A'BA + A'BA + A'B$ simplifies to _____.
a) $ABABAB$ b) $A + BA + BA + B$
c) $A' + BA' + BA' + B$ d) $A + B'A + B'A + B'$

3) Which logic gate produces a HIGH output only when all inputs are LOW?
a) AND b) NOR
c) XOR d) NAND

4) The minimum number of variables required to form a 4×1 multiplexer is _____.
a) 2 select lines and 4 input lines
b) 3 select lines and 8 input lines
c) 4 select lines and 16 input lines
d) 2 input lines and 4 select lines

5) Which of the following expressions represents a Half Adder output for SUM?
a) $A + BA + BA + B$ b) $ABABAB$
c) $A \oplus BA \backslash \text{oplus}\ BA \oplus B$ d) $A'B + AB'A'B + AB'A'B + AB'$

6) In a JK flip-flop, if both J and K inputs are HIGH, the output will ____.
a) Remain the same b) Reset to 0
c) Set to 1 d) Toggle

7) A register that shifts data either left or right is called a _____.
a) Parallel register b) Counter
c) Shift register d) Latch

8) In a Moore machine, the output depends on _____.
a) Present state only b) Input only
c) Both present state and input d) Next state only

9) The diagram that shows transitions between states in a finite state machine is called a _____.
a) Truth table b) Timing diagram
c) State diagram d) Flowchart

10) A Mealy machine produces output based on _____.
a) Present state only
b) Input only
c) Present state and current input
d) Next state

11) Which of the following PLDs has fixed AND array and programmable OR array?
a) PROM b) PAL
c) PLA d) FPGA

12) The main difference between PLA and PAL is that _____.
a) PLA has programmable AND & OR arrays, PAL has only programmable OR array
b) PLA has fixed AND array, PAL has fixed OR array
c) PLA has both programmable arrays, PAL has only programmable AND array
d) PLA is slower than PAL

13) Which type of memory is non-volatile and can be electrically erased and reprogrammed?
a) ROM b) PROM
c) EPROM d) EEPROM

14) The device that converts digital signals into analog signals is called _____.
a) ADC b) DAC
c) RAM d) ROM

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Techniques (ECEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following decimal numbers to binary and octal:
i) 25
ii) 213

b) What is a demultiplexer? Draw and explain a 1:4 demultiplexer.

c) Explain the working of an SR flip-flop with its truth table.

d) Simplify $F(A, B, C) = \Sigma(1, 2, 5, 6)$ using Karnaugh Map.

e) Explain Half Adder and Half Subtractor with logic diagram.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the working and truth tables of the basic and universal logic gates.

b) Simplify the Boolean expression using Boolean laws:
i) $\mathrm{A} + \mathrm{AB} + \mathrm{A}'\mathrm{B}$
ii) $\mathrm{ABC}' + \mathrm{BC} + \mathrm{A}'\mathrm{C}$

c) Explain the operation and characteristic table of SR, JK, D, and T flip-flops.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Draw a state diagram and state table for a sequence detector that detects "101" in a serial bit stream.

b) Describe the programming technique of EEPROM and how it differs from PROM.

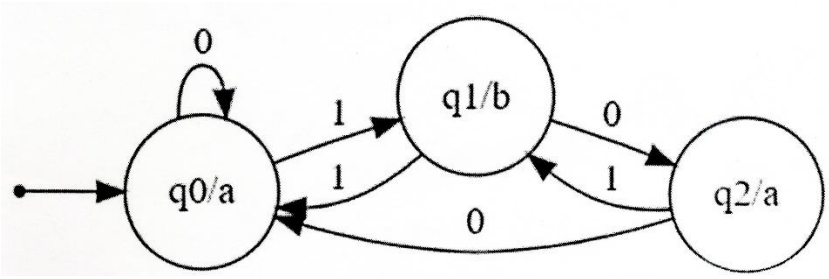
c) Explain how a logic function can be implemented using a PAL.

d) Explain the role of memory in digital systems and how it interfaces with a microprocessor.

e) What are Programmable Logic Devices (PLDs)? List their types.

Q.5 Attempt the following. (Any Two) **12**

a) Convert the following Moore machine to the Mealy machine with transition table.



b) Explain in brief FPGA architecture and its applications.

c) Compare RAM, ROM, PROM, EPROM, and EEPROM based on volatility, programmability, and use.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Techniques (ECEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) In a Moore machine, the output depends on _____.
a) Present state only
b) Input only
c) Both present state and input
d) Next state only

2) The diagram that shows transitions between states in a finite state machine is called a _____.
a) Truth table
b) Timing diagram
c) State diagram
d) Flowchart

3) A Mealy machine produces output based on _____.
a) Present state only
b) Input only
c) Present state and current input
d) Next state

4) Which of the following PLDs has fixed AND array and programmable OR array?
a) PROM
b) PAL
c) PLA
d) FPGA

5) The main difference between PLA and PAL is that _____.
a) PLA has programmable AND & OR arrays, PAL has only programmable OR array
b) PLA has fixed AND array, PAL has fixed OR array
c) PLA has both programmable arrays, PAL has only programmable AND array
d) PLA is slower than PAL

6) Which type of memory is non-volatile and can be electrically erased and reprogrammed?

a) ROM
b) PROM
c) EPROM
d) EEPROM

7) The device that converts digital signals into analog signals is called _____.

a) ADC
b) DAC
c) RAM
d) ROM

8) Which of the following is the binary equivalent of the decimal number 25?

a) 11000
b) 11001
c) 11100
d) 10101

9) The Boolean expression $A + A'BA + A'BA + A'B$ simplifies to _____.

a) $ABABAB$
b) $A + BA + BA + B$
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d) $A + B'A + B'A + B'$

10) Which logic gate produces a HIGH output only when all inputs are LOW?

a) AND
b) NOR
c) XOR
d) NAND

11) The minimum number of variables required to form a 4×1 multiplexer is _____.

a) 2 select lines and 4 input lines
b) 3 select lines and 8 input lines
c) 4 select lines and 16 input lines
d) 2 input lines and 4 select lines

12) Which of the following expressions represents a Half Adder output for SUM?

a) $A + BA + BA + B$
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13) In a JK flip-flop, if both J and K inputs are HIGH, the output will ____.

a) Remain the same
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c) Set to 1
d) Toggle

14) A register that shifts data either left or right is called a _____.

a) Parallel register
b) Counter
c) Shift register
d) Latch

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Techniques (ECEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following decimal numbers to binary and octal:
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ii) 213

b) What is a demultiplexer? Draw and explain a 1:4 demultiplexer.

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i) $\mathrm{A} + \mathrm{AB} + \mathrm{A'B}$
ii) $\mathrm{ABC'} + \mathrm{BC} + \mathrm{A'C}$

c) Explain the operation and characteristic table of SR, JK, D, and T flip-flops.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Draw a state diagram and state table for a sequence detector that detects "101" in a serial bit stream.

b) Describe the programming technique of EEPROM and how it differs from PROM.

c) Explain how a logic function can be implemented using a PAL.

d) Explain the role of memory in digital systems and how it interfaces with a microprocessor.

e) What are Programmable Logic Devices (PLDs)? List their types.

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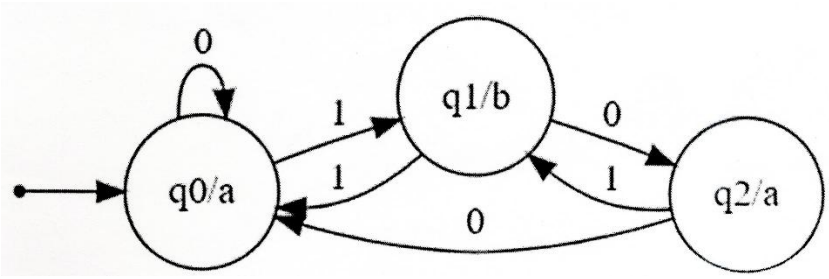

b) Explain in brief FPGA architecture and its applications.

c) Compare RAM, ROM, PROM, EPROM, and EEPROM based on volatility, programmability, and use.

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Techniques (ECEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) Which of the following PLDs has fixed AND array and programmable OR array?
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2) The main difference between PLA and PAL is that _____.
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8) The minimum number of variables required to form a 4×1 multiplexer is _____.
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13) The diagram that shows transitions between states in a finite state machine is called a _____.
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c) State diagram
d) Flowchart

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b) Input only
c) Present state and current input
d) Next state

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Techniques (ECEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Attempt the following. (Any Four) **16**

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Section – II

Q.4 Attempt the following. (Any Four) **16**

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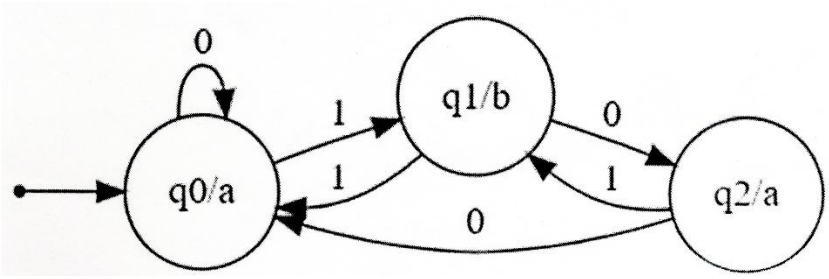


b) Explain in brief FPGA architecture and its applications.

c) Compare RAM, ROM, PROM, EPROM, and EEPROM based on volatility, programmability, and use.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Techniques (ECEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative. **14**

1) In a JK flip-flop, if both J and K inputs are HIGH, the output will ____.
a) Remain the same b) Reset to 0
c) Set to 1 d) Toggle

2) A register that shifts data either left or right is called a _____.
a) Parallel register b) Counter
c) Shift register d) Latch

3) In a Moore machine, the output depends on _____.
a) Present state only b) Input only
c) Both present state and input d) Next state only

4) The diagram that shows transitions between states in a finite state machine is called a _____.
a) Truth table b) Timing diagram
c) State diagram d) Flowchart

5) A Mealy machine produces output based on _____.
a) Present state only
b) Input only
c) Present state and current input
d) Next state

6) Which of the following PLDs has fixed AND array and programmable OR array?
a) PROM b) PAL
c) PLA d) FPGA

7) The main difference between PLA and PAL is that _____.
a) PLA has programmable AND & OR arrays, PAL has only programmable OR array
b) PLA has fixed AND array, PAL has fixed OR array
c) PLA has both programmable arrays, PAL has only programmable AND array
d) PLA is slower than PAL

8) Which type of memory is non-volatile and can be electrically erased and reprogrammed?
a) ROM
b) PROM
c) EPROM
d) EEPROM

9) The device that converts digital signals into analog signals is called _____.
a) ADC
b) DAC
c) RAM
d) ROM

10) Which of the following is the binary equivalent of the decimal number 25?
a) 11000
b) 11001
c) 11100
d) 10101

11) The Boolean expression $A + A'BA + A'BA + A'B$ simplifies to _____.
a) $ABABAB$
b) $A + BA + BA + B$
c) $A' + BA' + BA' + B$
d) $A + B'A + B'A + B'$

12) Which logic gate produces a HIGH output only when all inputs are LOW?
a) AND
b) NOR
c) XOR
d) NAND

13) The minimum number of variables required to form a 4×1 multiplexer is _____.
a) 2 select lines and 4 input lines
b) 3 select lines and 8 input lines
c) 4 select lines and 16 input lines
d) 2 input lines and 4 select lines

14) Which of the following expressions represents a Half Adder output for SUM?
a) $A + BA + BA + B$
b) $ABABAB$
c) $A \oplus BA \backslash \text{oplus } BA \oplus B$
d) $A'B + AB'A'B + AB'A'B + AB'$

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Techniques (ECEPCC-01)

Day & Date: Monday, 04-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following decimal numbers to binary and octal:
i) 25
ii) 213

b) What is a demultiplexer? Draw and explain a 1:4 demultiplexer.

c) Explain the working of an SR flip-flop with its truth table.

d) Simplify $F(A, B, C) = \Sigma(1, 2, 5, 6)$ using Karnaugh Map.

e) Explain Half Adder and Half Subtractor with logic diagram.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the working and truth tables of the basic and universal logic gates.

b) Simplify the Boolean expression using Boolean laws:
i) $\mathrm{A} + \mathrm{AB} + \mathrm{A}'\mathrm{B}$
ii) $\mathrm{ABC}' + \mathrm{BC} + \mathrm{A}'\mathrm{C}$

c) Explain the operation and characteristic table of SR, JK, D, and T flip-flops.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Draw a state diagram and state table for a sequence detector that detects "101" in a serial bit stream.

b) Describe the programming technique of EEPROM and how it differs from PROM.

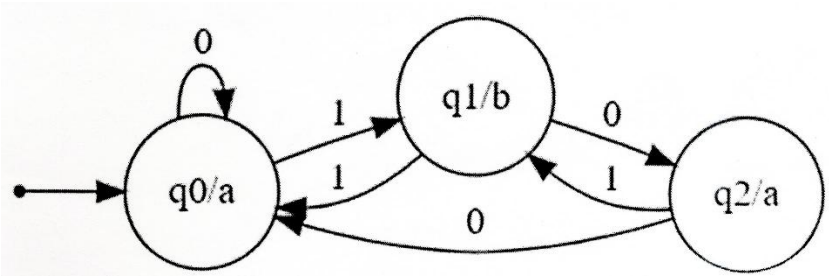
c) Explain how a logic function can be implemented using a PAL.

d) Explain the role of memory in digital systems and how it interfaces with a microprocessor.

e) What are Programmable Logic Devices (PLDs)? List their types.

Q.5 Attempt the following. (Any Two) **12**

a) Convert the following Moore machine to the Mealy machine with transition table.



b) Explain in brief FPGA architecture and its applications.

c) Compare RAM, ROM, PROM, EPROM, and EEPROM based on volatility, programmability, and use.

SLR-QH-177

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures and Algorithms (ECEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which queue allows insertion and deletion at both ends?
a) Circular Queue b) Priority Queue
c) Deque d) Simple Queue

2) In array implementation of a stack, which variable is used to indicate the current top element?
a) head b) front
c) rear d) top

3) A node in a doubly linked list contains: _____.
a) One pointer and data b) Two pointers and data
c) Data only d) Three pointers and data

4) In an array, traversal means: _____.
a) Inserting an element
b) Accessing each element exactly once
c) Removing elements
d) Sorting elements

5) A node in a singly linked list typically contains: _____.
a) Only data
b) Data and address of next node
c) Data and two pointers
d) Only pointer

6) Which is not an operation of a stack ADT?
a) push b) pop
c) peek d) search all D

7) An Abstract Data Type (ADT) is: _____.
   a) A data structure with fixed storage size
   b) A theoretical concept that defines operations but not implementation
   c) A function in C language
   d) An array with hidden elements B

8) Which of the following sorting algorithms is NOT comparison-based?
   a) Merge Sort
   b) Bubble Sort
   c) Counting Sort
   d) Quick Sort

9) Which of the following searching algorithms is NOT efficient for large datasets?
   a) Binary Search
   b) Linear Search
   c) Interpolation Search
   d) Fibonacci Search

10) An AVL tree is a BST that maintains: _____.
   a) Height balance
   b) Node balance
   c) Leaf balance
   d) Weight balance

11) The maximum number of nodes at level k in a binary tree is: ____.
   a) k
   b) 2^k
   c) $2^{(k-1)}$
   d) k^2

12) A graph is said to be connected if: ____.
   a) All vertices are reachable from one another
   b) Each vertex has at least one edge
   c) There are no cycles
   d) It is a tree

13) Which graph representation is most efficient for a fully connected graph with hundreds of nodes?
   a) Adjacency Matrix
   b) Adjacency List
   c) Linked List
   d) Heap

14) Which sorting algorithm repeatedly swaps adjacent elements if they are in the wrong order?
   a) Selection Sort
   b) Bubble Sort
   c) Quick Sort
   d) Merge Sort

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures and Algorithms (ECEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever necessary.

SECTION – I

Q.2 Solve Any Four of the followings. **16**

a) Define data structure. Explain its types along with example.

b) Define Algorithm. Explain its features.

c) What is stack data structure? Describe all its operations.

d) Explain with the help of diagram Singly Linked Lists
i) Node Structure
ii) Inserting a node

e) Explain in short the different types of linked lists.

Q.3 Solve Any Two of the followings. **12**

a) Write a C program to implement Enqueue, Dequeue and Display Operations on Queue.

b) Write a C program to perform the traversing, insertion and deletion operation on Array.

c) With the help of diagram describe the insertion and deletion operation on circular queue.

SECTION – II

Q.4 Solve Any Four of the followings. **16**

a) Write a program to implement Quick Sort Algorithm. Given below is an array of 10 numbers apply the Quick Sort Algorithm and show various stages with a suitable diagram. Array:
12, 55, 9, 21, 87, 39, 61, 10, 76, 50

b) Explain different Binary tree terminology.

c) Write a short note on:
i) Binary Search Tree
ii) AVL Tree

d) Explain the Breadth First Search (BFS) traversal technique of Graph.

e) Explain in detail the Dijkstra's algorithm for finding shortest path in Graph.

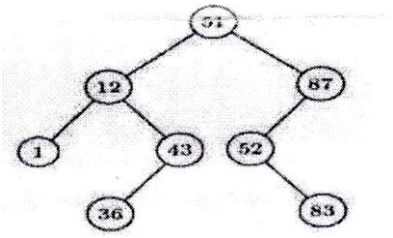
Q.5 Solve Any Two of the followings. **12**

a) Write a program to enter n numbers in an array. Redisplay the array with elements being sorted in ascending order using Bubble Sort.

b) Explain the Adjacency Matrix and Adjacency List representation of Graph.

c) Write the algorithms/functions for Tree Traversals and for the given tree illustrate the traversals with proper diagram

i) in-order traversal
ii) pre-order traversal
iii) post-order traversal



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Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures and Algorithms (ECEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data whenever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

1) Which of the following sorting algorithms is NOT comparison-based?
a) Merge Sort b) Bubble Sort
c) Counting Sort d) Quick Sort

2) Which of the following searching algorithms is NOT efficient for large datasets?
a) Binary Search b) Linear Search
c) Interpolation Search d) Fibonacci Search

3) An AVL tree is a BST that maintains: _____.
a) Height balance b) Node balance
c) Leaf balance d) Weight balance

4) The maximum number of nodes at level k in a binary tree is: ____.
a) k b) 2^k
c) $2^{(k-1)}$ d) k^2

5) A graph is said to be connected if: ____.
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c) Quick Sort
d) Merge Sort

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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures and Algorithms (ECEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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SECTION – I

Q.2 Solve Any Four of the followings. **16**

a) Define data structure. Explain its types along with example.

b) Define Algorithm. Explain its features.

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SECTION – II

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a) Write a program to implement Quick Sort Algorithm. Given below is an array of 10 numbers apply the Quick Sort Algorithm and show various stages with a suitable diagram. Array:
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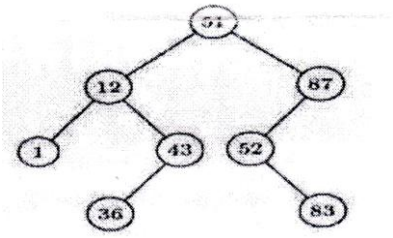

Seat No.	

Set | **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures and Algorithms (ECEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

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Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures and Algorithms (ECEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever necessary.

SECTION – I

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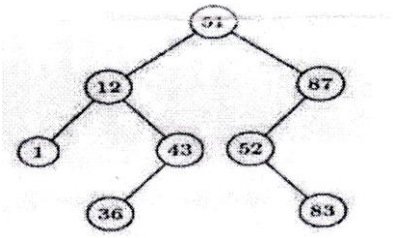

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Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures and Algorithms (ECEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternatives from the options and rewrite the sentence. **14**

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SLR-QH-177

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Data Structures and Algorithms (ECEPCC-02)

Day & Date: Wednesday, 06-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever necessary.

SECTION – I

Q.2 Solve Any Four of the followings. **16**

a) Define data structure. Explain its types along with example.

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SECTION – II

Q.4 Solve Any Four of the followings. **16**

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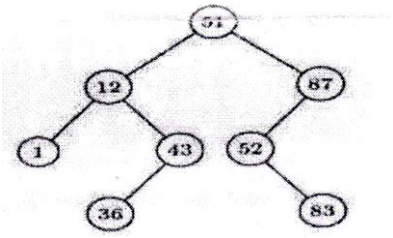

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Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electronic Devices and Circuit (ECEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A PN junction diode conducts when it is: _____.
a) Reverse biased b) Forward biased
c) Not connected d) Grounded

2) Bridge rectifier uses: _____.
a) 1 diode b) 2 diodes
c) 3 diodes d) 4 diodes

3) In a transistor, base current is: _____.
a) Maximum b) Minimum
c) Zero d) Equal to collector current

4) The region used for amplification in BJT is: _____.
a) Cutoff b) Saturation
c) Active d) Breakdown

5) JFET has: _____.
a) High input impedance b) Low input impedance
c) Zero impedance d) Infinite current

6) MOSFET is controlled by: _____.
a) Current b) Voltage
c) Power d) Frequency

7) In common drain configuration, output is taken from: _____.
a) Gate b) Source
c) Drain d) Substrate

8) Positive feedback is used in: _____.
a) Amplifiers b) Oscillators
c) Rectifiers d) Filters

9) An oscillator converts: _____.
a) AC to DC b) DC to AC
c) AC to AC d) DC to DC

10) SCR turns ON when: _____.
a) Gate is triggered b) Voltage is zero
c) Current is zero d) Temperature decreases

11) DIAC is used with: _____.
a) SCR b) TRIAC
c) BJT d) MOSFET

12) Class AB amplifier is a combination of: _____.
a) Class A and B b) Class B and C
c) Class A and C d) None

13) IC 555 in monostable mode produces: _____.
a) Continuous waveform b) Single pulse
c) Square wave d) No output

14) The control terminal of IC 555 is: _____.
a) Pin 2 b) Pin 3
c) Pin 5 d) Pin 7

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electronic Devices and Circuit (ECEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Why are filter circuits used? Compare C, L, LC and π filters.

b) Explain effect of variation in temperature on PN junction diode characteristics.

c) Explain DC load line concept in BJT CE amplifier.

d) Describe V-I characteristics of n-channel JFET.

e) Explain the single-stage CE amplifier.

Q.3 Attempt Any Two. **12**

a) Explain operation of full wave rectifier. Give detailed analysis of performance parameters.

b) Explain operation of half wave rectifier. Give a detailed analysis of: Vorms, Iorms, Voavg, Ioavg, ripple factor, efficiency, TUF, PIV.

c) Explain n-channel enhancement MOSFET characteristics (drain and transfer).

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain effect of negative feedback on stability and bandwidth.

b) Define positive and negative feedback. What are advantages of negative feedback?

c) Define class A amplifier and write its characteristics.

d) Explain IC 555 in astable mode with internal diagram.

e) Draw and explain RC phase shift oscillator.

Q.5 Attempt Any Two. **12**

a) Explain construction and working of SCR with neat diagram.

b) Explain IC 555 in monostable mode and pin configuration.

c) Compare Class A, Class AB and Class C amplifiers.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electronic Devices and Circuit (ECEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Positive feedback is used in: _____.
a) Amplifiers b) Oscillators
c) Rectifiers d) Filters

2) An oscillator converts: _____.
a) AC to DC b) DC to AC
c) AC to AC d) DC to DC

3) SCR turns ON when: _____.
a) Gate is triggered b) Voltage is zero
c) Current is zero d) Temperature decreases

4) DIAC is used with: _____.
a) SCR b) TRIAC
c) BJT d) MOSFET

5) Class AB amplifier is a combination of: _____.
a) Class A and B b) Class B and C
c) Class A and C d) None

6) IC 555 in monostable mode produces: _____.
a) Continuous waveform b) Single pulse
c) Square wave d) No output

7) The control terminal of IC 555 is: _____.
a) Pin 2 b) Pin 3
c) Pin 5 d) Pin 7

8) A PN junction diode conducts when it is: _____.
a) Reverse biased b) Forward biased
c) Not connected d) Grounded

9) Bridge rectifier uses: _____.
a) 1 diode b) 2 diodes
c) 3 diodes d) 4 diodes

10) In a transistor, base current is: _____.
a) Maximum b) Minimum
c) Zero d) Equal to collector current

11) The region used for amplification in BJT is: _____.
a) Cutoff b) Saturation
c) Active d) Breakdown

12) JFET has: _____.
a) High input impedance b) Low input impedance
c) Zero impedance d) Infinite current

13) MOSFET is controlled by: _____.
a) Current b) Voltage
c) Power d) Frequency

14) In common drain configuration, output is taken from: _____.
a) Gate b) Source
c) Drain d) Substrate

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electronic Devices and Circuit (ECEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Why are filter circuits used? Compare C, L, LC and π filters.

b) Explain effect of variation in temperature on PN junction diode characteristics.

c) Explain DC load line concept in BJT CE amplifier.

d) Describe V-I characteristics of n-channel JFET.

e) Explain the single-stage CE amplifier.

Q.3 Attempt Any Two. **12**

a) Explain operation of full wave rectifier. Give detailed analysis of performance parameters.

b) Explain operation of half wave rectifier. Give a detailed analysis of: Vorms, Iorms, Voavg, Ioavg, ripple factor, efficiency, TUF, PIV.

c) Explain n-channel enhancement MOSFET characteristics (drain and transfer).

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain effect of negative feedback on stability and bandwidth.

b) Define positive and negative feedback. What are advantages of negative feedback?

c) Define class A amplifier and write its characteristics.

d) Explain IC 555 in astable mode with internal diagram.

e) Draw and explain RC phase shift oscillator.

Q.5 Attempt Any Two. **12**

a) Explain construction and working of SCR with neat diagram.

b) Explain IC 555 in monostable mode and pin configuration.

c) Compare Class A, Class AB and Class C amplifiers.

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electronic Devices and Circuit (ECEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) DIAC is used with: _____.
a) SCR b) TRIAC
c) BJT d) MOSFET

2) Class AB amplifier is a combination of: _____.
a) Class A and B b) Class B and C
c) Class A and C d) None

3) IC 555 in monostable mode produces: _____.
a) Continuous waveform b) Single pulse
c) Square wave d) No output

4) The control terminal of IC 555 is: _____.
a) Pin 2 b) Pin 3
c) Pin 5 d) Pin 7

5) A PN junction diode conducts when it is: _____.
a) Reverse biased b) Forward biased
c) Not connected d) Grounded

6) Bridge rectifier uses: _____.
a) 1 diode b) 2 diodes
c) 3 diodes d) 4 diodes

7) In a transistor, base current is: _____.
a) Maximum b) Minimum
c) Zero d) Equal to collector current

8) The region used for amplification in BJT is: _____.
a) Cutoff b) Saturation
c) Active d) Breakdown

9) JFET has: _____.
a) High input impedance b) Low input impedance
c) Zero impedance d) Infinite current

10) MOSFET is controlled by: _____.
a) Current b) Voltage
c) Power d) Frequency

11) In common drain configuration, output is taken from: _____.
a) Gate b) Source
c) Drain d) Substrate

12) Positive feedback is used in: _____.
a) Amplifiers b) Oscillators
c) Rectifiers d) Filters

13) An oscillator converts: _____.
a) AC to DC b) DC to AC
c) AC to AC d) DC to DC

14) SCR turns ON when: _____.
a) Gate is triggered b) Voltage is zero
c) Current is zero d) Temperature decreases

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electronic Devices and Circuit (ECEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Why are filter circuits used? Compare C, L, LC and π filters.

b) Explain effect of variation in temperature on PN junction diode characteristics.

c) Explain DC load line concept in BJT CE amplifier.

d) Describe V-I characteristics of n-channel JFET.

e) Explain the single-stage CE amplifier.

Q.3 Attempt Any Two. **12**

a) Explain operation of full wave rectifier. Give detailed analysis of performance parameters.

b) Explain operation of half wave rectifier. Give a detailed analysis of: Vorms, Iorms, Voavg, Ioavg, ripple factor, efficiency, TUF, PIV.

c) Explain n-channel enhancement MOSFET characteristics (drain and transfer).

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain effect of negative feedback on stability and bandwidth.

b) Define positive and negative feedback. What are advantages of negative feedback?

c) Define class A amplifier and write its characteristics.

d) Explain IC 555 in astable mode with internal diagram.

e) Draw and explain RC phase shift oscillator.

Q.5 Attempt Any Two. **12**

a) Explain construction and working of SCR with neat diagram.

b) Explain IC 555 in monostable mode and pin configuration.

c) Compare Class A, Class AB and Class C amplifiers.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electronic Devices and Circuit (ECEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) MOSFET is controlled by: _____.
a) Current b) Voltage
c) Power d) Frequency

2) In common drain configuration, output is taken from: _____.
a) Gate b) Source
c) Drain d) Substrate

3) Positive feedback is used in: _____.
a) Amplifiers b) Oscillators
c) Rectifiers d) Filters

4) An oscillator converts: _____.
a) AC to DC b) DC to AC
c) AC to AC d) DC to DC

5) SCR turns ON when: _____.
a) Gate is triggered b) Voltage is zero
c) Current is zero d) Temperature decreases

6) DIAC is used with: _____.
a) SCR b) TRIAC
c) BJT d) MOSFET

7) Class AB amplifier is a combination of: _____.
a) Class A and B b) Class B and C
c) Class A and C d) None

8) IC 555 in monostable mode produces: _____.
a) Continuous waveform b) Single pulse
c) Square wave d) No output

9) The control terminal of IC 555 is: _____.
a) Pin 2 b) Pin 3
c) Pin 5 d) Pin 7

10) A PN junction diode conducts when it is: _____.
a) Reverse biased b) Forward biased
c) Not connected d) Grounded

11) Bridge rectifier uses: _____.
a) 1 diode b) 2 diodes
c) 3 diodes d) 4 diodes

12) In a transistor, base current is: _____.
a) Maximum b) Minimum
c) Zero d) Equal to collector current

13) The region used for amplification in BJT is: _____.
a) Cutoff b) Saturation
c) Active d) Breakdown

14) JFET has: _____.
a) High input impedance b) Low input impedance
c) Zero impedance d) Infinite current

SLR-QH-178

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electronic Devices and Circuit (ECEPCC-03)

Day & Date: Friday, 08-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Why are filter circuits used? Compare C, L, LC and π filters.

b) Explain effect of variation in temperature on PN junction diode characteristics.

c) Explain DC load line concept in BJT CE amplifier.

d) Describe V-I characteristics of n-channel JFET.

e) Explain the single-stage CE amplifier.

Q.3 Attempt Any Two. **12**

a) Explain operation of full wave rectifier. Give detailed analysis of performance parameters.

b) Explain operation of half wave rectifier. Give a detailed analysis of: Vorms, Iorms, Voavg, Ioavg, ripple factor, efficiency, TUF, PIV.

c) Explain n-channel enhancement MOSFET characteristics (drain and transfer).

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain effect of negative feedback on stability and bandwidth.

b) Define positive and negative feedback. What are advantages of negative feedback?

c) Define class A amplifier and write its characteristics.

d) Explain IC 555 in astable mode with internal diagram.

e) Draw and explain RC phase shift oscillator.

Q.5 Attempt Any Two. **12**

a) Explain construction and working of SCR with neat diagram.

b) Explain IC 555 in monostable mode and pin configuration.

c) Compare Class A, Class AB and Class C amplifiers.

SLR-QH-179

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

2) $\frac{1}{D-a} X$ is equal to _____.

a) $\int Xe^{ax}dx$ b) $e^{ax}\int X.e^{-ax}dx$

c) $\int Xe^{-ax}dx$ d) $e^{-ax}\int Xe^{-ax}dx$

3) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

4) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

5) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

6) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

7) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

8) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

9) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

10) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

11) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78

c) 0.81 d) 0.95

12) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1

c) ± 1 d) 1

13) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$

b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2

d) μ, and $\frac{\sigma^2}{n}$

14) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$

b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$

d) $\sum \frac{(O-E)^2}{E}$

Seat No.	

Set | **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7
c) -1.2 d) -4

2) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6
c) 3 d) 5

3) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$
c) $3/2$ d) 0

4) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78
c) 0.81 d) 0.95

5) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1
c) ± 1 d) 1

6) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

7) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

8) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

9) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

10) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

11) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

12) The solution of $p + q = 1$ is _____.

a) $z = ax + (1-a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1-y) + c$ d) $z = a(1-x) + b(1-y) + c$

13) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

14) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$

b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$

d) $\frac{\mu_4}{\mu_2^3}$

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78
c) 0.81 d) 0.95

2) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1
c) ± 1 d) 1

3) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

4) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$
c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

5) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

6) $\frac{1}{D-a} X$ is equal to _____.

a) $\int Xe^{ax}dx$ b) $e^{ax}\int X.e^{-ax}dx$

c) $\int Xe^{-ax}dx$ d) $e^{-ax}\int Xe^{-ax}dx$

7) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

8) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

9) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

10) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

11) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

12) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

13) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \leq x \leq 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

14) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) If μ_1', μ_2', μ_3' are the first three moments of the distribution about certain number then third moment μ_3 of the distribution about the arithmetic mean is given by _____.

a) $\mu_3' - 3\mu_2'\mu_1' + 2(\mu_1')^3$ b) $\mu_3' - 3\mu_1' + (\mu_2')^3$

c) $\mu_3' + 2\mu_2'\mu_1' + (\mu_3')^3$ d) $\mu_3' + 3\mu_2'\mu_1' + {\mu_1'}^2$

2) Coefficient of kurtosis β_1 is given by _____.

a) $\frac{\mu_4}{\mu_3}$ b) $\frac{\mu_4}{\mu_2^2}$

c) $\frac{\mu_3^2}{\mu_2^3}$ d) $\frac{\mu_4}{\mu_2^3}$

3) If value of x for normal distribution is 35, mean of normal distribution is 65 and standard deviation is 25 then standardized random variable is _____.

a) -1.5 b) -1.7

c) -1.2 d) -4

4) A continuous random variable has the following probability density function $f(x) = kx(1-x), 0 \le x \le 1$ then $k =$ _____.

a) 2 b) 6

c) 3 d) 5

5) The area under the standard normal curve from $z = -\infty$ to $z = 0$ is _____.

a) 1 b) $1/2$

c) $3/2$ d) 0

6) If X, Y denote the deviation from their means and if $\sum X^2 = 80, \sum Y^2 = 50$ & $\sum XY = 60$ and $r =$_____.

a) 0.65 b) 0.78

c) 0.81 d) 0.95

7) If two regression lines are co-incides then the coefficient of correlation is _____.

a) 0 b) -1

c) ± 1 d) 1

8) If $\bar{x}$ is the mean of the random sample of size n taken from a population of size N having mean μ and standard deviation σ then mean and variance of the distribution $\bar{x}$ are _____.

a) $\bar{x}, \sigma^2$ b) $\bar{x}, \frac{\sigma^2}{n}$

c) μ, σ^2 d) μ, and $\frac{\sigma^2}{n}$

9) χ^2 distribution is defined by _____.

a) $\sum \frac{(O-E)}{E}$ b) $\sum \frac{(O-E)}{E^2}$

c) $\sum \left(\frac{O-E}{E}\right)^2$ d) $\sum \frac{(O-E)^2}{E}$

10) If a linear differential equation with constant coefficients and r.h.s. equal to zero has a real root m_1 repeated two times, then the corresponding part of the integral is _____.

a) $(c_1 + c_2)e^{m_1 x}$ b) $(c_1 x + c_2 x)e^{m_1 x}$

c) $(c_1 x + c_2 x^2)e^{m_1 x}$ d) $(c_1 + c_2 x)e^{m_1 x}$

11) $\frac{1}{D-a} X$ is equal to _____.

a) $\int X e^{ax} dx$ b) $e^{ax} \int X . e^{-ax} dx$

c) $\int X e^{-ax} dx$ d) $e^{-ax} \int X e^{-ax} dx$

12) $\frac{1}{D+1}(\log x + \frac{1}{x})$ is equal to _____.

a) e^x b) 1

c) x d) $\log x$

13) The solution of the equation $\sqrt{p} + \sqrt{q} = 1$ is _____.

a) $z = ax + ay + c$ b) $z = ax + a^2 y + c$

c) $z = ax + \left(1 - \sqrt{a}\right)^2 y + c$ d) None of these

14) The solution of $p + q = 1$ is _____.

a) $z = ax + (1 - a)y + c$ b) $z = ax + by + c$

c) $z = ax + b(1 - y) + c$ d) $z = a(1 - x) + b(1 - y) + c$

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April-2026
Advanced Mathematics and Statistics (OE-01A)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Find the Arithmetic mean, Median and standard deviation for the following frequency distribution.

x:	5	9	12	15	20	24	30	35	42	49
f:	3	6	8	8	9	10	8	7	6	2

b) Solve: $(D^2+1)y = x^2\cos 3x$

c) Solve: $(D^2-4D+4)y = 8.x^2e^{2x}\sin 2x$

d) Calculate the first four moments about the mean of the given distribution. Also find β_1, β_2

x	2.0	2.5	3.0	3.5	4.0	4.5	5.0
f	4	36	60	90	70	40	10

e) Solve $yzp + 2xq = xy$

Q.3 Attempt Any Three. **09**

a) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = 2e^{2x}$

b) Solve $p - q = x^2 + y^2$

c) Find the median of the following frequency distribution.

x	1	3	5	7	9	11	13	15	17
f	3	6	8	12	16	16	15	10	5

d) Solve $x(y-z)p + y(z-x)q = z(x-y)$

e) Solve $(D^3 - 3D + 2)y = x$

Q.4 Attempt Any Two. **10**

a) The first four moments of a distribution about the value 5 are $2, 20, 40$ and 50, from the given information obtain the first four central moments, Standard deviation and coefficient of skewness and kurtosis.

b) Solve the following differential equations by method of separation of variables.

$$3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0, \text{ given } u(x, 0) = 4e^{-x}$$

c) Solve $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^{e^x}$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Find the value of k if each of the following functions is a probability density function.

$$f(x) = \begin{cases} kx^2(1 - x^3) & , \quad 0 \leq x \leq 1 \\ 0 & , \quad \text{otherwise} \end{cases}$$

b) The mean life time of 100 fluorescent light bulbs produced by a Company is computed to be 1570 Hrs. with S.D. of 120 Hrs. If μ is the mean lifetime of all the bulbs produced by the Company, Test the Hypothesis $\mu = 1600$ Hrs. against the alternative Hypothesis $\mu \neq 1600$ Hrs. using 5% level of Significance.
(Given Expected value at 5% LOS is 1.96)

c) Fit a Straight line $y = a + bx$ to the following data.

x	0	5	10	15	20	25
y	12	15	17	22	24	30

d) Two independent random sample have the following data.
$\overline{x_1} = 110, \sigma_1 = 25, n_1 = 16$
$\overline{x_2} = 120, \sigma_2 = 30, n_2 = 9$
If σ_1 and σ_2 are the S. D. of the populations. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(The table value of t at $\alpha = 0.05$ for $v = 23$ degrees of freedom is 2.069)

e) If the probability of defective bulbs is 0.2, find the mean and variance of the distribution of defective bulbs in a lot of 1000 bulbs.

Q.6 Attempt Any Three. **09**

a) If two independent random samples of sizes 15 and 8 have respectively the following mean and population standard deviations, $\overline{x_1} = 980, \overline{x_2} = 1012; \sigma_1 = 75, \sigma_2 = 80$. Test the hypothesis that $\mu_1 = \mu_2$ at 5% level of significance.
(Given Expected value at 5% LOS with 21 DF is 2.080)

b) The number of telephone calls received by an operator in a ten-minute interval follows a Poisson distribution with mean 1. What is the probability of receiving (i) no call, (ii) less than four calls, in the interval? What is the most likely number of calls?

c) Calculate the Coefficient of correlations between x and y from the following data
$n = 25, \sum x = 100, \sum x^2 = 950, \sum y = 110, \sum y^2 = 850, \sum x\,y = 800$

d) Monthly salaries of 1000 workers have a normal distribution with mean of Rs. 575 and a standard deviation of Rs. 75. Find the number of workers having salaries between Rs. 500 and Rs. 625 p.m. Also find the minimum salary of the highest paid 200 workers.
(Given: For a standard normal variate
i) area between $t = 0$ and $t = 1$ is 0.3413,
ii) area between $t = 0$ and $t = 0.67$ is 0.2486,
iii) area between $t = 0$ and $t = 0.84$ is 0.3)

e) Obtain a second-degree curve to the following data and estimate the production in 1975.

Year	1921	1931	1941	1951	1961	1971	1981
Prod. (m. tons)	3	5	9	10	12	14	15

Q.7 Attempt Any Two. **10**

a) Fit a Binomial distribution to the following data,

Value of x	0	1	2	3	4	5	6
Frequency f	6	20	28	12	8	6	0

b) Calculate the lines of regression from the following table, gives the marks obtained by a class of students in two special papers.

Paper I	80	45	55	56	58	60	65	68	70	75	85
Paper II	82	56	50	48	60	62	64	65	70	74	90

c) Ten school boys were given a test in Statistics and their scores were recorded. They were given a month's special coaching and a second test was given to them in the same subject at the end of the coaching period. Test if the marks given below give evidence to the fact that the students are benefitted by coaching.

Marks in test I:	70	68	56	75	80	90	68	75	56	58
Marks in Test II:	68	70	52	73	75	78	80	92	54	55

(Given that value of t_α at 5% LOS for $v = 9$ degrees of freedom is 1.86 for one tailed test)

SLR-QH-180

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: **14**

1) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com b) e-bay
c) Rentalic.com d) All of the above

2) Which type of E - Commerce is Amazon?
a) B2B b) B2C
c) G2B d) G2C

3) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model b) Business model
c) Business plan d) Revenue model

4) All of the following are major B2C business models except _____.
a) content provider b) industry consortium
c) transaction broker d) service provider

5) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

6) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling b) Connectivity
c) Communication d) Customer

7) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business
b) Business to Government
c) Consumer to Business
d) Business to Consumer

8) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo
b) regret
c) provide rating for
d) forget

9) Digital Cash has the following characteristics _____.
a) Anonymity
b) Security
c) Confidentiality
d) All of the Above

10) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

11) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack
b) Brute force attack
c) Phlashing
d) Smurf attack

12) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business
b) Business to Consumer
c) Business to Business
d) Consumer to Consumer

13) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway
b) E - E-Commerce gateway
c) Software gateway
d) E-Wallets

14) What is another name called PDoS?
a) Brute force attack
b) Non-technical attack
c) Phlashing
d) Smurf attack

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: **14**

1) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo b) regret
c) provide rating for d) forget

2) Digital Cash has the following characteristics _____.
a) Anonymity b) Security
c) Confidentiality d) All of the Above

3) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

4) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

5) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business b) Business to Consumer
c) Business to Business d) Consumer to Consumer

6) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway b) E - E-Commerce gateway
c) Software gateway d) E-Wallets

7) What is another name called PDoS?
a) Brute force attack
b) Non-technical attack
c) Phlashing
d) Smurf attack

8) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com
b) e-bay
c) Rentalic.com
d) All of the above

9) Which type of E - Commerce is Amazon?
a) B2B
b) B2C
c) G2B
d) G2C

10) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model
b) Business model
c) Business plan
d) Revenue model

11) All of the following are major B2C business models except _____.
a) content provider
b) industry consortium
c) transaction broker
d) service provider

12) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

13) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling
b) Connectivity
c) Communication
d) Customer

14) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business
b) Business to Government
c) Consumer to Business
d) Business to Consumer

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: **14**

1) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

2) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business b) Business to Consumer
c) Business to Business d) Consumer to Consumer

3) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway b) E - E-Commerce gateway
c) Software gateway d) E-Wallets

4) What is another name called PDoS?
a) Brute force attack b) Non-technical attack
c) Phlashing d) Smurf attack

5) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com b) e-bay
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6) Which type of E - Commerce is Amazon?
a) B2B b) B2C
c) G2B d) G2C

7) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model
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c) Communication
d) Customer

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c) Consumer to Business
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12) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
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b) regret
c) provide rating for
d) forget

13) Digital Cash has the following characteristics _____.
a) Anonymity
b) Security
c) Confidentiality
d) All of the Above

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b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose correct answer: **14**

1) SCM is a game of 4 C's = Collaboration; Co-operation; Co-ordination and _____.
a) Controlling b) Connectivity
c) Communication d) Customer

2) Which e-commerce transaction provides the benefits of eliminating the requirement of a middleman?
a) Business to Business b) Business to Government
c) Consumer to Business d) Business to Consumer

3) After completing an E-Commerce transaction, the seller and buyer should be provided an opportunity to _____ their transaction experience.
a) undo b) regret
c) provide rating for d) forget

4) Digital Cash has the following characteristics _____.
a) Anonymity b) Security
c) Confidentiality d) All of the Above

5) Benefit of E-Commerce platform is/are _____.
a) competitive pricing to benefit both seller and buyer
b) large number of products to choose from
c) ability to buy products not available in the local market
d) All of them

6) Which type of attack is a method of defeating a cryptographic scheme of trying a large number of possibilities?
a) Teardrop attack b) Brute force attack
c) Phlashing d) Smurf attack

7) Which is the model in E - E-Commerce, if the seller is an individual and the buyer is a business firm?
a) Consumer to Business
b) Business to Consumer
c) Business to Business
d) Consumer to Consumer

8) Which of the following authenticates and handles credit card payment for E-Commerce?
a) Payment gateway
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c) Software gateway
d) E-Wallets

9) What is another name called PDoS?
a) Brute force attack
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c) Phlashing
d) Smurf attack

10) Which of the following is/are considered examples of the Consumer to Consumer (C2C) model?
a) Amazon.com
b) e-bay
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d) All of the above

11) Which type of E - Commerce is Amazon?
a) B2B
b) B2C
c) G2B
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12) Which of the following is the set of planned activities that are designed to result in a profit in the marketplace?
a) Profit model
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d) Revenue model

13) All of the following are major B2C business models except _____.
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14) After completing an E-Commerce transaction, the buyer needs to _____.
a) Pick the product and go home
b) Take the product to home
c) Collect it directly from a store
d) Wait till the delivery of the product

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Marketing and E-Commerce (OE-01B)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) What is electronic commerce? Explain its applications.

b) Explain the concept of E-payment security.

c) What do you mean by Supply Chain Execution Framework?

d) Discuss in brief virtual auction. Explain the differences between virtual auction and reverse auction.

e) Write a short note on.
i) NEFD
ii) RTGS
iii) Bitcoin
iv) E-commerce

Q.3 Attempt Any Two. **12**

a) Define Electronic Data Interchange. What are the components of Electronic Data Interchange?

b) Explain in detail Business to Consumer e-Commerce model.

c) What are the key technologies for B2B E-commerce? Explain architectural models of B2B E-commerce.

SECTION -II

Q.4 Attempt Any Four. **16**

a) What is the purpose of using social media in E-commerce marketing?

b) Explain technical malware attack method related to different services.

c) Explain E-Commerce micro payments in detail.

d) Explain SEO in detail

e) Explain web advertising types in detail.

Q.5 Attempt Any Two. **12**

a) Define digital cash or e-cash. Explain with example how an online banking system works.

b) What are the different strategies to increase the sale?

c) What are the security challenges and protection measure available to any e business?

SLR-QH-181

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. 14

1) History is best defined as the study of _____.
a) Future events b) Past human activities
c) Natural phenomena d) Scientific experiments

2) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

3) Which of the following disciplines deals with political systems and governance?
a) Economics b) Political Science
c) Sociology d) Cultural Studies

4) Urbanization is best described as _____.
a) Decline of rural population b) Growth of cities and towns
c) Spread of agriculture d) Industrial decline

5) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

6) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

7) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

8) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

9) Socialization refers to _____.
a) Economic growth
b) Learning social norms
c) Political participation
d) Cultural diffusion

10) The study of language structure and its evolution is called _____.
a) Sociology
b) Linguistics
c) Psychology
d) Anthropology

11) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women’s rights
c) Political ideologies
d) Technological advancements

12) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science
b) Psychoanalysis
c) Economic theory
d) Structural linguistics

13) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology
b) Political Science
c) Economics
d) History

14) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

SLR-QH-181

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

SLR-QH-181

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Inflation means _____.
a) Increase in employment
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a) Economic growth
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6) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology
b) Political Science
c) Economics
d) History

7) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

8) History is best defined as the study of _____.
a) Future events
b) Past human activities
c) Natural phenomena
d) Scientific experiments

9) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

10) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

11) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

12) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

13) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

14) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

SLR-QH-181

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women's rights
c) Political ideologies
d) Technological advancements

2) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science b) Psychoanalysis
c) Economic theory d) Structural linguistics

3) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology b) Political Science
c) Economics d) History

4) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning b) Moral principles and conduct
c) Aesthetics and beauty d) Scientific discovery

5) History is best defined as the study of _____.
a) Future events b) Past human activities
c) Natural phenomena d) Scientific experiments

6) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

7) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

8) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

9) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

10) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

11) In which ancient civilization did the term “democracy” originate?
a) Ancient Egypt
b) Ancient Greece
c) Ancient Rome
d) Mesopotamia

12) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

13) Socialization refers to _____.
a) Economic growth
b) Learning social norms
c) Political participation
d) Cultural diffusion

14) The study of language structure and its evolution is called _____.
a) Sociology
b) Linguistics
c) Psychology
d) Anthropology

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Culture includes _____.
a) Only art and literature
b) Traditions, beliefs, and values
c) Economic systems
d) Political institutions only

2) In which ancient civilization did the term "democracy" originate?
a) Ancient Egypt b) Ancient Greece
c) Ancient Rome d) Mesopotamia

3) Inflation means _____.
a) Increase in employment
b) Decrease in prices
c) Increase in general price level
d) Increase in production

4) Socialization refers to _____.
a) Economic growth b) Learning social norms
c) Political participation d) Cultural diffusion

5) The study of language structure and its evolution is called _____.
a) Sociology b) Linguistics
c) Psychology d) Anthropology

6) Feminism primarily addresses issues related to _____.
a) Economic inequality
b) Gender equality and women's rights
c) Political ideologies
d) Technological advancements

7) Dr. Sigmund Freud is best known for his contributions to _____.
a) Political science
b) Psychoanalysis
c) Economic theory
d) Structural linguistics

8) Which discipline studies the production, distribution, and consumption of goods and services?
a) Sociology
b) Political Science
c) Economics
d) History

9) Identify the primary focus of ethics in philosophy.
a) Logic and reasoning
b) Moral principles and conduct
c) Aesthetics and beauty
d) Scientific discovery

10) History is best defined as the study of _____.
a) Future events
b) Past human activities
c) Natural phenomena
d) Scientific experiments

11) The archaeology focuses on _____.
a) Economic theories
b) The study of celestial bodies
c) Material remains of past societies
d) Genetic research

12) Which of the following disciplines deals with political systems and governance?
a) Economics
b) Political Science
c) Sociology
d) Cultural Studies

13) Urbanization is best described as _____.
a) Decline of rural population
b) Growth of cities and towns
c) Spread of agriculture
d) Industrial decline

14) Sociology is the study of _____.
a) Individual mind
b) Social behaviour and society
c) Political institutions
d) Historical events

SLR-QH-181

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Humanities and Social Sciences (OE-01C)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain various aspects of perception.

b) Explain major philosophical movements and their impact.

c) Explain the interdisciplinary nature of disciplines under humanities and social sciences.

d) Explain how perceptual processes shape human behaviour.

e) Write a short note on: Scope of humanities.

Q.3 Attempt Any Two. **16**

a) Explore main theories of psychology.

b) Write in details the effects of psychology on social communication.

c) Explore the merits and demerits of democratic system of rule.

SECTION -II

Q.4 Attempt Any Three. **12**

a) How did industrial revolution contribute to technical advancements?

b) Write a short note on: Ethics in Engineering.

c) Write a short note on: Social Institutions.

d) Which are the different aspects of culture and society?

e) Explain how the ancient civilizations have contributed to the modern society.

Q.5 Attempt Any Two. **16**

a) Explain the concept of industrialization with its social and economic consequences.

b) Explore various economic theories and their thinkers.

c) Which are the technological innovations in 18^{th} & 19^{th} century? Explain.

SLR-QH-182

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

2) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing b) Controlling
c) Planning d) Leading

3) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

4) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

5) Which is the first step in the planning process?
a) Developing alternatives b) Evaluating alternatives
c) Setting objectives d) Selecting the best alternative

6) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

7) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

8) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs
b) Social needs
c) Esteem needs
d) Self-actualization

9) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

10) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

11) Which of the following is not typically considered an element of quality?
a) Performance
b) Reliability
c) Advertising
d) Durability

12) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

13) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

14) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

SLR-QH-182

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-182

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs b) Social needs
c) Esteem needs d) Self-actualization

2) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

3) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

4) Which of the following is not typically considered an element of quality?
a) Performance b) Reliability
c) Advertising d) Durability

5) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

6) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

7) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

8) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

9) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

10) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

11) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

12) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

13) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

14) What is the main purpose of employee training and development?

a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

SLR-QH-182

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) Which of the following is not typically considered an element of quality?
a) Performance b) Reliability
c) Advertising d) Durability

2) Pareto Analysis is based on the principle that _____.
a) All causes contribute equally to problems
b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

3) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

4) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

5) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

6) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

7) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

8) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

9) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

10) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

11) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

12) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
a) Safety needs
b) Social needs
c) Esteem needs
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13) The "Carrot and Stick" approach to motivation is based on _____.
a) Building self-esteem through empowerment
b) Providing both rewards and punishments to influence behavior
c) Offering training and development opportunities
d) Recognizing only financial incentives

14) Which of the following best defines “quality” in the context of management?
a) Producing the highest quantity of products
b) Conforming to standards and satisfying customer needs
c) Meeting only internal business goals
d) Offering products at the lowest possible price

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

Seat No.	

Set | S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 MCQ/Objective Type Questions: 14

1) What is the primary purpose of organizing in management?
a) To control employee behavior
b) To define roles, responsibilities, and allocate resources
c) To create strict rules for employees
d) To plan financial statements

2) What is the main purpose of employee training and development?
a) To penalize poor performance
b) To reduce the number of staff
c) To delay promotions
d) To enhance employee skills and support career growth

3) According to Maslow's Hierarchy of Needs, which of the following is the highest level of need?
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c) Offering training and development opportunities
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5) Which of the following best defines "quality" in the context of management?
a) Producing the highest quantity of products
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c) Meeting only internal business goals
d) Offering products at the lowest possible price

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a) Performance
b) Reliability
c) Advertising
d) Durability

7) Pareto Analysis is based on the principle that _____.
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b) 20% of the causes account for 80% of the problems
c) Quality problems are random and unpredictable
d) Only external factors affect product quality

8) The main goal of Six Sigma is to _____.
a) Increase the speed of production
b) Eliminate all human involvement in processes
c) Reduce process variation and defects to near zero
d) Ensure all products are handmade

9) What is the primary purpose of Statistical Process Control (SPC)?
a) To eliminate all manual processes
b) To ensure marketing strategies are effective
c) To monitor and control a process through statistical methods
d) To increase financial profitability only

10) Which of the following best defines the primary purpose of management?
a) To create rules for employees to follow
b) To maintain financial records
c) To achieve organizational goals efficiently and effectively
d) To monitor employee behavior

11) Which function of management involves setting objectives and determining a course of action to achieve them?
a) Organizing
b) Controlling
c) Planning
d) Leading

12) Which of the following best represents the concept of social responsibility in management?
a) Maximizing shareholder wealth at any cost
b) Avoiding all legal penalties
c) Balancing profit-making with obligations to stakeholders and society
d) Focusing only on employee welfare

13) What is the most important reason for managers to follow ethical principles in decision-making?
a) To avoid law suits
b) To improve public image
c) To build trust and long-term sustainability
d) To increase profits quickly

14) Which is the first step in the planning process?
a) Developing alternatives
b) Evaluating alternatives
c) Setting objectives
d) Selecting the best alternative

SLR-QH-182

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial and Quality Management (OE-01D)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from both sections.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	Explain the Social responsibilities and ethics in management.	**07**
	b)	Explain decision making process with types of decision.	**07**
Q.3	**a)**	What is staffing? Explain its importance as a managerial function.	**07**
	b)	What are the types of organizations? Explain problems with organizational level.	**07**
Q.4	**a)**	What are the main techniques of managerial control.	**07**
	b)	What is motivation? Explain Maslow's theory of motivation.	**07**

SECTION – II

Q.5	**a)**	Define quality and state the steps in quality control.	**07**
	b)	Differentiate between quality of design and quality of conformance.	**07**
Q.6	**a)**	Explain Deming Wheel with suitable example.	**07**
	b)	List seven quality control tools. Explain with neat sketches Pareto analysis, Scatter diagram and cause and effect diagram.	**07**
Q.7	**a)**	What is Statistical Process Control (SPC)? Explain its objectives and importance in quality management.	**07**
	b)	Differentiate between single sampling plan & double sampling plan.	**07**

SLR-QH-183

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$
c) $(C_1 + C_2x)e^x$ d) x^2e^x

2) The general solution of $(D^2 - 4)^2y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$
b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$
c) $y = C_1\cos 2x + C_2\sin 2x + (C_3 + C_4x)e^{2x}$
d) None of these

3) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$
c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

4) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$
c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

5) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

6) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^k d) 3^{-k-1}

7) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

8) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2

c) 3 and 4 d) 0 and 1

9) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$

c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

10) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.

a) 0 b) $\frac{1}{2}$

c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

11) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

12) For the function $f(x) \begin{matrix} = & 0, & -\pi < x < 0 \\ = & x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

13) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

14) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \quad (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\, \cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

SLR-QH-183

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2
c) 3 and 4 d) 0 and 1

2) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$
c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

3) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.

a) 0 b) $\frac{1}{2}$
c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

4) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$
c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

5) For the function $f(x) \begin{matrix} = & 0, & -\pi < x < 0 \\ = & x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

6) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

7) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

8) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

9) The general solution of $(D^2 - 4)^2 y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1 \cos 2x + C_2 \sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

10) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

11) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

12) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

13) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^{k} d) 3^{-k-1}

14) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \ \ (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if $\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. **14**

1) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

2) For the function $f(x) \begin{matrix} = \\ = \end{matrix} \begin{matrix} 0, & -\pi < x < 0 \\ x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

3) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

4) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

5) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

6) The general solution of $(D^2 - 4)^2y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1\cos 2x + C_2\sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

7) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

8) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

9) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

10) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}

c) 3^k d) 3^{-k-1}

11) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2

c) $\sqrt{2}$ d) 3

12) A positive real root of the equation $xe^x - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2

c) 3 and 4 d) 0 and 1

13) Since $z\{1\} = \frac{z}{z-1}, z\{a^k\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$

c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

14) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^2$ is _____.

a) 0 b) $\frac{1}{2}$

c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \ \ (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks: 14

Q.1 Choose the correct alternative from the given option. 14

1) The inverse z-transform of $\frac{z}{z-3}, |z| > 3$ (with $k \geq 0$) is _____.

a) 3^{-k} b) 3^{k+1}
c) 3^{k} d) 3^{-k-1}

2) The rate of convergence of Newton-Raphson Method is _____.

a) 1 b) 2
c) $\sqrt{2}$ d) 3

3) A positive real root of the equation $xe^{x} - 2 = 0$ is lies between _____.

a) 2 and 3 b) 1 and 2
c) 3 and 4 d) 0 and 1

4) Since $z\{1\} = \frac{z}{z-1}, z\{a^{k}\}, k \geq 0 =$ _____.

a) $\frac{z}{z-a}$ b) $\frac{z}{a(z-1)}$
c) $\frac{a}{z-a}$ d) $\frac{z}{az-1}$

5) In the interval $(0,1)$ the constant term in the cosine series of $f(x) = x^{2}$ is _____.

a) 0 b) $\frac{1}{2}$
c) $\frac{1}{3}$ d) $\frac{\pi}{4}$

6) In the cosine series of $f(x) = \pi x - x^2$ for $0 < x < \pi$, the constant term is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi^2}{16}$

c) $\frac{\pi^2}{6}$ d) $\frac{\pi^2}{2}$

7) For the function $f(x) \begin{matrix} = \\ = \end{matrix} \begin{matrix} 0, & -\pi < x < 0 \\ x, & 0 < x < \pi \end{matrix}$

The value of Fourier constant a_0 is _____.

a) $\frac{\pi^2}{4}$ b) $\frac{\pi}{4}$

c) $\frac{\pi^2}{2}$ d) $\frac{-\pi}{4}$

8) The half range sine series of $f(x)$ defined in the interval $(0, 2)$ is _____.

a) $f(x) = \sum_{n=1}^{\infty} b_n \sin nx$ b) $f(x) = \sum_{n=1}^{\infty} b_n \sin(2n\pi x)$

c) $f(x) = \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi x}{2}\right)$ d) $f(x) = \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi x}{2}\right)$

9) If $F_s(\lambda) = e^{-\lambda}$ then the function $f(x) =$ _____.

a) $\frac{2}{\sqrt{1+x^2}}$ b) $\frac{\pi}{1+x^2}$

c) $\sqrt{\frac{2}{\pi}}\frac{1}{1+x^2}$ d) None

10) The particular Integral of $(D^2 - 2D + 1)y = -4e^x$ is _____.

a) $-2x^2e^x$ b) $-4x^2e^x$

c) $(C_1 + C_2x)e^x$ d) x^2e^x

11) The general solution of $(D^2 - 4)^2 y = 0$ is _____.

a) $y = C_1e^{2x} + C_2e^{-2x}$

b) $y = (C_1 + C_2x)e^{-2x} + (C_3 + C_4x)e^{2x}$

c) $y = C_1 \cos 2x + C_2 \sin 2x + (C_3 + C_4x)e^{2x}$

d) None of these

12) The value of $\frac{1}{D-a}X =$ _____.

a) $e^{-ax}\int e^{-ax}Xdx$ b) $e^{-ax}\int e^{ax}Xdx$

c) $e^{ax}\int e^{-ax}Xdx$ d) $e^{ax}\int e^{ax}Xdx$

13) $Lf(t)\delta(t-a) =$ _____.

a) $e^{-as}f(t)$ b) $e^{-as}f(a)$

c) $e^{as}f(a)$ d) $e^{-as}f(t-a)$

14) If $L\{f(t)\} = \frac{a}{s^2+a^2}$ then $L\left\{\int_0^1 f(t)dt\right\} =$ _____.

a) $\frac{1}{s(s^2+a^2)}$ b) $\frac{a}{s(s^2+a^2)}$

c) $\frac{as}{s^2+a^2}$ d) $\frac{as^2}{s^2+a^2}$

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Mathematics for Software and Hardware (OE-01E)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All question are compulsory.
2) Figures to the right indicate full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Attempt Any Three. **09**

a) Solve: $(D^2+1)y = x\sin 2x$

b) Solve: $(D^2+4D+4)y = e^{3x}$

c) Find $L\left\{\frac{1}{t}(1-\cos t)\right\}$

d) Find $z\{ka^k + k\beta^k\}, k \geq 0$

e) Find the Laplace transform of $\int_0^t te^{-3t}\sin(4t)dt$

Q.3 Attempt Any Three. **09**

a) Solve $(D^2-1)y = X\cos 2x$

b) Find $L\left[\int_0^t te^{-4t}\sin(3t)dt\right]$

c) Find the inverse Laplace transform of following by using the Convolution theorem of $\left[\frac{1}{s(s^2+9)}\right]$

d) Find $Z\left\{3^k\cos\left(\frac{k\pi}{2}+\frac{\pi}{4}\right)\right\}, k \geq 0$

e) Find the Laplace Transform of $\{1+2t-3t^2+4t^3\}U(t-2)\}$

Q.4 Attempt Any Two. **10**

a) Find $L\{t.\sqrt{1-\sin t}\}$

b) Solve $(D^3+1)y = 3+e^{-x}+5e^{2x}$

c) Find $Z^{-1}\left\{\frac{1}{(z-a)^2}\right\}, |z| > |a|., |z| < |a|$

SECTION – II

Q.5 Attempt Any Three. **09**

a) Evaluate $\int_0^6 \frac{e^x}{1+x}dx$ using Simpson's 1/3rd rule, (Take $h = 1$)

b) Find the half-range cosine series for $f(x) = e^{-x}$ in $(0, \pi)$

c) Evaluate $\sqrt{37}$ by Newton Raphson method correct to four decimal places by taking initial approximation as $x_0 = 6$

d) Find the Fourier Sine transforms of $2e^{-5x} + 5e^{-2x}$

e) Find the Fourier series of $f(x) \begin{matrix} = & \pi x, & 0 < x < 1 \\ = & 0, & 1 < x < 2 \end{matrix}$

Q.6 Attempt Any Three. **09**

a) Obtain half range sine series for $f(x) = x$ in $0 < x < 2$

b) Find the positive root of the following by using Newton Raphson method correct to four decimal places $3x - \cos x - 1 = 0$

c) Evaluate $\int_0^6 \frac{1}{1+x^2}dx\ n = 6$ using Trapezoidal rule.

d) Find the Fourier transform of $f(x)$ if $f(x) = \begin{cases} 1, & 0 \le x < 1 \\ 0, & x > 0 \end{cases}$

e) Find the Fourier series of $f(x) = x \sin x, \ \ (0, 2\pi)$

Q.7 Attempt Any Two. **10**

a) Find the Fourier transform of

$f(x) \begin{matrix} = 1 & |x| & < & k \\ = 0 & |x| & > & k \end{matrix}$ and

hence evaluate

i) $\int_{-\infty}^{\infty} \frac{\sin sk \,.\cos sk}{s} ds$

ii) $\int_{-\infty}^{\infty} \frac{\sin ks}{s} ds$

b) Obtain the Fourier series of $f(x) = a^2 - x^2$ in $(-a, a)$

c) Find the Value of K_1 by Runge Kutta Method of fourth order if

$\frac{dy}{dx} = 2x + 3y^2$ and $y(0.1) = 1.1165$ and $h = 0.1$

SLR-QH-184

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

2) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

3) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

4) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

5) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

6) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

7) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

8) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

9) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

10) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

11) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

12) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

13) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

14) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

SLR-QH-184

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) The main purpose of an interview is to _____.
a) Test physical strength
b) Assess a candidate's suitability
c) Conduct training
d) Provide entertainment

2) Which of the following is part of presentation etiquette?
a) Clear speaking b) Good posture
c) Proper visual aids d) All of the above

3) Good posture during a presentation indicates _____.
a) Confidence b) Nervousness
c) Disinterest d) Laziness

4) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

5) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

6) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

7) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

8) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

9) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

10) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

11) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

12) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

13) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

14) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
c) Ignoring the audience d) All of the above

SLR-QH-184

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

Seat No.	

Set | **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Which non-verbal factors help engage the audience?
a) Eye contact b) Facial expressions
c) Hand gestures d) All of the above

2) Prioritization in time management means _____.
a) Doing easy tasks first
b) Arranging tasks according to importance
c) Avoiding work
d) Doing everything at once

3) Procrastination means _____.
a) Completing work early b) Delaying tasks unnecessarily
c) Planning work d) Finishing tasks on time

4) Taking short breaks during work helps to _____.
a) Reduce efficiency b) Improve focus
c) Waste time d) Increase stress

5) In the process of communication, _____ is the person who encodes the message.
a) Receiver b) Driver
c) Cleaner d) Sender

6) Which among the following barriers is related to fault in the channel?
a) Physical b) Mechanical
c) Psychological d) All of above

7) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy b) Self-awareness
c) Emotional intelligence d) Relationship management

8) Stress is defined as _____.
   a) A physical or emotional reaction to challenges or demands
   b) A type of disease
   c) Only physical pain
   d) A mental disorder

9) Time management means _____.
   a) Doing work very quickly
   b) Planning and organizing how to spend time effectively
   c) Wasting time
   d) Avoiding responsibilities

10) Effective non-verbal communication in presentations helps to _____.
   a) Confuse the audience
   b) Improve understanding and engagement
   c) Reduce communication
   d) Replace verbal communication

11) Which of the following helps in effective presentation?
   a) Organizing ideas clearly b) Using complex language
   c) Ignoring the audience d) All of the above

12) The main purpose of an interview is to _____.
   a) Test physical strength
   b) Assess a candidate's suitability
   c) Conduct training
   d) Provide entertainment

13) Which of the following is part of presentation etiquette?
   a) Clear speaking b) Good posture
   c) Proper visual aids d) All of the above

14) Good posture during a presentation indicates _____.
   a) Confidence b) Nervousness
   c) Disinterest d) Laziness

SLR-QH-184

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternatives from the following. **14**

1) Effective non-verbal communication in presentations helps to _____.
a) Confuse the audience
b) Improve understanding and engagement
c) Reduce communication
d) Replace verbal communication

2) Which of the following helps in effective presentation?
a) Organizing ideas clearly b) Using complex language
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3) The main purpose of an interview is to _____.
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6) Which non-verbal factors help engage the audience?
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c) Hand gestures d) All of the above

7) Prioritization in time management means _____.
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d) Doing everything at once

8) Procrastination means _____.
a) Completing work early
b) Delaying tasks unnecessarily
c) Planning work
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9) Taking short breaks during work helps to _____.
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10) In the process of communication, _____ is the person who encodes the message.
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b) Driver
c) Cleaner
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11) Which among the following barriers is related to fault in the channel?
a) Physical
b) Mechanical
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12) The ability to recognize, understand and regulate your own emotions is called _____.
a) Empathy
b) Self-awareness
c) Emotional intelligence
d) Relationship management

13) Stress is defined as _____.
a) A physical or emotional reaction to challenges or demands
b) A type of disease
c) Only physical pain
d) A mental disorder

14) Time management means _____.
a) Doing work very quickly
b) Planning and organizing how to spend time effectively
c) Wasting time
d) Avoiding responsibilities

SLR-QH-184

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Soft Skills and Personality Development (OE-01F)

Day & Date: Monday, 11-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Write short note on: Functions of a Sender in Communication.

b) Explain physical barriers to communication with the ways to overcome them.

c) Write short note on: Time management.

d) Explain how language can become a barrier in communication.

e) Explain how feedback is necessary in communication.

Q.3 Attempt Any Two. **16**

a) Define psychological barriers and the ways to overcome them.

b) Elaborate various ways to develop emotional intelligence.

c) Which are the different steps in the process of communication?

SECTION -II

Q.4 Attempt Any Three. **12**

a) Explain how non-verbal communication helps for better presentation.

b) Explain different types of interviews.

c) Explain various ways of time management.

d) Elaborate different strategies to manage stress.

e) Explain different reasons of stress.

Q.5 Attempt Any Two. **16**

a) Explain the concept of interview with various steps in the process.

b) Elaborate various ways of effective time management.

c) Which are the different steps in the process of presentation?

SLR-QH-185

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

2) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

3) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

4) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

5) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

6) According to Boolean algebra, $A + A = ?$
a) A b) 0
c) 1 d) A'

7) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

8) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

9) A 1 -bit comparator has how many outputs?

a) 1 b) 2
c) 3 d) 4

10) Sequential circuits differ from combinational circuits because they _____.

a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

11) A flip-flop is a _____.

a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

12) Ripple counter is also called _____.

a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

13) Which memory is temporary and volatile?

a) ROM b) PROM
c) RAM d) EPROM

14) PROM stands for _____.

a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

2) A 1 -bit comparator has how many outputs?
a) 1 b) 2
c) 3 d) 4

3) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

4) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

5) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

6) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

7) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

8) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

9) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

10) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

11) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

12) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

13) According to Boolean algebra, $A + A = ?$
a) A b) 0
c) 1 d) A'

14) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

2) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

3) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

4) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

5) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

6) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

7) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

8) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

9) A NOR gate is equivalent to _____.
a) NOT + OR
b) NOT + AND
c) NOT + NAND
d) NOT + XO

10) According to Boolean algebra, A + A = ?
a) A
b) 0
c) 1
d) A'

11) A 4-variable K-map has _____.
a) 8 cells
b) 12 cells
c) 16 cells
d) 32 cells

12) The number of selection lines in a 16-to-1 MUX is _____.
a) 2
b) 4
c) 8
d) 16

13) A 1 -bit comparator has how many outputs?
a) 1
b) 2
c) 3
d) 4

14) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) According to Boolean algebra, A + A = ?
a) A b) 0
c) 1 d) A'

2) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

3) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

4) A 1 -bit comparator has how many outputs?
a) 1 b) 2
c) 3 d) 4

5) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

6) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

7) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

8) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

9) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

10) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

11) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

12) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

13) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

14) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

2) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

3) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

4) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

5) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

6) According to Boolean algebra, $A + A = ?$
a) A b) 0
c) 1 d) A'

7) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

8) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

9) A 1 -bit comparator has how many outputs?

a) 1 b) 2
c) 3 d) 4

10) Sequential circuits differ from combinational circuits because they _____.

a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

11) A flip-flop is a _____.

a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

12) Ripple counter is also called _____.

a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

13) Which memory is temporary and volatile?

a) ROM b) PROM
c) RAM d) EPROM

14) PROM stands for _____.

a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

2) A 1 -bit comparator has how many outputs?
a) 1 b) 2
c) 3 d) 4

3) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

4) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

5) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

6) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

7) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

8) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

9) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

10) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

11) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

12) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

13) According to Boolean algebra, $A + A = ?$
a) A b) 0
c) 1 d) A'

14) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function $F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

2) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

3) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

4) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

5) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

6) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

7) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

8) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

9) A NOR gate is equivalent to _____.
a) NOT + OR
b) NOT + AND
c) NOT + NAND
d) NOT + XO

10) According to Boolean algebra, A + A = ?
a) A
b) 0
c) 1
d) A'

11) A 4-variable K-map has _____.
a) 8 cells
b) 12 cells
c) 16 cells
d) 32 cells

12) The number of selection lines in a 16-to-1 MUX is _____.
a) 2
b) 4
c) 8
d) 16

13) A 1 -bit comparator has how many outputs?
a) 1
b) 2
c) 3
d) 4

14) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) According to Boolean algebra, A + A = ?
a) A b) 0
c) 1 d) A'

2) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

3) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

4) A 1 -bit comparator has how many outputs?
a) 1 b) 2
c) 3 d) 4

5) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

6) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

7) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

8) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

9) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

10) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

11) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

12) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

13) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

14) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

SLR-QH-185

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

2) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

3) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

4) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

5) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

6) According to Boolean algebra, $A + A = ?$
a) A b) 0
c) 1 d) A'

7) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

8) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

9) A 1 -bit comparator has how many outputs?

a) 1 b) 2
c) 3 d) 4

10) Sequential circuits differ from combinational circuits because they _____.

a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

11) A flip-flop is a _____.

a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

12) Ripple counter is also called _____.

a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

13) Which memory is temporary and volatile?

a) ROM b) PROM
c) RAM d) EPROM

14) PROM stands for _____.

a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

2) A 1 -bit comparator has how many outputs?
a) 1 b) 2
c) 3 d) 4

3) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

4) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

5) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

6) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

7) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

8) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

9) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

10) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

11) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

12) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

13) According to Boolean algebra, $A + A = ?$
a) A b) 0
c) 1 d) A'

14) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

2) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

3) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

4) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

5) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

6) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

7) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

8) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

9) A NOR gate is equivalent to _____.
a) NOT + OR
b) NOT + AND
c) NOT + NAND
d) NOT + XO

10) According to Boolean algebra, A + A = ?
a) A
b) 0
c) 1
d) A'

11) A 4-variable K-map has _____.
a) 8 cells
b) 12 cells
c) 16 cells
d) 32 cells

12) The number of selection lines in a 16-to-1 MUX is _____.
a) 2
b) 4
c) 8
d) 16

13) A 1 -bit comparator has how many outputs?
a) 1
b) 2
c) 3
d) 4

14) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) According to Boolean algebra, A + A = ?
a) A b) 0
c) 1 d) A'

2) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

3) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

4) A 1 -bit comparator has how many outputs?
a) 1 b) 2
c) 3 d) 4

5) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

6) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

7) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

8) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

9) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

10) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

11) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

12) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

13) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

14) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

SLR-QH-185

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

2) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

3) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

4) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

5) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

6) According to Boolean algebra, $A + A = ?$
a) A b) 0
c) 1 d) A'

7) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

8) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

9) A 1 -bit comparator has how many outputs?

a) 1 b) 2
c) 3 d) 4

10) Sequential circuits differ from combinational circuits because they _____.

a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

11) A flip-flop is a _____.

a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

12) Ripple counter is also called _____.

a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

13) Which memory is temporary and volatile?

a) ROM b) PROM
c) RAM d) EPROM

14) PROM stands for _____.

a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

2) A 1 -bit comparator has how many outputs?
a) 1 b) 2
c) 3 d) 4

3) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

4) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

5) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

6) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

7) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

8) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

9) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

10) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

11) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

12) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

13) According to Boolean algebra, $A + A = ?$
a) A b) 0
c) 1 d) A'

14) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

2) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

3) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

4) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

5) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

6) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

7) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

8) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

9) A NOR gate is equivalent to _____.
a) NOT + OR
b) NOT + AND
c) NOT + NAND
d) NOT + XO

10) According to Boolean algebra, A + A = ?
a) A
b) 0
c) 1
d) A'

11) A 4-variable K-map has _____.
a) 8 cells
b) 12 cells
c) 16 cells
d) 32 cells

12) The number of selection lines in a 16-to-1 MUX is _____.
a) 2
b) 4
c) 8
d) 16

13) A 1 -bit comparator has how many outputs?
a) 1
b) 2
c) 3
d) 4

14) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) According to Boolean algebra, A + A = ?
a) A b) 0
c) 1 d) A'

2) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

3) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

4) A 1 -bit comparator has how many outputs?
a) 1 b) 2
c) 3 d) 4

5) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

6) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

7) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

8) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

9) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

10) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

11) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

12) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

13) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

14) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

SLR-QH-185

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

2) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

3) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

4) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

5) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

6) According to Boolean algebra, $A + A = ?$
a) A b) 0
c) 1 d) A'

7) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

8) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

9) A 1 -bit comparator has how many outputs?

a) 1 b) 2
c) 3 d) 4

10) Sequential circuits differ from combinational circuits because they _____.

a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

11) A flip-flop is a _____.

a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

12) Ripple counter is also called _____.

a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

13) Which memory is temporary and volatile?

a) ROM b) PROM
c) RAM d) EPROM

14) PROM stands for _____.

a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function $F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

2) A 1 -bit comparator has how many outputs?
a) 1 b) 2
c) 3 d) 4

3) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

4) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

5) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

6) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

7) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

8) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

9) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

10) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

11) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

12) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

13) According to Boolean algebra, $A + A = ?$
a) A b) 0
c) 1 d) A'

14) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

2) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

3) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

4) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

5) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

6) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

7) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

8) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

9) A NOR gate is equivalent to _____.
a) NOT + OR
b) NOT + AND
c) NOT + NAND
d) NOT + XO

10) According to Boolean algebra, A + A = ?
a) A
b) 0
c) 1
d) A'

11) A 4-variable K-map has _____.
a) 8 cells
b) 12 cells
c) 16 cells
d) 32 cells

12) The number of selection lines in a 16-to-1 MUX is _____.
a) 2
b) 4
c) 8
d) 16

13) A 1 -bit comparator has how many outputs?
a) 1
b) 2
c) 3
d) 4

14) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) According to Boolean algebra, A + A = ?
a) A b) 0
c) 1 d) A'

2) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

3) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

4) A 1 -bit comparator has how many outputs?
a) 1 b) 2
c) 3 d) 4

5) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

6) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

7) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

8) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

9) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

10) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

11) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

12) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

13) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

14) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

2) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

3) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

4) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

5) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

6) According to Boolean algebra, $A + A = ?$
a) A b) 0
c) 1 d) A'

7) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

8) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

9) A 1 -bit comparator has how many outputs?

a) 1 b) 2
c) 3 d) 4

10) Sequential circuits differ from combinational circuits because they _____.

a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

11) A flip-flop is a _____.

a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

12) Ripple counter is also called _____.

a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

13) Which memory is temporary and volatile?

a) ROM b) PROM
c) RAM d) EPROM

14) PROM stands for _____.

a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function
$F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

2) A 1 -bit comparator has how many outputs?
a) 1 b) 2
c) 3 d) 4

3) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

4) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

5) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

6) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

7) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

8) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

9) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

10) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

11) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

12) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

13) According to Boolean algebra, $A + A = ?$
a) A b) 0
c) 1 d) A'

14) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function $F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

2) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

3) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

4) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

5) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

6) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

7) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

8) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

9) A NOR gate is equivalent to _____.
a) NOT + OR
b) NOT + AND
c) NOT + NAND
d) NOT + XO

10) According to Boolean algebra, A + A = ?
a) A
b) 0
c) 1
d) A'

11) A 4-variable K-map has _____.
a) 8 cells
b) 12 cells
c) 16 cells
d) 32 cells

12) The number of selection lines in a 16-to-1 MUX is _____.
a) 2
b) 4
c) 8
d) 16

13) A 1 -bit comparator has how many outputs?
a) 1
b) 2
c) 3
d) 4

14) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function $F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) According to Boolean algebra, A + A = ?
a) A b) 0
c) 1 d) A'

2) A 4-variable K-map has _____.
a) 8 cells b) 12 cells
c) 16 cells d) 32 cells

3) The number of selection lines in a 16-to-1 MUX is _____.
a) 2 b) 4
c) 8 d) 16

4) A 1 -bit comparator has how many outputs?
a) 1 b) 2
c) 3 d) 4

5) Sequential circuits differ from combinational circuits because they _____.
a) Have no memory
b) Depend on past inputs (memory)
c) Use only logic gates
d) Do not require clock

6) A flip-flop is a _____.
a) 1-bit memory cell b) 2-bit memory cell
c) 4-bit memory cell d) 8-bit memory cel

7) Ripple counter is also called _____.
a) Asynchronous counter b) Synchronous counter
c) Ring counter d) Johnson counter

8) Which memory is temporary and volatile?
a) ROM b) PROM
c) RAM d) EPROM

9) PROM stands for _____.
a) Programmable ROM b) Permanent ROM
c) Parallel ROM d) None

10) Convert $(2F)_{16}$ to decimal _____.
a) 46 b) 47
c) 45 d) 44

11) ASCII code is primarily used for _____.
a) Numbers only b) Characters and symbols
c) Images d) Memory addressing

12) Binary division : $(10010)_2 \div (10)_2 =$ _____
a) 1001 b) 1010
c) 1100 d) 1111

13) Which of the following is a universal gate?
a) AND b) OR
c) NAND d) XOR

14) A NOR gate is equivalent to _____.
a) NOT + OR b) NOT + AND
c) NOT + NAND d) NOT + XO

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Digital Circuits (ECEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Convert the following number system:
i) 1011101 to Gray code
ii) ASCII code for "TEST"

b) Perform following operations:
i) $110101 + 101110$
ii) $111001 - 100101$
iii) $110101 * 101$
iv) $11011/110$

c) Draw the truth tables for AND, OR, XOR and NOT gates

d) Simplify the Boolean expression: $\mathrm{F} = \mathrm{A}(\mathrm{B} + \mathrm{C}) + \mathrm{A}'\mathrm{B}$ using Boolean algebra.

e) Use a Karnaugh map to simplify the function $F(A, B, C) = \sum(0, 1, 3, 5, 7) + d(2, 4)$

f) Prove De Morgan's theorems.

Q.3 Attempt the following. (Any Two) **12**

a) Define the decimal, binary, octal, and hexadecimal number systems with examples.

b) Describe the operation of XOR and XNOR gates with truth tables.

c) What are SOP and POS forms? Give examples.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Design a full subtractor circuit using basic logic gates.

b) What is a comparator? Explain the working of a 4-bit magnitude comparator.

c) Describe the operation of a D flip-flop with timing diagram.

d) What is the difference between a latch and a flip-flop? Give examples.

e) Differentiate between RAM and ROM with examples.

Q.5 Attempt the following. (Any Two) **12**

a) Explain the working of a multiplexer and de-multiplexer with a truth table.

b) Explain the working of SR flip-flop and JK flip-flop and write its excitation table.

c) List and explain types of ROM: PROM, EPROM, and EEPROM.

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Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Sem - I) (New) (NEP CBCS) Examination: March/April - 2026
AI Technology - (Iot) And Smart Systems (ECEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer for the following. **14**

1) IoT devices work _____.
a) Automatically b) Manually
c) Offline d) Individually

2) Sensors belong to _____.
a) Perception layer b) Application
c) Network d) Middleware

3) Edge computing helps to reduce _____.
a) Delay b) Speed
c) Security d) Power

4) Which of the following is *not* an IoT enabling technology?
a) Al b) RFID
c) Cloud d) Compiler

5) IoT gateway is primarily used for _____.
a) Protocol translation b) Display
c) Encryption d) Storage

6) A smart object refers to _____.
a) Connected device b) Manual tool
c) Passive unit d) Switch

7) The most suitable communication model for alert notifications is _____.
a) Publish-Subscribe b) Request-Response
c) Push-Pull d) Peer-to-Peer

8) Which addressing scheme supports a large number of IoT devices?
a) IPv6 b) IPv4
c) MAC d) Static

9) RPL is a routing protocol used for _____.
a) Low power networks b) LAN
c) Cloud d) None

10) CoAP operates over _____.
a) UDP b) TCP
c) HTTP d) FTP

11) Which of the following is a topic-based protocol?
a) MQTT b) AMQP
c) HTTP d) CoAP

12) AMQP ensures reliable delivery using _____.
a) Queue b) Topic
c) Packet d) Ping

13) TLS provides security primarily over _____.
a) TCP b) UDP
c) ICMP d) SMS

14) Which of the following is a major IoT security risk?
a) Weak passwords b) Strong firewalls
c) High bandwidth d) Long range

SLR-QH-188

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Sem - I) (New) (NEP CBCS) Examination: March/April - 2026
AI Technology - (Iot) And Smart Systems (ECEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following. (Any Four) **16**

a) What is Middleware in IoT? Give one example.

b) Define sensors and actuators with two examples each.

c) Differentiate between Push-Pull and Publish-Subscribe models.

d) Explain the Perception Layer in IoT architecture.

e) What is an embedded system? Discuss its role in IoT applications.

Q.3 Answer the following. (Any Two) **12**

a) Explain all four IoT communication models with a suitable diagram.

b) Compare Request-Response, Publish-Subscribe, and Push-Pull models.

c) Explain the architecture of an embedded IoT device with a block diagram.

Section – II

Q.4 Answer the following. (Any Four) **16**

a) Define MQTT and list any two features.

b) What is the role of RPL in IoT communication?

c) Define DTLS and explain its significance.

d) Explain the concept of “topics” in MQTT.

e) Describe any two security challenges in IoT protocols and suggest mitigation methods.

Q.5 Answer the following. (Any Two) **12**

a) Compare MQTT, AMQP, and HTTP.

b) Explain RPL routing protocol with a neat diagram of DODAG.

c) Describe DTLS architecture and its workflow.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Sem - I) (New) (NEP CBCS) Examination: March/April - 2026
AI Technology - (Iot) And Smart Systems (ECEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer for the following. **14**

1) Which addressing scheme supports a large number of IoT devices?
a) IPv6 b) IPv4
c) MAC d) Static

2) RPL is a routing protocol used for _____.
a) Low power networks b) LAN
c) Cloud d) None

3) CoAP operates over _____.
a) UDP b) TCP
c) HTTP d) FTP

4) Which of the following is a topic-based protocol?
a) MQTT b) AMQP
c) HTTP d) CoAP

5) AMQP ensures reliable delivery using _____.
a) Queue b) Topic
c) Packet d) Ping

6) TLS provides security primarily over _____.
a) TCP b) UDP
c) ICMP d) SMS

7) Which of the following is a major IoT security risk?
a) Weak passwords b) Strong firewalls
c) High bandwidth d) Long range

8) IoT devices work _____.
a) Automatically b) Manually
c) Offline d) Individually

9) Sensors belong to _____.
a) Perception layer b) Application
c) Network d) Middleware

10) Edge computing helps to reduce _____.
a) Delay b) Speed
c) Security d) Power

11) Which of the following is *not* an IoT enabling technology?
a) Al b) RFID
c) Cloud d) Compiler

12) IoT gateway is primarily used for _____.
a) Protocol translation b) Display
c) Encryption d) Storage

13) A smart object refers to _____.
a) Connected device b) Manual tool
c) Passive unit d) Switch

14) The most suitable communication model for alert notifications is _____.
a) Publish-Subscribe b) Request-Response
c) Push-Pull d) Peer-to-Peer

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Sem - I) (New) (NEP CBCS) Examination: March/April - 2026
AI Technology - (Iot) And Smart Systems (ECEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following. (Any Four) **16**

a) What is Middleware in IoT? Give one example.

b) Define sensors and actuators with two examples each.

c) Differentiate between Push-Pull and Publish-Subscribe models.

d) Explain the Perception Layer in IoT architecture.

e) What is an embedded system? Discuss its role in IoT applications.

Q.3 Answer the following. (Any Two) **12**

a) Explain all four IoT communication models with a suitable diagram.

b) Compare Request-Response, Publish-Subscribe, and Push-Pull models.

c) Explain the architecture of an embedded IoT device with a block diagram.

Section – II

Q.4 Answer the following. (Any Four) **16**

a) Define MQTT and list any two features.

b) What is the role of RPL in IoT communication?

c) Define DTLS and explain its significance.

d) Explain the concept of “topics” in MQTT.

e) Describe any two security challenges in IoT protocols and suggest mitigation methods.

Q.5 Answer the following. (Any Two) **12**

a) Compare MQTT, AMQP, and HTTP.

b) Explain RPL routing protocol with a neat diagram of DODAG.

c) Describe DTLS architecture and its workflow.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Sem - I) (New) (NEP CBCS) Examination: March/April - 2026
AI Technology - (Iot) And Smart Systems (ECEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer for the following. **14**

1) Which of the following is a topic-based protocol?
a) MQTT b) AMQP
c) HTTP d) CoAP

2) AMQP ensures reliable delivery using _____.
a) Queue b) Topic
c) Packet d) Ping

3) TLS provides security primarily over _____.
a) TCP b) UDP
c) ICMP d) SMS

4) Which of the following is a major IoT security risk?
a) Weak passwords b) Strong firewalls
c) High bandwidth d) Long range

5) IoT devices work _____.
a) Automatically b) Manually
c) Offline d) Individually

6) Sensors belong to _____.
a) Perception layer b) Application
c) Network d) Middleware

7) Edge computing helps to reduce _____.
a) Delay b) Speed
c) Security d) Power

8) Which of the following is *not* an IoT enabling technology?
a) Al b) RFID
c) Cloud d) Compiler

9) IoT gateway is primarily used for _____.
a) Protocol translation b) Display
c) Encryption d) Storage

10) A smart object refers to _____.
a) Connected device b) Manual tool
c) Passive unit d) Switch

11) The most suitable communication model for alert notifications is _____.
a) Publish-Subscribe b) Request-Response
c) Push-Pull d) Peer-to-Peer

12) Which addressing scheme supports a large number of IoT devices?
a) IPv6 b) IPv4
c) MAC d) Static

13) RPL is a routing protocol used for _____.
a) Low power networks b) LAN
c) Cloud d) None

14) CoAP operates over _____.
a) UDP b) TCP
c) HTTP d) FTP

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Sem - I) (New) (NEP CBCS) Examination: March/April - 2026
AI Technology - (Iot) And Smart Systems (ECEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following. (Any Four) **16**

a) What is Middleware in IoT? Give one example.
b) Define sensors and actuators with two examples each.
c) Differentiate between Push-Pull and Publish-Subscribe models.
d) Explain the Perception Layer in IoT architecture.
e) What is an embedded system? Discuss its role in IoT applications.

Q.3 Answer the following. (Any Two) **12**

a) Explain all four IoT communication models with a suitable diagram.
b) Compare Request-Response, Publish-Subscribe, and Push-Pull models.
c) Explain the architecture of an embedded IoT device with a block diagram.

Section – II

Q.4 Answer the following. (Any Four) **16**

a) Define MQTT and list any two features.
b) What is the role of RPL in IoT communication?
c) Define DTLS and explain its significance.
d) Explain the concept of “topics” in MQTT.
e) Describe any two security challenges in IoT protocols and suggest mitigation methods.

Q.5 Answer the following. (Any Two) **12**

a) Compare MQTT, AMQP, and HTTP.
b) Explain RPL routing protocol with a neat diagram of DODAG.
c) Describe DTLS architecture and its workflow.

Seat No.	

Set | S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Sem - I) (New) (NEP CBCS) Examination: March/April - 2026
AI Technology - (Iot) And Smart Systems (ECEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer for the following. **14**

1) A smart object refers to _____.
a) Connected device b) Manual tool
c) Passive unit d) Switch

2) The most suitable communication model for alert notifications is _____.
a) Publish-Subscribe b) Request-Response
c) Push-Pull d) Peer-to-Peer

3) Which addressing scheme supports a large number of IoT devices?
a) IPv6 b) IPv4
c) MAC d) Static

4) RPL is a routing protocol used for _____.
a) Low power networks b) LAN
c) Cloud d) None

5) CoAP operates over _____.
a) UDP b) TCP
c) HTTP d) FTP

6) Which of the following is a topic-based protocol?
a) MQTT b) AMQP
c) HTTP d) CoAP

7) AMQP ensures reliable delivery using _____.
a) Queue b) Topic
c) Packet d) Ping

8) TLS provides security primarily over _____.
a) TCP b) UDP
c) ICMP d) SMS

9) Which of the following is a major IoT security risk?
a) Weak passwords b) Strong firewalls
c) High bandwidth d) Long range

10) IoT devices work _____.
a) Automatically b) Manually
c) Offline d) Individually

11) Sensors belong to _____.
a) Perception layer b) Application
c) Network d) Middleware

12) Edge computing helps to reduce _____.
a) Delay b) Speed
c) Security d) Power

13) Which of the following is *not* an IoT enabling technology?
a) Al b) RFID
c) Cloud d) Compiler

14) IoT gateway is primarily used for _____.
a) Protocol translation b) Display
c) Encryption d) Storage

SLR-QH-188

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Sem - I) (New) (NEP CBCS) Examination: March/April - 2026
AI Technology - (Iot) And Smart Systems (ECEHON-01B)

Day & Date: Wednesday, 13-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Answer the following. (Any Four) **16**

a) What is Middleware in IoT? Give one example.

b) Define sensors and actuators with two examples each.

c) Differentiate between Push-Pull and Publish-Subscribe models.

d) Explain the Perception Layer in IoT architecture.

e) What is an embedded system? Discuss its role in IoT applications.

Q.3 Answer the following. (Any Two) **12**

a) Explain all four IoT communication models with a suitable diagram.

b) Compare Request-Response, Publish-Subscribe, and Push-Pull models.

c) Explain the architecture of an embedded IoT device with a block diagram.

Section – II

Q.4 Answer the following. (Any Four) **16**

a) Define MQTT and list any two features.

b) What is the role of RPL in IoT communication?

c) Define DTLS and explain its significance.

d) Explain the concept of “topics” in MQTT.

e) Describe any two security challenges in IoT protocols and suggest mitigation methods.

Q.5 Answer the following. (Any Two) **12**

a) Compare MQTT, AMQP, and HTTP.

b) Explain RPL routing protocol with a neat diagram of DODAG.

c) Describe DTLS architecture and its workflow.

SLR-QH-191

Seat No.		Set	P

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Value education enables us _____.
a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

2) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

3) _____ is the basic unit of any human society.
a) Group b) Individual
c) Nature d) Society

4) Natural acceptance & _____ are the two processes of knowing.
a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

5) Present Education system gives more focus to skills.
a) True b) False
c) May be d) None of the above

6) Value of an entity is _____.
a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

7) _____ are as Basic Human Aspirations.
a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

8) Any course content on value education needs to be _____.
a) Universal b) Rational
c) Natural d) All of above

9) When we live with correct understanding of values, we feel _____.
a) Deprived b) Frustrated
c) Happy d) Unhappy

10) Following are the basic guidelines for value education except _____.
a) Universal b) Personal
c) Rational d) Natural

11) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

12) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

13) Right Understanding and Physical Facilities leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

14) ____ are the content of self-exploration.
a) Program b) Desire
c) Both a and b d) None of the above

15) To be in state of liking is _____.
a) Happy b) Unhappy
c) Both a and b d) None of the above

16) _____ helps the human being to transform from Animal consciousness to human consciousness.
a) Physical Facility b) Right understanding
c) Relationship d) All of above

17) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.

a) Value b) Skill
c) Technology d) All of above

18) _____ means physical facilities more than to satisfy my needs.

a) Health b) Prosperity
c) Happiness d) None of above

19) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

a) naturally acceptable b) pushed
c) common d) None of above

20) Physical facilities are necessary and complete for _____.

a) Animal b) Human being
c) Nature d) All of the above

21) Beside physical facilities human being want _____.

a) Name b) Fame
c) Relationship d) None of the above

22) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.

a) Swatantra b) Partantra
c) Prosperous d) None of the above

23) To be in state of _____ is unhappiness.

a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

24) Which of following leads to variety of problems at different levels of our living?

a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

25) Working only for physical facilities in living is called _____.

a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

26) Self and _____ are different in nature, materiality, needs and activities.

a) Trust b) Body
c) Belief d) None of the above

27) Sukh and _____ both are needed and can't replace each other.

a) Self b) Body
c) Suvidha d) Belief

28) In value education Sanyama means _____.
a) Self-regulation b) Health
c) Happiness d) Prosperity

29) Sadupyog of the Body mean _____ of the Body.
a) Self-regulation b) Care
c) Happiness d) Right utilization

30) Knowing means having the _____.
a) Assumption b) Right understanding
c) Right feeling d) None of the above

31) Each human being is co-existence of the _____ and the _____.
a) self, self b) body, body
c) self, body d) None of the above

32) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.
a) Swasthya b) Sanyam
c) Prosperity d) None of the above

33) The system of the body works in a _____ way.
a) Happy b) Self organized
c) Random d) Independent

34) The self is _____ in nature while body is _____ in nature.
a) Unconscious, Physico-chemical
b) Conscious, Physico-chemical
c) Physico-chemical, Conscious
d) Physico-chemical, Unconscious

35) The activity of desire, thought and expecting together is called as _____.
a) Body b) Health
c) Imagination d) Future

36) Harmony should be maintained in _____.
a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

37) Sah-astitva means _____.
a) Co-existence b) Co-operation
c) Co-ordination d) Corporate identity

38) The process of education and right living leads to _____ in the individual.

a) Right understanding b) Health
c) Prosperity d) None of the above

39) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness b) Confusion
c) Confidence d) Fear

40) _____ is the foundational value in relationship.

a) Respect b) Love
c) Trust d) Glory

41) To be assured of others at all time is the feeling of _____.

a) Respect b) Love
c) Trust d) Glory

42) _____ is the feeling for someone who has made efforts for excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

43) _____ is the feeling of acceptance for those who have made efforts for my excellence.

a) Reverence b) Glory
c) Gratitude d) Guidance

44) The feeling of relatedness to all human beings is called _____.

a) Love b) Affection
c) Gratitude d) Respect

45) All the units of nature can be classified into _____ orders.

a) Two b) Three
c) Four d) Six

46) Which of the following does not form an order in nature?

a) Bio b) Animal
c) Consciousness d) Human

47) Which of the following statement is not true?

a) There is interconnectedness in nature
b) There is recyclability and self-regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

48) Harmony in the family is the building block for harmony in the _____.

a) society b) individual
c) friend d) relative

49) _____ in the family means that the family is able to identify its needs.

a) wealth
b) prosperity
c) harmony
d) happiness

50) _____ means right evaluation.

a) Respect
b) Love
c) Trust
d) Glory

SLR-QH-191

Seat No.		Set	Q

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Beside physical facilities human being want _____.
a) Name b) Fame
c) Relationship d) None of the above

2) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.
a) Swatantra b) Partantra
c) Prosperous d) None of the above

3) To be in state of _____ is unhappiness.
a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

4) Which of following leads to variety of problems at different levels of our living?
a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
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d) Lack of awareness towards health

5) Working only for physical facilities in living is called _____.
a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

6) Self and _____ are different in nature, materiality, needs and activities.
a) Trust b) Body
c) Belief d) None of the above

7) Sukh and _____ both are needed and can't replace each other.
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8) In value education Sanyama means _____.
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a) Self-regulation b) Care
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10) Knowing means having the _____.
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20) _____ is the foundational value in relationship.

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21) To be assured of others at all time is the feeling of _____.

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22) _____ is the feeling for someone who has made efforts for excellence.

a) Reverence b) Glory
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a) Love b) Affection
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d) There is mutual fulfillment in nature

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c) harmony d) happiness

30) _____ means right evaluation.

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31) Value education enables us _____.

a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

32) One of the basic desires of every human being is to be always _____.

a) Happy b) Sad
c) Laugh d) Earn Money

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a) Self -Actualization b) Self Exploration
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35) Present Education system gives more focus to skills.

a) True b) False
c) May be d) None of the above

36) Value of an entity is _____.

a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

37) _____ are as Basic Human Aspirations.

a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

38) Any course content on value education needs to be _____.

a) Universal b) Rational
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41) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

42) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

43) Right Understanding and Physical Facilities leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

44) ____ are the content of self-exploration.
a) Program b) Desire
c) Both a and b d) None of the above

45) To be in state of liking is _____.
a) Happy b) Unhappy
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46) _____ helps the human being to transform from Animal consciousness to human consciousness.
a) Physical Facility b) Right understanding
c) Relationship d) All of above

47) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.
a) Value b) Skill
c) Technology d) All of above

48) _____ means physical facilities more than to satisfy my needs.
a) Health b) Prosperity
c) Happiness d) None of above

49) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.

a) naturally acceptable b) pushed
c) common d) None of above

50) Physical facilities are necessary and complete for _____.

a) Animal b) Human being
c) Nature d) All of the above

SLR-QH-191

Seat No.		Set	R

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) To be assured of others at all time is the feeling of _____.
a) Respect b) Love
c) Trust d) Glory

2) _____ is the feeling for someone who has made efforts for excellence.
a) Reverence b) Glory
c) Gratitude d) Guidance

3) _____ is the feeling of acceptance for those who have made efforts for my excellence.
a) Reverence b) Glory
c) Gratitude d) Guidance

4) The feeling of relatedness to all human beings is called _____.
a) Love b) Affection
c) Gratitude d) Respect

5) All the units of nature can be classified into _____ orders.
a) Two b) Three
c) Four d) Six

6) Which of the following does not form an order in nature?
a) Bio b) Animal
c) Consciousness d) Human

7) Which of the following statement is not true?
a) There is interconnectedness in nature
b) There is recyclability and self-regulation in nature
c) There is struggle for survival in nature
d) There is mutual fulfillment in nature

8) Harmony in the family is the building block for harmony in the _____.
a) society b) individual
c) friend d) relative

9) _____ in the family means that the family is able to identify its needs.
a) wealth b) prosperity
c) harmony d) happiness

10) _____ means right evaluation.
a) Respect b) Love
c) Trust d) Glory

11) Value education enables us _____.
a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

12) One of the basic desires of every human being is to be always _____.
a) Happy b) Sad
c) Laugh d) Earn Money

13) _____ is the basic unit of any human society.
a) Group b) Individual
c) Nature d) Society

14) Natural acceptance & _____ are the two processes of knowing.
a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

15) Present Education system gives more focus to skills.
a) True b) False
c) May be d) None of the above

16) Value of an entity is _____.
a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

17) _____ are as Basic Human Aspirations.
a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

18) Any course content on value education needs to be _____.
a) Universal b) Rational
c) Natural d) All of above

19) When we live with correct understanding of values, we feel _____.
a) Deprived b) Frustrated
c) Happy d) Unhappy

20) Following are the basic guidelines for value education except _____.
a) Universal b) Personal
c) Rational d) Natural

21) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

22) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

23) Right Understanding and Physical Facilities leads to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

24) ____ are the content of self-exploration.
a) Program b) Desire
c) Both a and b d) None of the above

25) To be in state of liking is _____.
a) Happy b) Unhappy
c) Both a and b d) None of the above

26) _____ helps the human being to transform from Animal consciousness to human consciousness.
a) Physical Facility b) Right understanding
c) Relationship d) All of above

27) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.
a) Value b) Skill
c) Technology d) All of above

28) _____ means physical facilities more than to satisfy my needs.
a) Health b) Prosperity
c) Happiness d) None of above

29) If something is _____ to us, without any force or compulsion, then it is often correct and does not change with time and people.
a) naturally acceptable b) pushed
c) common d) None of above

30) Physical facilities are necessary and complete for _____.
a) Animal b) Human being
c) Nature d) All of the above

31) Beside physical facilities human being want _____.
a) Name b) Fame
c) Relationship d) None of the above

32) When you are living with pre-conditionings and accumulated desires without evaluating them, then it means that you are _____.
a) Swatantra b) Partantra
c) Prosperous d) None of the above

33) To be in state of _____ is unhappiness.
a) Disharmony b) Contradiction
c) Disharmony or contradiction d) None of the above

34) Which of following leads to variety of problems at different levels of our living?
a) Lack of right understanding of happiness
b) Lack of right understanding of prosperity
c) Lack of right understanding of happiness & prosperity
d) Lack of awareness towards health

35) Working only for physical facilities in living is called _____.
a) Animal Consciousness b) Human Consciousness
c) Rich Consciousness d) None of these

36) Self and _____ are different in nature, materiality, needs and activities.
a) Trust b) Body
c) Belief d) None of the above

37) Sukh and _____ both are needed and can't replace each other.
a) Self b) Body
c) Suvidha d) Belief

38) In value education Sanyama means _____.
a) Self-regulation b) Health
c) Happiness d) Prosperity

39) Sadupyog of the Body mean _____ of the Body.
a) Self-regulation b) Care
c) Happiness d) Right utilization

40) Knowing means having the _____.
a) Assumption b) Right understanding
c) Right feeling d) None of the above

41) Each human being is co-existence of the _____ and the _____.
a) self, self b) body, body
c) self, body d) None of the above

42) _____ is the feeling of responsibility for nurturing, protecting and right utilizing the body.
a) Swasthya b) Sanyam
c) Prosperity d) None of the above

43) The system of the body works in a _____ way.
a) Happy b) Self organized
c) Random d) Independent

44) The self is _____ in nature while body is _____ in nature.
a) Unconscious, Physico-chemical
b) Conscious, Physico-chemical
c) Physico-chemical, Conscious
d) Physico-chemical, Unconscious

45) The activity of desire, thought and expecting together is called as _____.
a) Body b) Health
c) Imagination d) Future

46) Harmony should be maintained in _____.
a) Between body and life
b) Between self and society
c) Between life and environment
d) All the above

47) Sah-astitva means _____.
a) Co-existence b) Co-operation
c) Co-ordination d) Corporate identity

48) The process of education and right living leads to _____ in the individual.
a) Right understanding b) Health
c) Prosperity d) None of the above

49) Ensuring justice in the relationship, on the basis of values leads to _____ in society.

a) Fearlessness
b) Confusion
c) Confidence
d) Fear

50) _____ is the foundational value in relationship.

a) Respect
b) Love
c) Trust
d) Glory

SLR-QH-191

Seat No.		Set	S

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Universal Human Values (VEC-01)

Day & Date: Friday, 15-05-2026 Max. Marks: 50
Time: 03:00 PM To 04:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Answer

Q.1 Solve following Multiple Choice Questions.

1) Please give the correct priority for Physical Facilities, Right Understanding and Relationship.
a) Physical Facilities, Right Understanding and Relationship
b) Relationship, Right Understanding and Physical Facilities
c) Right Understanding, Relationship and Physical Facilities
d) None of the above

2) Right Understanding and relationships lead to _____.
a) Mutual Happiness b) Mutual Prosperity
c) Both a and b d) All are wrong

3) Right Understanding and Physical Facilities leads to _____.
a) Mutual Happiness b) Mutual Prosperity
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4) ____ are the content of self-exploration.
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c) Both a and b d) None of the above

5) To be in state of liking is _____.
a) Happy b) Unhappy
c) Both a and b d) None of the above

6) _____ helps the human being to transform from Animal consciousness to human consciousness.
a) Physical Facility b) Right understanding
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7) _____ is only a means to achieve what is considered valuable for a human being in an effective and efficient manner.
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33) _____ is the feeling of acceptance for those who have made efforts for my excellence.
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a) Two b) Three
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c) There is struggle for survival in nature
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a) society b) individual
c) friend d) relative

39) _____ in the family means that the family is able to identify its needs.

a) wealth b) prosperity
c) harmony d) happiness

40) _____ means right evaluation.

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c) Trust d) Glory

41) Value education enables us _____.

a) To understand our needs
b) Visualize our goals correctly
c) Indicate the direction for their fulfillment
d) All of the above

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a) Happy b) Sad
c) Laugh d) Earn Money

43) _____ is the basic unit of any human society.

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a) Self -Actualization b) Self Exploration
c) Self Evaluation d) Self Control

45) Present Education system gives more focus to skills.

a) True b) False
c) May be d) None of the above

46) Value of an entity is _____.

a) Physical Facility
b) Prosperity
c) Its participation in larger order of which it is part
d) Both a and b

47) _____ are as Basic Human Aspirations.

a) Money
b) Relationship without money
c) Physical Facility
d) Continuous Happiness & Prosperity

48) Any course content on value education needs to be _____.

a) Universal b) Rational
c) Natural d) All of above

49) When we live with correct understanding of values, we feel _____.

a) Deprived b) Frustrated

c) Happy d) Unhappy

50) Following are the basic guidelines for value education except _____.

a) Universal b) Personal

c) Rational d) Natural

SLR-QH-192

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computer Architecture and Organization (ECEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) The basic model of a computer system is based on _____.
a) Harvard architecture b) Von Neumann architecture
c) Parallel architecture d) Distributed system

2) CPI stands for _____.
a) Clock per instruction
b) Cycles per instruction
c) Central processing index
d) Control processing instruction

3) RISC architecture typically has _____.
a) Complex instructions b) Variable instruction length
c) Large number of registers d) Microprogrammed control

4) Which operation is NOT performed by ALU?
a) Arithmetic operations b) Logic operations
c) Control operations d) Shift operations

5) Floating-point numbers are represented using _____.
a) Only mantissa b) Only exponent
c) Mantissa and exponent d) Binary integers

6) Hardwired control unit is _____.
a) Slower than microprogrammed
b) Faster but less flexible
c) More flexible
d) Software-based

7) The first stage of instruction cycle is _____.
a) Decode
b) Execute
c) Fetch
d) Store

8) Cache memory is used to _____.
a) Increase storage capacity
b) Reduce access time
c) Replace RAM
d) Store permanent data

9) Direct mapping technique uses _____.
a) One-to-many mapping
b) Many-to-one mapping
c) One-to-one mapping
d) Fully associative mapping

10) TLB is used in _____.
a) Cache memory
b) Virtual memory
c) ALU
d) Control unit

11) Paging eliminates _____.
a) External fragmentation
b) Internal fragmentation
c) Both
d) None

12) Pipeline hazard due to data dependency is called _____.
a) Structural hazard
b) Data hazard
c) Control hazard
d) Memory hazard

13) DMA stands for _____.
a) Direct Memory Access
b) Data Memory Allocation
c) Dynamic Memory Access
d) Direct Module Access

14) Interrupt driven I/O is better than programmed I/O because _____.
a) CPU continuously checks device
b) CPU is free during I/O operation
c) No hardware required
d) Slower execution

SLR-QH-192

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computer Architecture and Organization (ECEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Answer Any Four questions. **16**

a) Explain Von Neumann architecture with diagram.

b) Compare CISC and RISC architectures.

c) Define and derive expression for execution time

d) Explain design of ALU for addition and subtraction.

e) Explain floating-point number representation

Q.3 Answer Any Two questions. **12**

a) Explain performance metrics: Clock rate, CPI, MIPS with examples.

b) Explain instruction cycle with neat diagram.

c) Compare hardwired and microprogrammed control units.

SECTION – II

Q.4 Answer Any Four questions. **16**

a) Explain memory hierarchy with diagram.

b) Explain cache mapping techniques.

c) Define paging and segmentation.

d) Explain different pipeline hazards.

e) Explain programmed I/O and interrupt-driven I/O.

Q.5 Answer Any Two questions. **12**

a) Explain cache replacement and write policies.

b) Explain virtual memory and working of TLB.

c) Explain instruction pipelining with diagram and hazards.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computer Architecture and Organization (ECEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Cache memory is used to _____.
a) Increase storage capacity b) Reduce access time
c) Replace RAM d) Store permanent data

2) Direct mapping technique uses _____.
a) One-to-many mapping b) Many-to-one mapping
c) One-to-one mapping d) Fully associative mapping

3) TLB is used in _____.
a) Cache memory b) Virtual memory
c) ALU d) Control unit

4) Paging eliminates _____.
a) External fragmentation b) Internal fragmentation
c) Both d) None

5) Pipeline hazard due to data dependency is called _____.
a) Structural hazard b) Data hazard
c) Control hazard d) Memory hazard

6) DMA stands for _____.
a) Direct Memory Access b) Data Memory Allocation
c) Dynamic Memory Access d) Direct Module Access

7) Interrupt driven I/O is better than programmed I/O because _____.
a) CPU continuously checks device
b) CPU is free during I/O operation
c) No hardware required
d) Slower execution

8) The basic model of a computer system is based on _____.
a) Harvard architecture
b) Von Neumann architecture
c) Parallel architecture
d) Distributed system

9) CPI stands for _____.
a) Clock per instruction
b) Cycles per instruction
c) Central processing index
d) Control processing instruction

10) RISC architecture typically has _____.
a) Complex instructions
b) Variable instruction length
c) Large number of registers
d) Microprogrammed control

11) Which operation is NOT performed by ALU?
a) Arithmetic operations
b) Logic operations
c) Control operations
d) Shift operations

12) Floating-point numbers are represented using _____.
a) Only mantissa
b) Only exponent
c) Mantissa and exponent
d) Binary integers

13) Hardwired control unit is _____.
a) Slower than microprogrammed
b) Faster but less flexible
c) More flexible
d) Software-based

14) The first stage of instruction cycle is _____.
a) Decode
b) Execute
c) Fetch
d) Store

SLR-QH-192

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computer Architecture and Organization (ECEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Answer Any Four questions. **16**

a) Explain Von Neumann architecture with diagram.

b) Compare CISC and RISC architectures.

c) Define and derive expression for execution time

d) Explain design of ALU for addition and subtraction.

e) Explain floating-point number representation

Q.3 Answer Any Two questions. **12**

a) Explain performance metrics: Clock rate, CPI, MIPS with examples.

b) Explain instruction cycle with neat diagram.

c) Compare hardwired and microprogrammed control units.

SECTION – II

Q.4 Answer Any Four questions. **16**

a) Explain memory hierarchy with diagram.

b) Explain cache mapping techniques.

c) Define paging and segmentation.

d) Explain different pipeline hazards.

e) Explain programmed I/O and interrupt-driven I/O.

Q.5 Answer Any Two questions. **12**

a) Explain cache replacement and write policies.

b) Explain virtual memory and working of TLB.

c) Explain instruction pipelining with diagram and hazards.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computer Architecture and Organization (ECEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Paging eliminates _____.
a) External fragmentation b) Internal fragmentation
c) Both d) None

2) Pipeline hazard due to data dependency is called _____.
a) Structural hazard b) Data hazard
c) Control hazard d) Memory hazard

3) DMA stands for _____.
a) Direct Memory Access b) Data Memory Allocation
c) Dynamic Memory Access d) Direct Module Access

4) Interrupt driven I/O is better than programmed I/O because _____.
a) CPU continuously checks device
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5) The basic model of a computer system is based on _____.
a) Harvard architecture b) Von Neumann architecture
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9) Floating-point numbers are represented using _____.
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11) The first stage of instruction cycle is _____.
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12) Cache memory is used to _____.
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13) Direct mapping technique uses _____.
a) One-to-many mapping b) Many-to-one mapping
c) One-to-one mapping d) Fully associative mapping

14) TLB is used in _____.
a) Cache memory b) Virtual memory
c) ALU d) Control unit

SLR-QH-192

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computer Architecture and Organization (ECEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Answer Any Four questions. **16**

a) Explain Von Neumann architecture with diagram.

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d) Explain design of ALU for addition and subtraction.

e) Explain floating-point number representation

Q.3 Answer Any Two questions. **12**

a) Explain performance metrics: Clock rate, CPI, MIPS with examples.

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SECTION – II

Q.4 Answer Any Four questions. **16**

a) Explain memory hierarchy with diagram.

b) Explain cache mapping techniques.

c) Define paging and segmentation.

d) Explain different pipeline hazards.

e) Explain programmed I/O and interrupt-driven I/O.

Q.5 Answer Any Two questions. **12**

a) Explain cache replacement and write policies.

b) Explain virtual memory and working of TLB.

c) Explain instruction pipelining with diagram and hazards.

Seat No.	

Set | S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computer Architecture and Organization (ECEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Hardwired control unit is _____.
a) Slower than microprogrammed
b) Faster but less flexible
c) More flexible
d) Software-based

2) The first stage of instruction cycle is _____.
a) Decode b) Execute
c) Fetch d) Store

3) Cache memory is used to _____.
a) Increase storage capacity b) Reduce access time
c) Replace RAM d) Store permanent data

4) Direct mapping technique uses _____.
a) One-to-many mapping b) Many-to-one mapping
c) One-to-one mapping d) Fully associative mapping

5) TLB is used in _____.
a) Cache memory b) Virtual memory
c) ALU d) Control unit

6) Paging eliminates _____.
a) External fragmentation b) Internal fragmentation
c) Both d) None

7) Pipeline hazard due to data dependency is called _____.
a) Structural hazard b) Data hazard
c) Control hazard d) Memory hazard

8) DMA stands for _____.
a) Direct Memory Access
b) Data Memory Allocation
c) Dynamic Memory Access
d) Direct Module Access

9) Interrupt driven I/O is better than programmed I/O because _____.
a) CPU continuously checks device
b) CPU is free during I/O operation
c) No hardware required
d) Slower execution

10) The basic model of a computer system is based on _____.
a) Harvard architecture
b) Von Neumann architecture
c) Parallel architecture
d) Distributed system

11) CPI stands for _____.
a) Clock per instruction
b) Cycles per instruction
c) Central processing index
d) Control processing instruction

12) RISC architecture typically has _____.
a) Complex instructions
b) Variable instruction length
c) Large number of registers
d) Microprogrammed control

13) Which operation is NOT performed by ALU?
a) Arithmetic operations
b) Logic operations
c) Control operations
d) Shift operations

14) Floating-point numbers are represented using _____.
a) Only mantissa
b) Only exponent
c) Mantissa and exponent
d) Binary integers

SLR-QH-192

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April – 2026
Computer Architecture and Organization (ECEPCC-04)

Day & Date: Saturday, 16-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Answer Any Four questions. **16**

a) Explain Von Neumann architecture with diagram.

b) Compare CISC and RISC architectures.

c) Define and derive expression for execution time

d) Explain design of ALU for addition and subtraction.

e) Explain floating-point number representation

Q.3 Answer Any Two questions. **12**

a) Explain performance metrics: Clock rate, CPI, MIPS with examples.

b) Explain instruction cycle with neat diagram.

c) Compare hardwired and microprogrammed control units.

SECTION – II

Q.4 Answer Any Four questions. **16**

a) Explain memory hierarchy with diagram.

b) Explain cache mapping techniques.

c) Define paging and segmentation.

d) Explain different pipeline hazards.

e) Explain programmed I/O and interrupt-driven I/O.

Q.5 Answer Any Two questions. **12**

a) Explain cache replacement and write policies.

b) Explain virtual memory and working of TLB.

c) Explain instruction pipelining with diagram and hazards.

SLR-QH-193

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Network Theory and Linear Integrated Circuits (ECEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) In mesh analysis, KVL is applied to _____.
a) Nodes b) Meshes
c) Branches d) Junctions

2) Superposition theorem cannot be applied to _____.
a) Voltage b) Current
c) Power d) Resistance

3) The internal resistance in Thevenin's theorem is _____.
a) Load resistance
b) Source resistance
c) Equivalent resistance seen from terminals
d) Zero

4) The unit of admittance is _____.
a) Ohm b) Siemens
c) Henry d) Farad

5) Inductive reactance increases with _____.
a) Resistance b) Frequency
c) Capacitance d) Voltage

6) At resonance in series RLC circuit, current is _____.
a) Minimum b) Maximum
c) Zero d) Constant

7) In Bode plot, phase is measured in _____.
a) Radians only b) Degrees
c) Volts d) Hertz

8) Y-parameters relate _____.
a) Voltage to voltage b) Current to current
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9) For a symmetrical network _____.
a) $Z_{11} = Z_{22}$ b) $Z_{12} = Z_{21}$
c) $Y_{12} = Y_{21}$ d) $h_{11} = h_{22}$

10) Ideal Op-Amp has offset voltage _____.
a) Infinite b) Zero
c) High d) Variable

11) Slew rate affects _____.
a) DC gain b) High-frequency response
c) Resistance d) Current

12) Differentiator output is proportional to _____.
a) Integral of input b) Derivative of input
c) Square of input d) Constant

13) Comparator output is _____.
a) Analog b) Digital (high/low)
c) Sinusoidal d) Triangular

14) Low-pass filter attenuates _____.
a) Low frequency b) High frequency
c) All frequencies d) No frequency

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Network Theory and Linear Integrated Circuits (ECEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

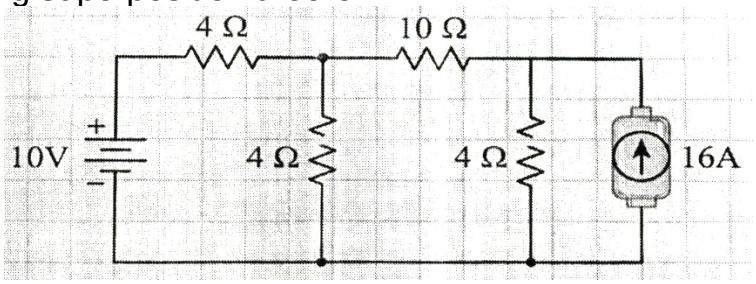
Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

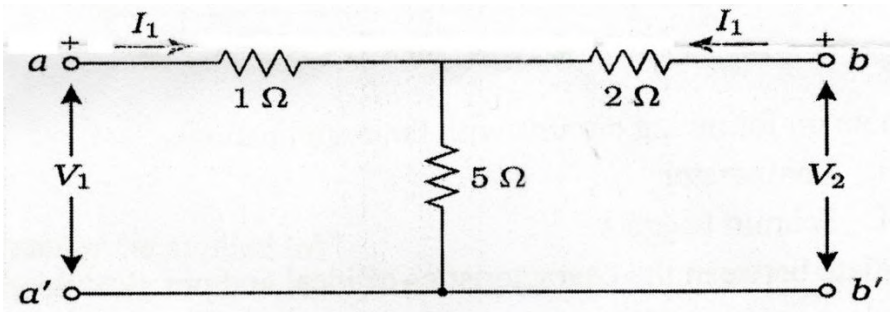
a) State and explain Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL).

b) Determine current flowing through 10 Ω resistor of the following circuit using superposition theorem.

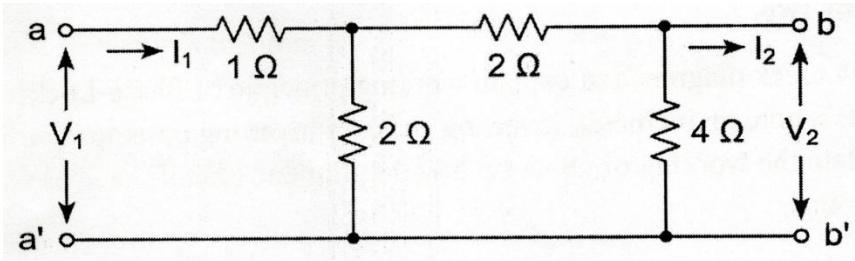


c) Derive an expression of resonant frequency for a RLC parallel resonance circuit.

d) Derive ABCD-parameter equations for two-port network in terms of voltages & currents. Find the ABCD parameter of the network shown below-



e) Derive Y-parameter equations for two-port network in terms of voltages & currents. Find the Y parameter of the network shown below-



Q.3 Attempt Any Two. **12**

a) Write Steps of Mesh Analysis and determine the mesh current I1 in the circuit shown in fig. 2.29

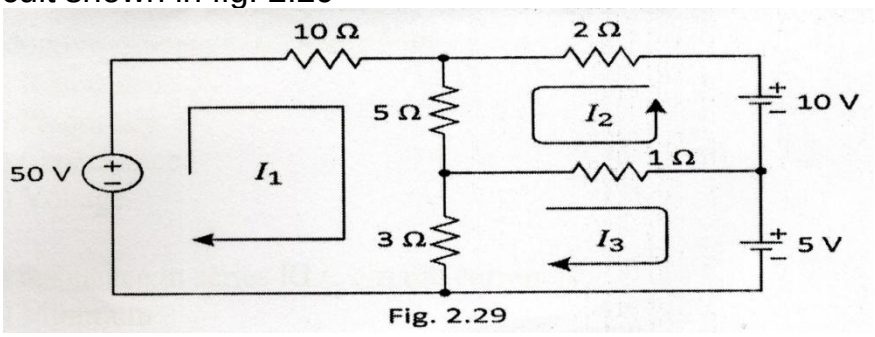


Fig. 2.29

b) Derive an expression of resonant frequency, upper & lower half power frequencies, Bandwidth and Quality factor for a series circuit.

c) Explain interconnection of two port networks. Write application of two port networks.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Referring to Fig. 8.14, design an adjustable positive voltage regulator using LM317 for an output voltage V, varying from 4 to 12 V and an output current I of 1 A

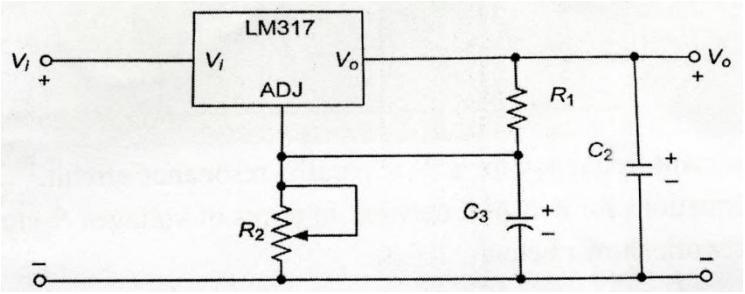


Fig. 8.14, LM317 adjustable positive voltage regulator

b) Write a note on following circuits with their applications -

i) Comparator

ii) Schmitt triggers

c) Differentiate between the characteristics of ideal and practical operational amplifiers (Op-Amps).

d) Explain the working of Wien bridge oscillator and derive the condition for oscillation.

e) Explain the working of band-pass and band-stop filters with suitable diagrams.

Q.5 Attempt Any Two. **12**

a) Draw block diagram and explain working principle of Phase-Locked Loops (PLL).

b) Write a note on including inverting and non-inverting op-amps configurations.

c) Explain the working of Op-Amp based arithmetic circuits such as adder and subtractor with neat diagrams.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Network Theory and Linear Integrated Circuits (ECEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Y-parameters relate _____.
a) Voltage to voltage b) Current to current
c) Voltage to current d) Power to voltage

2) For a symmetrical network _____.
a) $Z_{11} = Z_{22}$ b) $Z_{12} = Z_{21}$
c) $Y_{12} = Y_{21}$ d) $h_{11} = h_{22}$

3) Ideal Op-Amp has offset voltage _____.
a) Infinite b) Zero
c) High d) Variable

4) Slew rate affects _____.
a) DC gain b) High-frequency response
c) Resistance d) Current

5) Differentiator output is proportional to _____.
a) Integral of input b) Derivative of input
c) Square of input d) Constant

6) Comparator output is _____.
a) Analog b) Digital (high/low)
c) Sinusoidal d) Triangular

7) Low-pass filter attenuates _____.
a) Low frequency b) High frequency
c) All frequencies d) No frequency

8) In mesh analysis, KVL is applied to _____.
a) Nodes b) Meshes
c) Branches d) Junctions

9) Superposition theorem cannot be applied to _____.
a) Voltage b) Current
c) Power d) Resistance

10) The internal resistance in Thevenin's theorem is _____.
a) Load resistance
b) Source resistance
c) Equivalent resistance seen from terminals
d) Zero

11) The unit of admittance is _____.
a) Ohm b) Siemens
c) Henry d) Farad

12) Inductive reactance increases with _____.
a) Resistance b) Frequency
c) Capacitance d) Voltage

13) At resonance in series RLC circuit, current is _____.
a) Minimum b) Maximum
c) Zero d) Constant

14) In Bode plot, phase is measured in _____.
a) Radians only b) Degrees
c) Volts d) Hertz

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Network Theory and Linear Integrated Circuits (ECEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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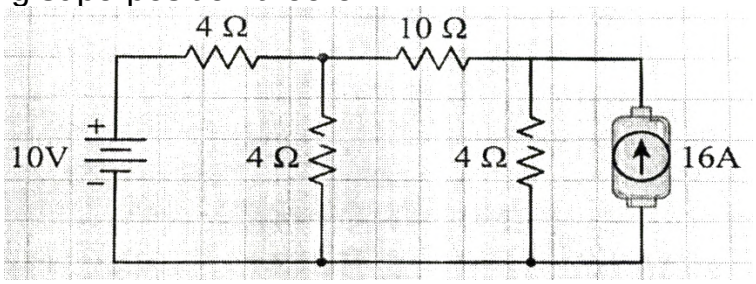
SECTION – I

Q.2 Attempt Any Four. **16**

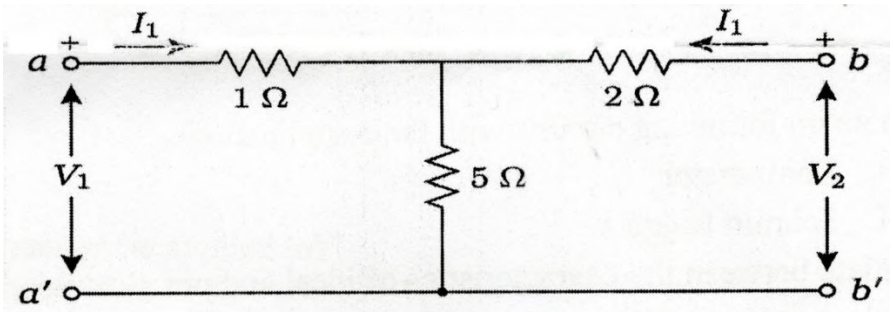
a) State and explain Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL).

b) Determine current flowing through 10 Ω resistor of the following circuit using superposition theorem.

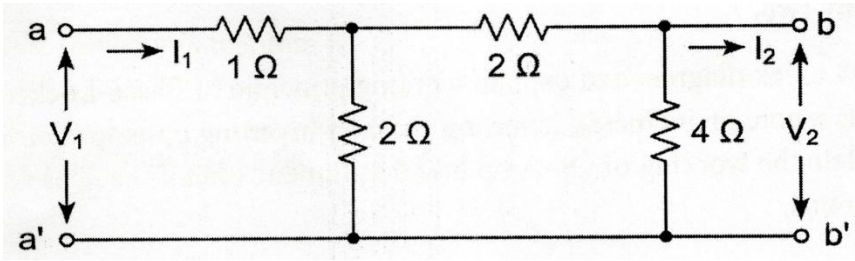


c) Derive an expression of resonant frequency for a RLC parallel resonance circuit.

d) Derive ABCD-parameter equations for two-port network in terms of voltages & currents. Find the ABCD parameter of the network shown below-



e) Derive Y-parameter equations for two-port network in terms of voltages & currents. Find the Y parameter of the network shown below-



Q.3 Attempt Any Two. **12**

a) Write Steps of Mesh Analysis and determine the mesh current I1 in the circuit shown in fig. 2.29

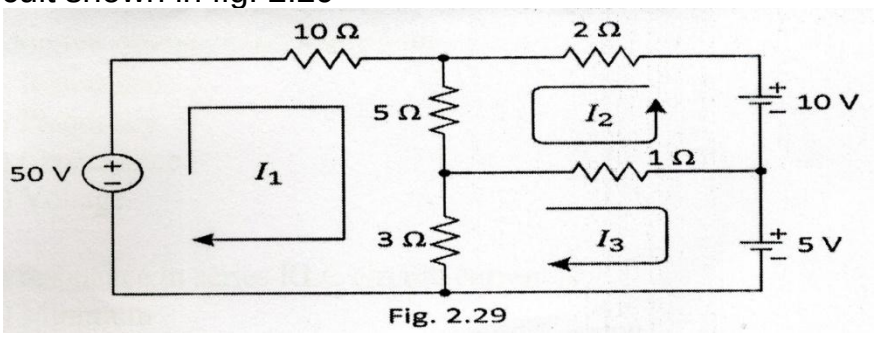


Fig. 2.29

b) Derive an expression of resonant frequency, upper & lower half power frequencies, Bandwidth and Quality factor for a series circuit.

c) Explain interconnection of two port networks. Write application of two port networks.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Referring to Fig. 8.14, design an adjustable positive voltage regulator using LM317 for an output voltage V, varying from 4 to 12 V and an output current I of 1 A

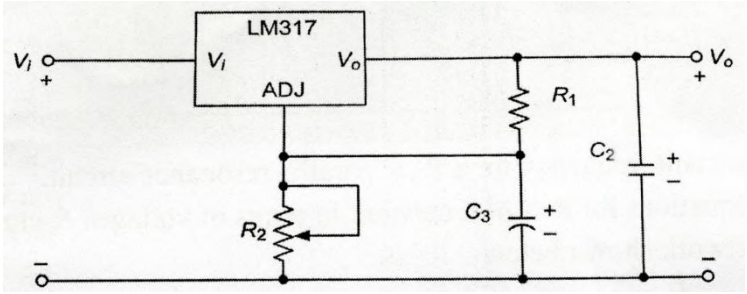


Fig. 8.14, LM317 adjustable positive voltage regulator

b) Write a note on following circuits with their applications -

i) Comparator

ii) Schmitt triggers

c) Differentiate between the characteristics of ideal and practical operational amplifiers (Op-Amps).

d) Explain the working of Wien bridge oscillator and derive the condition for oscillation.

e) Explain the working of band-pass and band-stop filters with suitable diagrams.

Q.5 Attempt Any Two. **12**

a) Draw block diagram and explain working principle of Phase-Locked Loops (PLL).

b) Write a note on including inverting and non-inverting op-amps configurations.

c) Explain the working of Op-Amp based arithmetic circuits such as adder and subtractor with neat diagrams.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Network Theory and Linear Integrated Circuits (ECEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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3) Figures to the right indicates full marks.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Slew rate affects _____.
a) DC gain b) High-frequency response
c) Resistance d) Current

2) Differentiator output is proportional to _____.
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3) Comparator output is _____.
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4) Low-pass filter attenuates _____.
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5) In mesh analysis, KVL is applied to _____.
a) Nodes b) Meshes
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6) Superposition theorem cannot be applied to _____.
a) Voltage b) Current
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7) The internal resistance in Thevenin's theorem is _____.
a) Load resistance
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8) The unit of admittance is _____.
a) Ohm b) Siemens
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9) Inductive reactance increases with _____.
a) Resistance b) Frequency
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10) At resonance in series RLC circuit, current is _____.
a) Minimum b) Maximum
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12) Y-parameters relate _____.
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13) For a symmetrical network _____.
a) $Z_{11} = Z_{22}$ b) $Z_{12} = Z_{21}$
c) $Y_{12} = Y_{21}$ d) $h_{11} = h_{22}$

14) Ideal Op-Amp has offset voltage _____.
a) Infinite b) Zero
c) High d) Variable

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Network Theory and Linear Integrated Circuits (ECEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Four. **16**

a) State and explain Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL).

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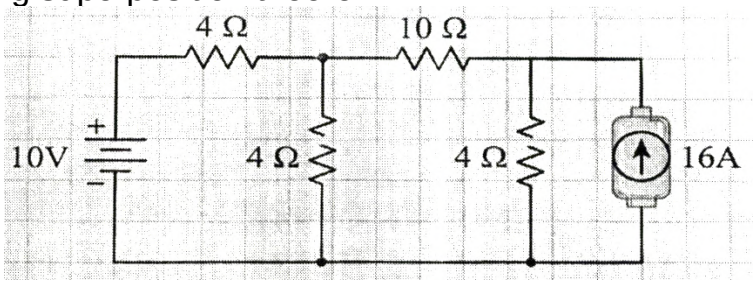

c) Derive an expression of resonant frequency for a RLC parallel resonance circuit.

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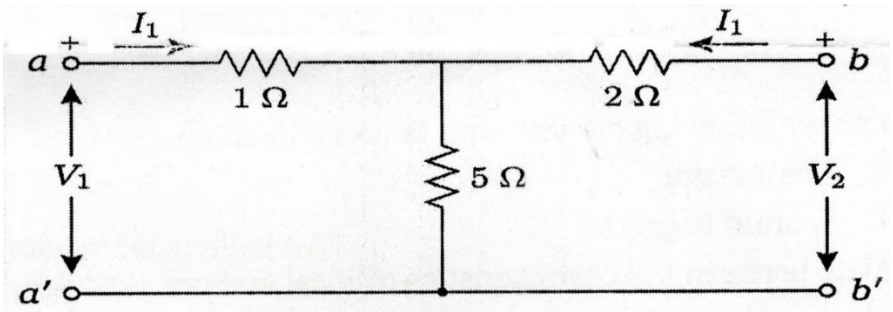

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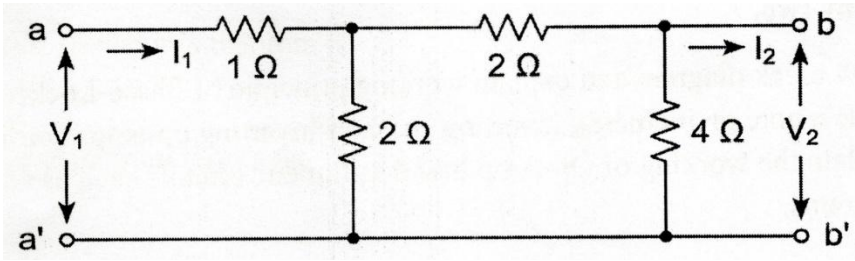

Q.3 Attempt Any Two. **12**

a) Write Steps of Mesh Analysis and determine the mesh current I1 in the circuit shown in fig. 2.29

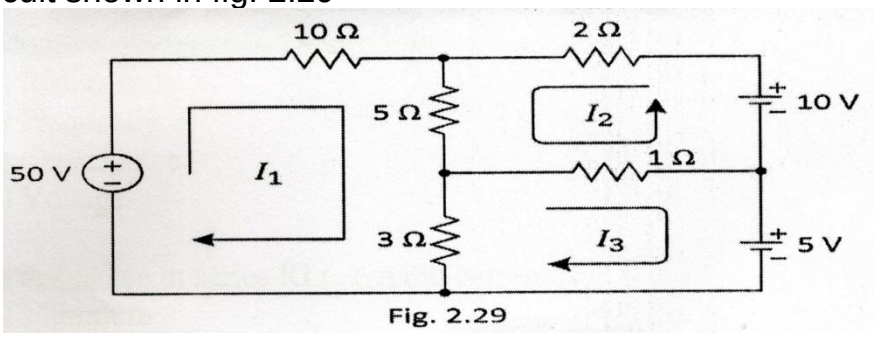

Fig. 2.29

b) Derive an expression of resonant frequency, upper & lower half power frequencies, Bandwidth and Quality factor for a series circuit.

c) Explain interconnection of two port networks. Write application of two port networks.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Referring to Fig. 8.14, design an adjustable positive voltage regulator using LM317 for an output voltage V, varying from 4 to 12 V and an output current I of 1 A

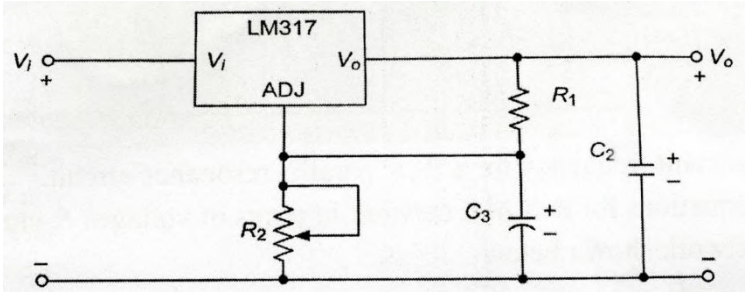

Fig. 8.14, LM317 adjustable positive voltage regulator

b) Write a note on following circuits with their applications -

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c) Differentiate between the characteristics of ideal and practical operational amplifiers (Op-Amps).

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e) Explain the working of band-pass and band-stop filters with suitable diagrams.

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b) Write a note on including inverting and non-inverting op-amps configurations.

c) Explain the working of Op-Amp based arithmetic circuits such as adder and subtractor with neat diagrams.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Network Theory and Linear Integrated Circuits (ECEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

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9) Low-pass filter attenuates _____.
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a) Resistance b) Frequency
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Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Network Theory and Linear Integrated Circuits (ECEPCC-05)

Day & Date: Tuesday, 19-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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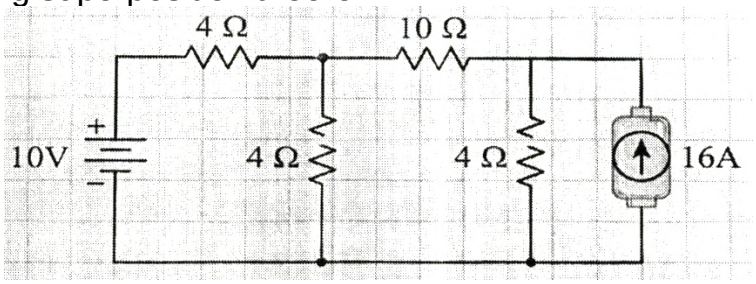
SECTION – I

Q.2 Attempt Any Four. **16**

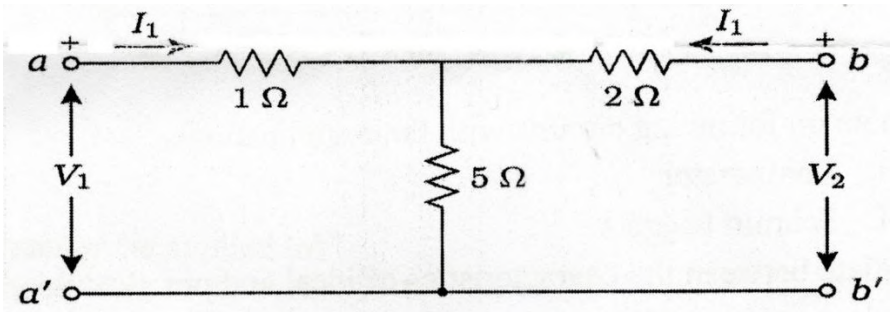
a) State and explain Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL).

b) Determine current flowing through 10 Ω resistor of the following circuit using superposition theorem.

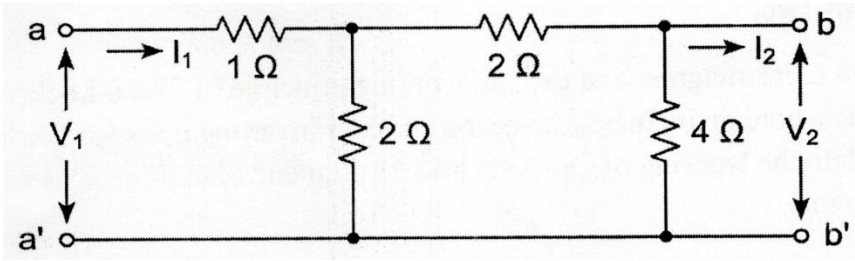


c) Derive an expression of resonant frequency for a RLC parallel resonance circuit.

d) Derive ABCD-parameter equations for two-port network in terms of voltages & currents. Find the ABCD parameter of the network shown below-



e) Derive Y-parameter equations for two-port network in terms of voltages & currents. Find the Y parameter of the network shown below-



Q.3 Attempt Any Two. **12**

a) Write Steps of Mesh Analysis and determine the mesh current I1 in the circuit shown in fig. 2.29

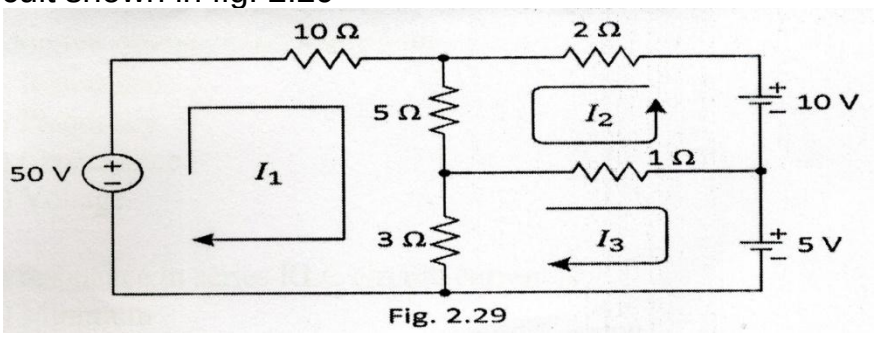


Fig. 2.29

b) Derive an expression of resonant frequency, upper & lower half power frequencies, Bandwidth and Quality factor for a series circuit.

c) Explain interconnection of two port networks. Write application of two port networks.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Referring to Fig. 8.14, design an adjustable positive voltage regulator using LM317 for an output voltage V, varying from 4 to 12 V and an output current I of 1 A

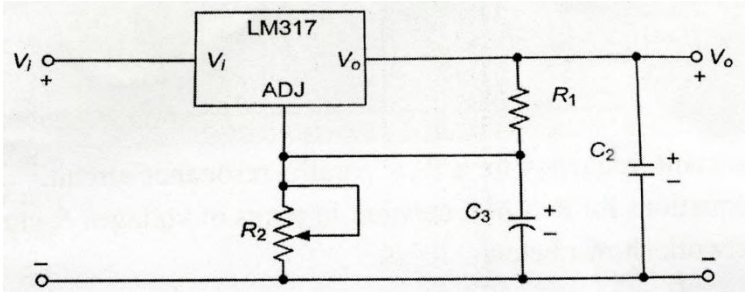


Fig. 8.14, LM317 adjustable positive voltage regulator

b) Write a note on following circuits with their applications -

i) Comparator

ii) Schmitt triggers

c) Differentiate between the characteristics of ideal and practical operational amplifiers (Op-Amps).

d) Explain the working of Wien bridge oscillator and derive the condition for oscillation.

e) Explain the working of band-pass and band-stop filters with suitable diagrams.

Q.5 Attempt Any Two. **12**

a) Draw block diagram and explain working principle of Phase-Locked Loops (PLL).

b) Write a note on including inverting and non-inverting op-amps configurations.

c) Explain the working of Op-Amp based arithmetic circuits such as adder and subtractor with neat diagrams.

SLR-QH-194

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Object Oriented Programming (ECEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which of the following is the correct way to declare a multi-dimensional array in Java?

a) int[] arr = new int[3][3]
b) int arr[][] = new int[3][3]
c) int[][] arr = new int[3][3]
d) Both b and c

2) What is the output?

```
class Test {
  public static void main(String[] args) {
    String s = "Hello World";
 System.out.println(s.toLowerCase());
  }
 }
```

a) Hello World
b) hello world
c) HELLO WORLD
d) Error

3) Which concept allows one class to acquire the properties of another class?

a) Encapsulation
b) Polymorphism
c) Inheritance
d) Abstraction

4) What is the size of int data type in Java?

a) 2 bytes
b) 4 bytes
c) 8 bytes
d) 1 byte

5) Which exception is thrown when dividing by zero in Java?

a) NullPointerException
b) ArithmeticException
c) ArrayIndexOutOfBoundsException
d) ClassCastException

6) Which of the following is used to define a constant in Java?

a) static
b) final
c) const
d) fixed

7) What does the 'super' keyword refer to in Java?

a) Current class object
b) Parent class object
c) Interface
d) Static method

8) What is the output?

```
class Demo {
  public static void main(String[] args) {
for(int i = 1; i <= 5; i++) {
System.out.print(i + " ");
    }
   }
 }
```

a) 1 2 3 4 5
b) 0 1 2 3 4
c) 2 4 6 8 10
d) Error

9) Which collection allows duplicate elements and maintains insertion order?

a) HashSet
b) TreeSet
c) ArrayList
d) HashMap

10) Which method is used to start a thread in Java?

a) run()
b) begin()
c) start()
d) init()

11) What is the default value of an int variable in Java?

a) Null
b) 1
c) 0
d) -1

12) Which Swing component is used to display a single line of text input?

a) JTextArea
b) JLable
c) JTextField
d) JButton

13) Which port does HTTP use by default?

a) 21
b) 80
c) 443
d) 8080

14) What is the output?

```
class Program {
  public static void main(String[] args) {
    String a = "Java";
    String b = "Java";
System.out.println(a.equals(b));
   }
 }
```

a) True
b) False
c) Error
d) 0

SLR-QH-194

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Object Oriented Programming (ECEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain Character Streams and Buffered Streams in Java.

b) Write a Java program to check whether a given number is Armstrong number or not.

c) Explain the concept of Encapsulation in Java with example.

d) Explain Chained Exceptions in Java with example.

Q.3 Attempt Any Two. **16**

a) Explain Abstract Classes and Interfaces in Java with suitable examples and differences.

b) Explain Access Modifiers in Java. Describe public, private, protected, and default with examples.

c) Write a Java program to demonstrate method overriding and method overloading.

SECTION – II

Q.4 Attempt Any Three. **12**

a) Explain Searching and Sorting of Arrays of primitive data types with example.

b) Explain the following with example:
i) InetAddress
ii) Socket (TCP communication)

c) Explain Thread Scheduling and Thread Priority in Java.

d) Explain Swing Events and Event Listeners. Write a program for button click event.

Q.5 Attempt Any Two. **16**

a) Explain the Java Collections Framework. Describe List, Set, Map and the role of Iterator in traversing collections.

b) Explain Multithreading in Java. Describe Thread creation using Thread class and Runnable interface with examples.

c) Explain Swing Layout Managers: FlowLayout, BorderLayout, GridLayout with suitable examples.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Object Oriented Programming (ECEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) What is the output?

```
class Demo {
  public static void main(String[] args) {
for(int i = 1; i <= 5; i++) {
System.out.print(i + " ");
    }
   }
 }
```

a) 1 2 3 4 5 b) 0 1 2 3 4
c) 2 4 6 8 10 d) Error

2) Which collection allows duplicate elements and maintains insertion order?
a) HashSet b) TreeSet
c) ArrayList d) HashMap

3) Which method is used to start a thread in Java?
a) run() b) begin()
c) start() d) init()

4) What is the default value of an int variable in Java?
a) Null b) 1
c) 0 d) -1

5) Which Swing component is used to display a single line of text input?
a) JTextArea b) JLable
c) JTextField d) JButton

6) Which port does HTTP use by default?
a) 21 b) 80
c) 443 d) 8080

7) What is the output?

```
class Program {
  public static void main(String[] args) {
    String a = "Java";
    String b = "Java";
System.out.println(a.equals(b));
  }
 }
```

a) True
b) False
c) Error
d) 0

8) Which of the following is the correct way to declare a multi-dimensional array in Java?

a) int[] arr = new int[3][3]
b) int arr[][] = new int[3][3]
c) int[][] arr = new int[3][3]
d) Both b and c

9) What is the output?

```
class Test {
  public static void main(String[] args) {
    String s = "Hello World";
 System.out.println(s.toLowerCase());
  }
 }
```

a) Hello World
b) hello world
c) HELLO WORLD
d) Error

10) Which concept allows one class to acquire the properties of another class?

a) Encapsulation
b) Polymorphism
c) Inheritance
d) Abstraction

11) What is the size of int data type in Java?

a) 2 bytes
b) 4 bytes
c) 8 bytes
d) 1 byte

12) Which exception is thrown when dividing by zero in Java?

a) NullPointerException
b) ArithmeticException
c) ArrayIndexOutOfBoundsException
d) ClassCastException

13) Which of the following is used to define a constant in Java?

a) static
b) final
c) const
d) fixed

14) What does the 'super' keyword refer to in Java?

a) Current class object
b) Parent class object
c) Interface
d) Static method

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Object Oriented Programming (ECEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain Character Streams and Buffered Streams in Java.

b) Write a Java program to check whether a given number is Armstrong number or not.

c) Explain the concept of Encapsulation in Java with example.

d) Explain Chained Exceptions in Java with example.

Q.3 Attempt Any Two. **16**

a) Explain Abstract Classes and Interfaces in Java with suitable examples and differences.

b) Explain Access Modifiers in Java. Describe public, private, protected, and default with examples.

c) Write a Java program to demonstrate method overriding and method overloading.

SECTION – II

Q.4 Attempt Any Three. **12**

a) Explain Searching and Sorting of Arrays of primitive data types with example.

b) Explain the following with example:
i) InetAddress
ii) Socket (TCP communication)

c) Explain Thread Scheduling and Thread Priority in Java.

d) Explain Swing Events and Event Listeners. Write a program for button click event.

Q.5 Attempt Any Two. **16**

a) Explain the Java Collections Framework. Describe List, Set, Map and the role of Iterator in traversing collections.

b) Explain Multithreading in Java. Describe Thread creation using Thread class and Runnable interface with examples.

c) Explain Swing Layout Managers: FlowLayout, BorderLayout, GridLayout with suitable examples.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Object Oriented Programming (ECEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) What is the default value of an int variable in Java?
a) Null b) 1
c) 0 d) -1

2) Which Swing component is used to display a single line of text input?
a) JTextArea b) JLable
c) JTextField d) JButton

3) Which port does HTTP use by default?
a) 21 b) 80
c) 443 d) 8080

4) What is the output?

```
class Program {
  public static void main(String[] args) {
    String a = "Java";
    String b = "Java";
System.out.println(a.equals(b));
   }
 }
```

a) True b) False
c) Error d) 0

5) Which of the following is the correct way to declare a multi-dimensional array in Java?
a) int[] arr = new int[3][3] b) int arr[][] = new int[3][3]
c) int[][] arr = new int[3][3] d) Both b and c

6) What is the output?

```
class Test {
  public static void main(String[] args) {
    String s = "Hello World";
 System.out.println(s.toLowerCase());
  }
 }
```

a) Hello World
b) hello world
c) HELLO WORLD
d) Error

7) Which concept allows one class to acquire the properties of another class?

a) Encapsulation
b) Polymorphism
c) Inheritance
d) Abstraction

8) What is the size of int data type in Java?

a) 2 bytes
b) 4 bytes
c) 8 bytes
d) 1 byte

9) Which exception is thrown when dividing by zero in Java?

a) NullPointerException
b) ArithmeticException
c) ArrayIndexOutOfBoundsException
d) ClassCastException

10) Which of the following is used to define a constant in Java?

a) static
b) final
c) const
d) fixed

11) What does the 'super' keyword refer to in Java?

a) Current class object
b) Parent class object
c) Interface
d) Static method

12) What is the output?

```
class Demo {
  public static void main(String[] args) {
for(int i = 1; i <= 5; i++) {
System.out.print(i + " ");
    }
   }
 }
```

a) 1 2 3 4 5
b) 0 1 2 3 4
c) 2 4 6 8 10
d) Error

13) Which collection allows duplicate elements and maintains insertion order?

a) HashSet
b) TreeSet
c) ArrayList
d) HashMap

14) Which method is used to start a thread in Java?

a) run()
b) begin()
c) start()
d) init()

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Object Oriented Programming (ECEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain Character Streams and Buffered Streams in Java.

b) Write a Java program to check whether a given number is Armstrong number or not.

c) Explain the concept of Encapsulation in Java with example.

d) Explain Chained Exceptions in Java with example.

Q.3 Attempt Any Two. **16**

a) Explain Abstract Classes and Interfaces in Java with suitable examples and differences.

b) Explain Access Modifiers in Java. Describe public, private, protected, and default with examples.

c) Write a Java program to demonstrate method overriding and method overloading.

SECTION – II

Q.4 Attempt Any Three. **12**

a) Explain Searching and Sorting of Arrays of primitive data types with example.

b) Explain the following with example:
i) InetAddress
ii) Socket (TCP communication)

c) Explain Thread Scheduling and Thread Priority in Java.

d) Explain Swing Events and Event Listeners. Write a program for button click event.

Q.5 Attempt Any Two. **16**

a) Explain the Java Collections Framework. Describe List, Set, Map and the role of Iterator in traversing collections.

b) Explain Multithreading in Java. Describe Thread creation using Thread class and Runnable interface with examples.

c) Explain Swing Layout Managers: FlowLayout, BorderLayout, GridLayout with suitable examples.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Object Oriented Programming (ECEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which of the following is used to define a constant in Java?
a) static b) final
c) const d) fixed

2) What does the 'super' keyword refer to in Java?
a) Current class object b) Parent class object
c) Interface d) Static method

3) What is the output?

```
class Demo {
  public static void main(String[] args) {
for(int i = 1; i <= 5; i++) {
System.out.print(i + " ");
    }
   }
 }
```

a) 1 2 3 4 5 b) 0 1 2 3 4
c) 2 4 6 8 10 d) Error

4) Which collection allows duplicate elements and maintains insertion order?
a) HashSet b) TreeSet
c) ArrayList d) HashMap

5) Which method is used to start a thread in Java?
a) run() b) begin()
c) start() d) init()

6) What is the default value of an int variable in Java?
a) Null b) 1
c) 0 d) -1

7) Which Swing component is used to display a single line of text input?

a) JTextArea
b) JLable
c) JTextField
d) JButton

8) Which port does HTTP use by default?

a) 21
b) 80
c) 443
d) 8080

9) What is the output?

```
class Program {
  public static void main(String[] args) {
    String a = "Java";
    String b = "Java";
System.out.println(a.equals(b));
   }
 }
```

a) True
b) False
c) Error
d) 0

10) Which of the following is the correct way to declare a multi-dimensional array in Java?

a) int[] arr = new int[3][3]
b) int arr[][] = new int[3][3]
c) int[][] arr = new int[3][3]
d) Both b and c

11) What is the output?

```
class Test {
  public static void main(String[] args) {
    String s = "Hello World";
 System.out.println(s.toLowerCase());
  }
 }
```

a) Hello World
b) hello world
c) HELLO WORLD
d) Error

12) Which concept allows one class to acquire the properties of another class?

a) Encapsulation
b) Polymorphism
c) Inheritance
d) Abstraction

13) What is the size of int data type in Java?

a) 2 bytes
b) 4 bytes
c) 8 bytes
d) 1 byte

14) Which exception is thrown when dividing by zero in Java?

a) NullPointerException
b) ArithmeticException
c) ArrayIndexOutOfBoundsException
d) ClassCastException

SLR-QH-194

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Object Oriented Programming (ECEPCC-06)

Day & Date: Thursday, 21-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

SECTION – I

Q.2 Attempt Any Three. **12**

a) Explain Character Streams and Buffered Streams in Java.

b) Write a Java program to check whether a given number is Armstrong number or not.

c) Explain the concept of Encapsulation in Java with example.

d) Explain Chained Exceptions in Java with example.

Q.3 Attempt Any Two. **16**

a) Explain Abstract Classes and Interfaces in Java with suitable examples and differences.

b) Explain Access Modifiers in Java. Describe public, private, protected, and default with examples.

c) Write a Java program to demonstrate method overriding and method overloading.

SECTION – II

Q.4 Attempt Any Three. **12**

a) Explain Searching and Sorting of Arrays of primitive data types with example.

b) Explain the following with example:
i) InetAddress
ii) Socket (TCP communication)

c) Explain Thread Scheduling and Thread Priority in Java.

d) Explain Swing Events and Event Listeners. Write a program for button click event.

Q.5 Attempt Any Two. **16**

a) Explain the Java Collections Framework. Describe List, Set, Map and the role of Iterator in traversing collections.

b) Explain Multithreading in Java. Describe Thread creation using Thread class and Runnable interface with examples.

c) Explain Swing Layout Managers: FlowLayout, BorderLayout, GridLayout with suitable examples.

SLR-QH-195

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Innovation provides _____.
a) Stability b) Competitive advantage
c) Similarity d) Confusion

2) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

3) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

4) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

5) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

6) Six Thinking Hats tool was developed by _____.
a) Peter Drucker b) Steve Jobs
c) Edward de Bono d) Clayton Christensen

7) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

8) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
c) Disruptive d) Delaying

9) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

10) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

11) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

12) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

13) Legal consideration in entrepreneurship includes _____.
a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

14) Entrepreneurial process starts with _____.
a) HR hiring b) Opportunity identification
c) Revenue calculation d) Market monopoly

SLR-QH-195

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-195

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
c) Disruptive d) Delaying

2) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

3) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

4) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

5) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

6) Legal consideration in entrepreneurship includes _____.
a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

7) Entrepreneurial process starts with _____.
a) HR hiring
b) Opportunity identification
c) Revenue calculation
d) Market monopoly

8) Innovation provides _____.
a) Stability
b) Competitive advantage
c) Similarity
d) Confusion

9) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

10) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

11) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

12) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

13) Six Thinking Hats tool was developed by _____.
a) Peter Drucker
b) Steve Jobs
c) Edward de Bono
d) Clayton Christensen

14) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

SLR-QH-195

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

2) Crafting a business model involves _____.
a) Ignoring customers
b) Defining value, segments, and revenue streams
c) Random investments
d) Borrowing

3) Legal consideration in entrepreneurship includes _____.
a) Product packaging b) Compliance and regulations
c) Floor layout d) Office color

4) Entrepreneurial process starts with _____.
a) HR hiring b) Opportunity identification
c) Revenue calculation d) Market monopoly

5) Innovation provides _____.
a) Stability b) Competitive advantage
c) Similarity d) Confusion

6) Managerial competency involves _____.
a) Fundraising only
b) Communication, planning, and leadership
c) Imitation
d) None

7) Entrepreneurship as a style of management focuses on _____.
a) Routine activities
b) Risk avoidance
c) Innovation and opportunity recognition
d) Only HR

8) A corporate entrepreneur is _____.
a) Owner of small business
b) Government employee
c) Innovator within an organization
d) None

9) Technology transfer occurs when _____.
a) Knowledge is shared from research to application
b) Patents expire
c) Innovation fails
d) Licenses are revoked

10) Six Thinking Hats tool was developed by _____.
a) Peter Drucker b) Steve Jobs
c) Edward de Bono d) Clayton Christensen

11) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

12) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
c) Disruptive d) Delaying

13) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

14) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

SLR-QH-195

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-195

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose Correct answer MCQ/ Objective Questions. 14

1) Six Thinking Hats tool was developed by _____.
a) Peter Drucker b) Steve Jobs
c) Edward de Bono d) Clayton Christensen

2) NUF test stands for _____.
a) Necessary, Useful, Feasible
b) Need, Use, Focus
c) None
d) Necessary, Unusual, Functional

3) Which is not a type of innovation strategy?
a) Pioneering b) Imitative
c) Disruptive d) Delaying

4) Red Ocean strategy is about _____.
a) Uncontested markets
b) Price competition in saturated markets
c) Patent generation
d) Blue economy

5) Continuous learning is essential for _____.
a) Innovation growth b) Routine operations
c) Cost reduction d) Project closure

6) Failure in innovation can occur due to _____.
a) Over-regulation b) Poor planning
c) Lack of feedback d) All of these

7) Crafting a business model involves _____.
   a) Ignoring customers
   b) Defining value, segments, and revenue streams
   c) Random investments
   d) Borrowing

8) Legal consideration in entrepreneurship includes _____.
   a) Product packaging
   b) Compliance and regulations
   c) Floor layout
   d) Office color

9) Entrepreneurial process starts with _____.
   a) HR hiring
   b) Opportunity identification
   c) Revenue calculation
   d) Market monopoly

10) Innovation provides _____.
   a) Stability
   b) Competitive advantage
   c) Similarity
   d) Confusion

11) Managerial competency involves _____.
   a) Fundraising only
   b) Communication, planning, and leadership
   c) Imitation
   d) None

12) Entrepreneurship as a style of management focuses on _____.
   a) Routine activities
   b) Risk avoidance
   c) Innovation and opportunity recognition
   d) Only HR

13) A corporate entrepreneur is _____.
   a) Owner of small business
   b) Government employee
   c) Innovator within an organization
   d) None

14) Technology transfer occurs when _____.
   a) Knowledge is shared from research to application
   b) Patents expire
   c) Innovation fails
   d) Licenses are revoked

SLR-QH-195

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Entrepreneurship and Innovation (OE-02A)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.
5) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 All questions are compulsory.

a) Explain types of innovation with suitable examples. **06**

b) Define Entrepreneur. Discuss key roles and responsibilities. **04**

Q.3 Solve Any Three questions.

a) Describe relationship between innovation and competitive advantage. **06**

b) Explain entrepreneurship as a career and style of management. **06**

c) Explain the concepts of Entrepreneur, Manager, and Intrapreneur. Differentiate between them with suitable examples. **06**

d) What are the seven sources of innovative opportunities? **06**

e) Explain creative methods for managing innovation. **06**

SECTION – II

Q.4 All questions are compulsory.

a) Explain the concept of innovation process. **06**

b) Discuss barriers to innovation in business. **04**

Q.5 Solve Any Three question.

a) Write note on Blue Ocean Strategy with example. **06**

b) Describe innovation failure causes. **06**

c) Explain the Lean Start-up concept. **06**

d) What are ethical and legal considerations for entrepreneurs? **06**

e) Explain opportunity recognition and decision-making in entrepreneurship. **06**

SLR-QH-197

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

2) What is a key characteristic of solar energy?
a) Utilizes sunlight for power generation
b) Requires fossil fuels for operation
c) Has no environmental benefits
d) ls non-renewable

3) Which renewable energy is best suited for coastal areas?
a) Biomass energy b) Geothermal energy
c) Wave and tidal energy d) Oil shale energy

4) What is solar radiation?
a) Radiation from the Earth b) Radiation from the Moon
c) Radiation from the Sun d) None of the above

5) What is solar radiation measured in?
a) Kilograms
b) Liters
c) Watts per square meter (W/m^2)
d) Newtons

6) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

7) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

8) What happens when electricity demand is higher than generation?
   a) Energy storage can provide additional power
   b) Renewable energy sources produce more electricity
   c) Power plants automatically increase supply
   d) Transmission lines store energy

9) Which of the following sectors benefits the most from energy storage?
   a) Agriculture
   b) Construction
   c) Transport
   d) Power generation

10) What does the efficiency of an energy storage device indicate?
   a) The time taken to store energy
   b) The total cost of the device
   c) The percentage of stored energy that can be retrieved
   d) The size of the storage system

11) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
   a) Penstock
   b) Reservoir
   c) Fore bay
   d) Spillways

12) Tidal energy is caused primarily by the _____.
   a) Moon's gravity
   b) Sun's gravity
   c) Earth's rotation
   d) Ocean currents

13) Green hydrogen is produced by _____.
   a) Coal gasification
   b) Methane reforming
   c) Water electrolysis using renewable energy
   d) Nuclear fission

14) Which is the cleanest method of hydrogen production?
   a) Electrolysis using solar/wind energy
   b) Coal gasification
   c) Nuclear thermal splitting
   d) Steam methane reforming

SLR-QH-197

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2 **a)** What is biomass energy, and how is it produced from the biomass? **05**

b) Explain with neat sketch working of Pyrheliometer. **05**

Q.3 **a)** Give the detailed classification of wind energy conversion systems. **04**

b) Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities. **05**

Q.4 **a)** Explain with neat sketch working of a Flat Plate Collector. **04**

b) Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability? **05**

Q.5 **a)** Differentiate between solar thermal and solar photovoltaic systems those are used for power generation. **04**

b) What are the criterions considered for selection of site for the wind mill? **05**

SECTION – II

Q.6 **a)** Enlist and explain the major problems that arise due to the absence of energy storage in power generation. **05**

b) Draw the neat sketch of layout for hydroelectric power plat and explain the components. **05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) What happens when electricity demand is higher than generation?
a) Energy storage can provide additional power
b) Renewable energy sources produce more electricity
c) Power plants automatically increase supply
d) Transmission lines store energy

2) Which of the following sectors benefits the most from energy storage?
a) Agriculture b) Construction
c) Transport d) Power generation

3) What does the efficiency of an energy storage device indicate?
a) The time taken to store energy
b) The total cost of the device
c) The percentage of stored energy that can be retrieved
d) The size of the storage system

4) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock b) Reservoir
c) Fore bay d) Spillways

5) Tidal energy is caused primarily by the _____.
a) Moon's gravity b) Sun's gravity
c) Earth's rotation d) Ocean currents

6) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

7) Which is the cleanest method of hydrogen production?
   a) Electrolysis using solar/wind energy
   b) Coal gasification
   c) Nuclear thermal splitting
   d) Steam methane reforming

8) Which of the following is a key goal of sustainable development?
   a) Increase in fossil fuel consumption
   b) Balanced use of resources
   c) Maximum economic growth only
   d) Eliminating renewable energy use

9) What is a key characteristic of solar energy?
   a) Utilizes sunlight for power generation
   b) Requires fossil fuels for operation
   c) Has no environmental benefits
   d) ls non-renewable

10) Which renewable energy is best suited for coastal areas?
   a) Biomass energy
   b) Geothermal energy
   c) Wave and tidal energy
   d) Oil shale energy

11) What is solar radiation?
   a) Radiation from the Earth
   b) Radiation from the Moon
   c) Radiation from the Sun
   d) None of the above

12) What is solar radiation measured in?
   a) Kilograms
   b) Liters
   c) Watts per square meter (W/m^2)
   d) Newtons

13) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

14) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock b) Reservoir
c) Fore bay d) Spillways

2) Tidal energy is caused primarily by the _____.
a) Moon's gravity b) Sun's gravity
c) Earth's rotation d) Ocean currents

3) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

4) Which is the cleanest method of hydrogen production?
a) Electrolysis using solar/wind energy
b) Coal gasification
c) Nuclear thermal splitting
d) Steam methane reforming

5) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

6) What is a key characteristic of solar energy?
   a) Utilizes sunlight for power generation
   b) Requires fossil fuels for operation
   c) Has no environmental benefits
   d) ls non-renewable

7) Which renewable energy is best suited for coastal areas?
   a) Biomass energy
   b) Geothermal energy
   c) Wave and tidal energy
   d) Oil shale energy

8) What is solar radiation?
   a) Radiation from the Earth
   b) Radiation from the Moon
   c) Radiation from the Sun
   d) None of the above

9) What is solar radiation measured in?
   a) Kilograms
   b) Liters
   c) Watts per square meter (W/m^2)
   d) Newtons

10) What is the primary difference between pyrolysis and gasification?
   a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
   b) Pyrolysis produces syngas, while gasification produces bio-oil
   c) Gasification is a biochemical process, while pyrolysis is thermo chemical
   d) Pyrolysis requires higher temperatures than gasification

11) Which of the following is a disadvantage of biomass energy?
   a) Reduces waste
   b) Can lead to deforestation
   c) Low carbon footprint
   d) Independent of weather conditions

12) What happens when electricity demand is higher than generation?
   a) Energy storage can provide additional power
   b) Renewable energy sources produce more electricity
   c) Power plants automatically increase supply
   d) Transmission lines store energy

13) Which of the following sectors benefits the most from energy storage?
   a) Agriculture
   b) Construction
   c) Transport
   d) Power generation

14) What does the efficiency of an energy storage device indicate?
   a) The time taken to store energy
   b) The total cost of the device
   c) The percentage of stored energy that can be retrieved
   d) The size of the storage system

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

SLR-QH-197

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative: **14**

1) What is the primary difference between pyrolysis and gasification?
a) Gasification uses a small amount of oxygen, while pyrolysis occurs in the absence of oxygen
b) Pyrolysis produces syngas, while gasification produces bio-oil
c) Gasification is a biochemical process, while pyrolysis is thermo chemical
d) Pyrolysis requires higher temperatures than gasification

2) Which of the following is a disadvantage of biomass energy?
a) Reduces waste
b) Can lead to deforestation
c) Low carbon footprint
d) Independent of weather conditions

3) What happens when electricity demand is higher than generation?
a) Energy storage can provide additional power
b) Renewable energy sources produce more electricity
c) Power plants automatically increase supply
d) Transmission lines store energy

4) Which of the following sectors benefits the most from energy storage?
a) Agriculture b) Construction
c) Transport d) Power generation

5) What does the efficiency of an energy storage device indicate?
a) The time taken to store energy
b) The total cost of the device
c) The percentage of stored energy that can be retrieved
d) The size of the storage system

6) In hydro power stations what is an enlarged body of water just above the intake and used as a regulating reservoir called?
a) Penstock
b) Reservoir
c) Fore bay
d) Spillways

7) Tidal energy is caused primarily by the _____.
a) Moon's gravity
b) Sun's gravity
c) Earth's rotation
d) Ocean currents

8) Green hydrogen is produced by _____.
a) Coal gasification
b) Methane reforming
c) Water electrolysis using renewable energy
d) Nuclear fission

9) Which is the cleanest method of hydrogen production?
a) Electrolysis using solar/wind energy
b) Coal gasification
c) Nuclear thermal splitting
d) Steam methane reforming

10) Which of the following is a key goal of sustainable development?
a) Increase in fossil fuel consumption
b) Balanced use of resources
c) Maximum economic growth only
d) Eliminating renewable energy use

11) What is a key characteristic of solar energy?
a) Utilizes sunlight for power generation
b) Requires fossil fuels for operation
c) Has no environmental benefits
d) ls non-renewable

12) Which renewable energy is best suited for coastal areas?
a) Biomass energy
b) Geothermal energy
c) Wave and tidal energy
d) Oil shale energy

13) What is solar radiation?
a) Radiation from the Earth
b) Radiation from the Moon
c) Radiation from the Sun
d) None of the above

14) What is solar radiation measured in?
a) Kilograms
b) Liters
c) Watts per square meter (W/m^2)
d) Newtons

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Renewable Energy (OE-02C)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. 2 from section I is compulsory. Solve any two questions from Q.3, 4 and 5.
2) Q.6 from section two is compulsory. Solve any two questions from Q.7, 8 and 9.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

SECTION – I

Q.2	**a)**	What is biomass energy, and how is it produced from the biomass?	**05**
	b)	Explain with neat sketch working of Pyrheliometer.	**05**
Q.3	**a)**	Give the detailed classification of wind energy conversion systems.	**04**
	b)	Explain how the Internet of Energy (IoE) can improve energy distribution in smart cities.	**05**
Q.4	**a)**	Explain with neat sketch working of a Flat Plate Collector.	**04**
	b)	Enlist and explain the major biomass resources available in India. How can these resources be utilized to address energy demands while ensuring sustainability?	**05**
Q.5	**a)**	Differentiate between solar thermal and solar photovoltaic systems those are used for power generation.	**04**
	b)	What are the criterions considered for selection of site for the wind mill?	**05**

SECTION – II

Q.6	**a)**	Enlist and explain the major problems that arise due to the absence of energy storage in power generation.	**05**
	b)	Draw the neat sketch of layout for hydroelectric power plat and explain the components.	**05**

Q.7	**a)**	Explain with neat sketch working of open cycle Ocen Thermal Energy Conversion (OTEC) system.	**04**
	b)	Give the general specifications of Energy Storage devices.	**05**
Q.8	**a)**	Give the detailed classification of hydroelectric power plants.	**04**
	b)	Enlist different types of tidal energy conversion systems and explain any one with neat sketch.	**05**
Q.9	**a)**	How will you estimate a hydropower? Explain the terms involved in it.	**04**
	b)	State and explain different hydrogen storage methods.	**05**

SLR-QH-198

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

2) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

3) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

4) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

5) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

6) In a DSO, the input signals are _____.
   a) directly applied to oscilloscope
   b) multiplexed, converted to digital form and stored and applied to oscilloscope
   c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
   d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

7) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
   a) n wattmeters
   b) (n + 1) wattmeters
   c) (n - 2) wattmeters
   d) (n - 1) wattmeters

8) Which transducer does not require any external power supply for working?
   a) Strain gauge transducer
   b) Piezoelectric Crystals
   c) Hydraulic transducer
   d) Pneumatic transducer

9) Piezoelectric accelerometer converts _____ energy to _____ energy.
   a) mechanical, sound
   b) mechanical, electrical
   c) sound, electrical
   d) None of these

10) Which factor affects the least while selection of sensor?
   a) Size
   b) Accuracy
   c) Colour
   d) Durability

11) Which sensor should be used for calculating pressure?
   a) DHT11
   b) LM335Z/NOPB
   c) HC-SR04
   d) MPX10DP

12) Which of the following represents range of frequency measured by ADC?
   a) Bandwidth
   b) Threshold frequency
   c) Peak frequency
   d) None of the mentioned

13) Thermistor is a _____.
   a) sensor
   b) ADC
   c) transducer
   d) micro controller

14) Which of the following type output is provided by ADC?
   a) Serial type
   b) Parallel type
   c) Both serial and parallel type
   d) None of the mentioned

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) Which transducer does not require any external power supply for working?
a) Strain gauge transducer b) Piezoelectric Crystals
c) Hydraulic transducer d) Pneumatic transducer

2) Piezoelectric accelerometer converts _____ energy to _____ energy.
a) mechanical, sound b) mechanical, electrical
c) sound, electrical d) None of these

3) Which factor affects the least while selection of sensor?
a) Size b) Accuracy
c) Colour d) Durability

4) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

5) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

6) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

7) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

8) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

9) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

10) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

11) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.
a) Substitution b) Loss of charge
c) Wheatstone bridge d) Kelvin's double bridge

12) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

13) In a DSO, the input signals are _____.
a) directly applied to oscilloscope
b) multiplexed, converted to digital form and stored and applied to oscilloscope
c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

14) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
a) n wattmeters b) (n + 1) wattmeters
c) (n - 2) wattmeters d) (n - 1) wattmeters

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
c) HC-SR04 d) MPX10DP

2) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

3) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

4) Which of the following type output is provided by ADC?
a) Serial type b) Parallel type
c) Both serial and parallel type d) None of the mentioned

5) Which of the following is not a type of systematic error?
a) Instrumental Errors b) Environmental Errors
c) Observational Errors d) Gross error

6) _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
a) Absolute b) Indicating
c) Recording d) Integrating

7) A moving iron instrument can be used for _____.
a) D.C. only b) A.C. only
c) Both D.C. and A.C. d) None

8) _____ method is suitable for the measurement of a resistance of expected value less than one ohm.

a) Substitution
b) Loss of charge
c) Wheatstone bridge
d) Kelvin's double bridge

9) Instrument transformers are _____.

a) Potential transformers
b) Current transformers
c) Both (a) and (b)
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10) In a DSO, the input signals are _____.

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b) multiplexed, converted to digital form and stored and applied to oscilloscope
c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

11) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.

a) n wattmeters
b) (n + 1) wattmeters
c) (n - 2) wattmeters
d) (n - 1) wattmeters

12) Which transducer does not require any external power supply for working?

a) Strain gauge transducer
b) Piezoelectric Crystals
c) Hydraulic transducer
d) Pneumatic transducer

13) Piezoelectric accelerometer converts _____ energy to _____ energy.

a) mechanical, sound
b) mechanical, electrical
c) sound, electrical
d) None of these

14) Which factor affects the least while selection of sensor?

a) Size
b) Accuracy
c) Colour
d) Durability

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
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SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) In a DSO, the input signals are _____.
a) directly applied to oscilloscope
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c) multiplexed, converted to digital form stored, converted to analog form and applied to oscilloscope
d) applied to amplifier, stored as analog signals, multiplexed, converted to digital form, stored in digital form, converted to analog form, and applied to CRO through an amplifier.

2) The power of n-phase unbalanced circuit can be measured by using a minimum of _____.
a) n wattmeters b) (n + 1) wattmeters
c) (n - 2) wattmeters d) (n - 1) wattmeters

3) Which transducer does not require any external power supply for working?
a) Strain gauge transducer b) Piezoelectric Crystals
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4) Piezoelectric accelerometer converts _____ energy to _____ energy.
a) mechanical, sound b) mechanical, electrical
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5) Which factor affects the least while selection of sensor?
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6) Which sensor should be used for calculating pressure?
a) DHT11 b) LM335Z/NOPB
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7) Which of the following represents range of frequency measured by ADC?
a) Bandwidth b) Threshold frequency
c) Peak frequency d) None of the mentioned

8) Thermistor is a _____.
a) sensor b) ADC
c) transducer d) micro controller

9) Which of the following type output is provided by ADC?
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14) Instrument transformers are _____.
a) Potential transformers b) Current transformers
c) Both (a) and (b) d) Power transformers

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Measurement, Instrumentation and Sensors (OE-02D)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat diagrams whenever necessary.

SECTION – I

Q.2 Attempt the following. (Any Four) **16**

a) Explain the term:
i) Accuracy
ii) Linearity
iii) Reproducibility
iv) Precision

b) Describe different damping methods in details.

c) Difference between Current Transformer and Potential Transformer.

d) Explain with neat diagram, working of ramp type digital voltmeter.

e) Explain Anderson Bridge with phasor diagram. Also derive the equation of dissipation factor.

Q.3 Attempt the following. (Any Two) **12**

a) Draw the equivalent circuit and phasor diagram of a PT. Derive expression for actual transformation ratio.

b) Explain the method of measurement of power using two wattmeter for balanced load. Also derive the equation of power factor.

c) A bridge consists of the following:
Arm ab: - A choke coil having resistance R1 & amp: inductance L1
Arm bc: - A non-inductive resistance R3
Arm cd: - A mica condenser C4 in series with non-inductive resistance R4
Arm da: - A non-inductive resistance R2
When this bridge fed from a source of 500 Hz, balance is obtained under following Conditions. $R2 = 2410\ \Omega$, $R3 = 750\ \Omega$, $C4 = 0.35\ \mu F$, $R4 = 64.5\ \Omega$ The series resistance of capacitor is 0.4Ω. Calculate resistance and Inductance of choke coil. The supply is connected between a & c and detector is between b & d.

SECTION – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain units of measurement.

b) Explain the principle of working of piezo-electric effect sensor.

c) Explain the basic concept of analog to digital converter.

d) Explain the sensor interfacing circuit's data transmission.

e) State the different types of temperature sensor and explain any one of them.

Q.5 Attempt the following. (Any Two) **12**

a) State and explain the different types of batteries for low power sensors.

b) Stale and explain the sensors used for Displacement, and Level application.

c) Explain the concept of humidity and state different types of sensor used to measure humidity.

SLR-QH-199

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

2) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
c) Simplex Method d) Integer Programming

3) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

4) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (-1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

5) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
c) Faster Solution d) Slower Solution

6) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

7) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

8) At the Break-Even Point _____.
a) Profit > Loss
b) Profit < Loss
c) Profit = Loss
d) None of these

9) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource
b) Reconciliation
c) Reconsideration
d) Review

10) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum
b) Average
c) Safety
d) Standard

11) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

12) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
b) Need not satisfy all the constraints
c) Must be a corner point of feasible region
d) Must optimize the objective function

13) In a project network, the critical path _____.
a) may be the shortest path
b) is the longest path
c) may be the longest path
d) is the shortest path

14) The inventory carrying costs are also called as _____.
a) Procurement costs
b) Set-up costs
c) Storage costs
d) None of the above

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

Activity	Estimated Time		
	to	tm	tp
$1-2$	1	1	7
$1-3$	1	4	7
$1-4$	2	2	8
$2-5$	1	1	1
$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) At the Break-Even Point _____.
a) Profit > Loss b) Profit < Loss
c) Profit = Loss d) None of these

2) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

3) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

4) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

5) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
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7) The inventory carrying costs are also called as _____.
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c) Storage costs d) None of the above

8) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
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9) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
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10) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

11) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (−1)
b) Subtract Entire Matrix from Highest Cell
c) Both a & b
d) None of these

12) Advantage of VAM of transportation is _____.
a) Near to optimal Solution b) Least Cost
c) Faster Solution d) Slower Solution

13) Transportation Models are also called as _____.
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c) Game Theory d) Assignment Model

14) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
$X_2 \geq 3$;
$0 \leq X_1; \leq 20$;
$0 \leq X_2; \leq 12$;

b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

b) Define 'Inventory Control' and explain its necessity in the construction industry. Detailed the various types of Inventory Costs involved in maintaining inventory on a site.

Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
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b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

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$3-5$	2	5	14
$4-6$	2	5	8
$5-6$	3	6	15

Probability Factor	Probability
0	50%
1	84.13 %
2	97.72 %
3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Optimization Means _____.
a) Maximization
b) Minimization
c) Minimization or Maximization
d) Mean of Minimization & Maximization

2) A feasible solution to LPP _____.
a) Must satisfy all the constraints simultaneously
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c) Must be a corner point of feasible region
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3) In a project network, the critical path _____.
a) may be the shortest path b) is the longest path
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4) The inventory carrying costs are also called as _____.
a) Procurement costs b) Set-up costs
c) Storage costs d) None of the above

5) When total supply = total demand, the transportation problem is called _____.
a) Balanced b) Equated
c) Simple d) Zero

6) Which technique is used to solve Assignment Model?
a) Hungarian Method b) Graphical Method
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7) Allocated cells in the IBFS are also called as _____.
a) Stone Cells b) Water Cells
c) Air Cells d) None of these

8) To convert Maximization Assignment Model into Minimization, _____.
a) Multiply Whole matrix by (-1)
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11) ABC analysis considers _____.
a) Total consumption of items b) Total amount of items
c) Both a) and b) d) None of these

12) At the Break-Even Point _____.
a) Profit $>$ Loss b) Profit $<$ Loss
c) Profit $=$ Loss d) None of these

13) The PERT in project management means Program Evaluation and _____ Technique.
a) Resource b) Reconciliation
c) Reconsideration d) Review

14) _____ stock is the lower limit of stock below which the stock should not be allowed to fall.
a) Maximum b) Average
c) Safety d) Standard

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
3) Assume suitable data wherever necessary and mention it clearly.
4) Use of non-programmable calculator is allowed.

SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
$X_1 - X_2 \geq 0$;
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$0 \leq X_1; \leq 20$;
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b) Consider the assignment problem to as shown in table, in this problem 4 supply jobs are to be assigned to four different sub assembly. Solve assignment problem by using Hungarian method.

Sub Assembly	Supply			
	i	ii	iii	iv
1	15	13	14	17
2	11	12	15	13
3	13	12	10	11
4	15	17	14	16

Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
S_2	3	4	7	8	15
S_3	9	6	5	8	15
Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

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Q.6 Solve both. **14**

a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

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Probability Factor	Probability
0	50%
1	84.13 %
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3	99.87 %

Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Transportation Models are also called as _____.
a) Probabilistic Model b) Distribution Model
c) Game Theory d) Assignment Model

2) ABC analysis considers _____.
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c) Faster Solution
d) Slower Solution

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Operation Research (OE-02E)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Solve any two questions from each Section.
2) Figures to the right indicates full marks.
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SECTION – I

Q.2 Solve both. **14**

a) Using Graphical method, solve
Maximize $Z = 2X_1 + 3X_2$
Subject to, $X_1 + X_2 \leq 30$;
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Q.3 Solve both. **14**

a) Find the initial basic feasible solution by NWCM.

	Destination				
	D_1	D_2	D_3	D_4	↓ Supply
S_1	5	3	6	4	30
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Demand →	10	25	18	7	

b) Write in brief on application & advantages of Operational Research.

Q.4 Solve both. **14**

a) What is LPP? What are different components of LPP?

b) How assignment model is useful in practical life? Explain with its steps to solve it.

SECTION – II

Q.5 Solve both. **14**

a) Calculate the value of Economic Order Quantity, Reordering Period, No. of orders per year with the following Data, Annual Usages = 50 Units, Procurement Cost = 15 Rs. Per Order, Unit Cost = 100 Rs. /Item, Inventory Caring Cost = 10% of the unit cost.

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a) Draw network, find out CP & PD. Calculate All floats of each non-critical Activity.

Activity	$1-2$	$2-3$	$2-4$	$3-4$	$3-5$	$4-6$	$5-6$
Time (Days)	14	13	16	15	18	23	15

b) A small project consists of seven activities. The time estimates in weeks of different activities are given below. Find out probability of completing the project in 18 weeks.

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Probability Factor	Probability
0	50%
1	84.13 %
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Q.7 Solve both. **14**

a) Write short notes on:

i) Processing N jobs on one machine (SPT and WSPT rules)

ii) No passing rule in sequencing

b) Explain Sequencing Problem Technique. What are its Different Elements, also elaborate its assumptions?

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

2) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

3) The Gauss-Seidel method is used for solving _____.
a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

4) Which of the following is a disadvantage of the Gauss-Jacobi method?
a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

5) The use of Romberg's method is _____.
a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

6) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

7) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

8) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

9) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

10) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

11) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

12) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

13) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

14) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

2) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

3) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

4) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

5) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

6) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

7) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

8) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

9) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

10) The Gauss-Seidel method is used for solving _____.
a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

11) Which of the following is a disadvantage of the Gauss-Jacobi method?
a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

12) The use of Romberg's method is _____.
a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

13) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

14) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

2) In the power method, the vector is normalized in each iteration mainly to _____.
a) increase the determinant
b) prevent values from becoming too large
c) eliminate eigen values
d) make the matrix symmetric

3) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
a) multiple of 2 b) multiple of 3
c) multiple of 4 d) odd only

4) Picard's method is mainly used to solve _____.
a) linear programming problems b) differential equations
c) eigen value problems d) interpolation problems

5) A transcendental equation is an equation that involves _____.
a) Only algebraic terms
b) Only transcendental functions
c) Both algebraic and transcendental functions
d) Linear terms only

6) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.

a) $(1, 2)$ b) $(0, 1)$
c) $(2, 3)$ d) $(3, 4)$

7) The Gauss-Seidel method is used for solving _____.

a) Nonlinear equations b) Systems of linear equations
c) Ordinary differential equations d) Partial differential equations

8) Which of the following is a disadvantage of the Gauss-Jacobi method?

a) It converges faster than most direct methods
b) It requires a large number of iterations for a good approximation
c) It cannot be used for systems with more than two equations
d) It works only for symmetric systems

9) The use of Romberg's method is _____.

a) To solve simultaneous linear equation
b) To find root of linear equation
c) To evaluate definite integration
d) To find the Eigen values

10) The order of convergence of Newton-Raphson method is _____.

a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

11) Power Method is used to find _____.

a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

12) To find the numerically largest Eigen value using iterative method we use the equation _____.

a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

13) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.

a) 0.905 b) 1.905
c) 2.905 d) None

14) Runge-Kutta method is self-starting method _____.

a) True b) False
c) We can't say d) None

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data where necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) The order of convergence of Newton-Raphson method is _____.
a) 1 b) 2
c) $\sqrt{2}$ d) 1.6

2) Power Method is used to find _____.
a) Negative Eigen Value b) Largest Eigen value
c) Positive Eigen Value d) None of these

3) To find the numerically largest Eigen value using iterative method we use the equation _____.
a) $A = \lambda X$ b) $AX = X$
c) $X = \lambda X$ d) $AX = \lambda X$

4) If $dy/dx = x - y$ and $y(0) = 1$, then by Picard's method the value of $y_1(1)$ is _____.
a) 0.905 b) 1.905
c) 2.905 d) None

5) Runge-Kutta method is self-starting method _____.
a) True b) False
c) We can't say d) None

6) The Newton's forward interpolation formula is generally preferred when data points are _____.
a) Unequally spaced
b) Equally spaced and near the beginning
c) Equally spaced and near the end
d) Randomly spaced

7) In the power method, the vector is normalized in each iteration mainly to _____.
   a) increase the determinant
   b) prevent values from becoming too large
   c) eliminate eigen values
   d) make the matrix symmetric

8) Simpson's $3/8$ rule requires the number of sub-intervals to be _____.
   a) multiple of 2
   b) multiple of 3
   c) multiple of 4
   d) odd only

9) Picard's method is mainly used to solve _____.
   a) linear programming problems
   b) differential equations
   c) eigen value problems
   d) interpolation problems

10) A transcendental equation is an equation that involves _____.
   a) Only algebraic terms
   b) Only transcendental functions
   c) Both algebraic and transcendental functions
   d) Linear terms only

11) The interval in which a real root of the equation $x^3 - 2x - 5 = 0$ lies is _____.
   a) $(1, 2)$
   b) $(0, 1)$
   c) $(2, 3)$
   d) $(3, 4)$

12) The Gauss-Seidel method is used for solving _____.
   a) Nonlinear equations
   b) Systems of linear equations
   c) Ordinary differential equations
   d) Partial differential equations

13) Which of the following is a disadvantage of the Gauss-Jacobi method?
   a) It converges faster than most direct methods
   b) It requires a large number of iterations for a good approximation
   c) It cannot be used for systems with more than two equations
   d) It works only for symmetric systems

14) The use of Romberg's method is _____.
   a) To solve simultaneous linear equation
   b) To find root of linear equation
   c) To evaluate definite integration
   d) To find the Eigen values

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Computational Mathematics (OE-02F)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data where necessary.

SECTION – I

Q.2 Attempt Any Five: **25**

a) Find the double root of the equation $x^3 - 5.4x^2 + 9.24x - 5.096 = 0$ given that it is nearer to 1.5.

b) Solve the system of equations by Jacobi's iterative method (perform 3 iterations):
$27x + 6y - z = 85,$
$6x + 15y + 2z = 72,$
$x + y + 54z = 110$

c) Find positive real root of the equation $x\sin(x) + \cos(x) = 0$ using Newton-Raphson method correct to 3 decimal places.

d) Solve the system of equations by using Gauss-Elimination method:
$2x + y + z = 7,$
$x + 2y + 3z = 14,$
$3x + 4y + z = 14.$

e) Solve the following system of equations using LU Decomposition method:
$2x + 3y + z = 9$
$x + 2y + 3z = 6$
$3x + y + 2z = 8$

f) Solve $\frac{dy}{dx} = x + y$ with $x_0 = 0, y_0 = 1$ using fourth-order Runge-Kutta method and find approximate value of y when $x = 0.2$

g) Solve $\frac{dy}{dx} = 1 + xy$ with $y(0) = 1$ using Picard's method take first approximation and find y for $x = 0.1$

Q.3 Attempt Any One. **03**

a) Solve the system by Gauss-Seidel method (Perform 4 iterations):

$10x + y + z = 12$

$2x + 10y + z = 13$

$2x + 2y + 10z = 14$

b) Use Newton-Raphson method to find a root of the equation $x^4 - x - 10 = 0$ which is near to $x = 2$. Perform 3 iterations correct to three decimal places.

SECTION – II

Q.4 Attempt Any Five. **25**

a) Approximate $\int_1^3 \frac{1}{x} dx$ using the composite trapezoidal rule with $n = 4$ sub-intervals. List the function values at the nodes, show the application of the formula, and give the final answer correct to 4 decimal places

b) Using Jacobi's method, find all eigenvalues and eigenvectors of the symmetric matrix:

$$A = \begin{bmatrix} 6 & 2 & 1 \\ 2 & 5 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

c) Evaluate the integral $\int_{-1}^{1} \frac{dx}{1+x^2}$ using Gaussian 3-point Quadrature formula.

d) Find the dominant eigenvalue and the corresponding eigenvector of the matrix

$A = \begin{bmatrix} 4 & 1 & 1 \\ 1 & 3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$ using the Power Method.

Perform 5 iterations taking initial vector as $[1,0,0]^T$

e) Given the Values:

x	2	4	6	8
$f(x)$	5	17	37	65

Evaluate $f(5)$, using Lagrange's Formula.

f) Using Newton's Backward formula, find the value of $f(2)$ if:

x	1.0	1.5	2.0	2.5
$f(x)$	2.71	3.38	4.00	4.58

g) Determine the polynomial $f(x)$ using Newton's Divided Difference formula for the data: Also find $f(3)$.

x	0	1	2	3	5
$f(x)$	1	14	15	5	6

Q.5 Attempt Any One. **03**

a) Find all Eigen values and Eigen vectors of the following matrix by using Gauss Jacobi's Method. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) Construct Newton's Forward interpolation polynomial for the following data:

x	4	6	8	10
$f(x)$	1	3	8	16

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.
a) Decoding b) Encoding
c) Feedback d) Channeling

2) A message sent without words using facial expressions or gestures is called _____.
a) Written communication b) Verbal communication
c) Non-verbal communication d) Grapevine communication

3) Which channel characteristic most reduces chances of immediate feedback?
a) Face-to-face conversation b) Telephone call
c) Email d) Video conference

4) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.
a) Noise b) Semantic barrier
c) Perceptual barrier d) Channel barrier

5) Body language, eye contact and posture are examples of ____.
a) Verbal codes b) Non-verbal codes
c) Written codes d) Graphic communication

6) Upward communication flows from _____.
a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

7) An advantage of face-to-face communication over written communication is _____.
a) Permanent record
b) Easier legal reference
c) Immediate feedback
d) More formal tone

8) Which element is essential for an effective welcome speech?
a) Detailed technical data
b) Acknowledgement of guests
c) Long biographical note
d) Complex statistics

9) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
b) Summarize research findings
c) Express gratitude to contributors and audience
d) Present the event budget

10) Which is a best practice when delivering a professional presentation?
a) Reading every slide verbatim
b) Using too many small fonts
c) Maintaining eye contact and varying tone
d) Using no structure or flow

11) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
a) Enquiry letter
b) Complaint letter
c) Order letter
d) Quotation letter

12) A purchase order is principally used to _____.
a) Complain about defects
b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

13) Which part of a business letter contains the main message or details the writer wants to communicate?
a) Heading
b) Salutation
c) Body
d) Signature block

14) Which report type is typically written to describe a workplace accident and recommend corrective actions?
a) Progress report
b) Accident report
c) Sales report
d) Quotation report

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Which element is essential for an effective welcome speech?
a) Detailed technical data b) Acknowledgement of guests
c) Long biographical note d) Complex statistics

2) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
b) Summarize research findings
c) Express gratitude to contributors and audience
d) Present the event budget

3) Which is a best practice when delivering a professional presentation?
a) Reading every slide verbatim
b) Using too many small fonts
c) Maintaining eye contact and varying tone
d) Using no structure or flow

4) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
a) Enquiry letter b) Complaint letter
c) Order letter d) Quotation letter

5) A purchase order is principally used to _____.
a) Complain about defects
b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

6) Which part of a business letter contains the main message or details the writer wants to communicate?

a) Heading
b) Salutation
c) Body
d) Signature block

7) Which report type is typically written to describe a workplace accident and recommend corrective actions?

a) Progress report
b) Accident report
c) Sales report
d) Quotation report

8) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.

a) Decoding
b) Encoding
c) Feedback
d) Channeling

9) A message sent without words using facial expressions or gestures is called _____.

a) Written communication
b) Verbal communication
c) Non-verbal communication
d) Grapevine communication

10) Which channel characteristic most reduces chances of immediate feedback?

a) Face-to-face conversation
b) Telephone call
c) Email
d) Video conference

11) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.

a) Noise
b) Semantic barrier
c) Perceptual barrier
d) Channel barrier

12) Body language, eye contact and posture are examples of ____.

a) Verbal codes
b) Non-verbal codes
c) Written codes
d) Graphic communication

13) Upward communication flows from _____.

a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

14) An advantage of face-to-face communication over written communication is _____.

a) Permanent record
b) Easier legal reference
c) Immediate feedback
d) More formal tone

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

SLR-QH-201

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.
a) Enquiry letter b) Complaint letter
c) Order letter d) Quotation letter

2) A purchase order is principally used to _____.
a) Complain about defects
b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

3) Which part of a business letter contains the main message or details the writer wants to communicate?
a) Heading b) Salutation
c) Body d) Signature block

4) Which report type is typically written to describe a workplace accident and recommend corrective actions?
a) Progress report b) Accident report
c) Sales report d) Quotation report

5) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.
a) Decoding b) Encoding
c) Feedback d) Channeling

6) A message sent without words using facial expressions or gestures is called _____.
a) Written communication b) Verbal communication
c) Non-verbal communication d) Grapevine communication

7) Which channel characteristic most reduces chances of immediate feedback?
a) Face-to-face conversation b) Telephone call
c) Email d) Video conference

8) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.
a) Noise b) Semantic barrier
c) Perceptual barrier d) Channel barrier

9) Body language, eye contact and posture are examples of ____.
a) Verbal codes b) Non-verbal codes
c) Written codes d) Graphic communication

10) Upward communication flows from _____.
a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

11) An advantage of face-to-face communication over written communication is _____.
a) Permanent record b) Easier legal reference
c) Immediate feedback d) More formal tone

12) Which element is essential for an effective welcome speech?
a) Detailed technical data b) Acknowledgement of guests
c) Long biographical note d) Complex statistics

13) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
b) Summarize research findings
c) Express gratitude to contributors and audience
d) Present the event budget

14) Which is a best practice when delivering a professional presentation?
a) Reading every slide verbatim
b) Using too many small fonts
c) Maintaining eye contact and varying tone
d) Using no structure or flow

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P’s of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever needed and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Upward communication flows from _____.
a) Top management to workers
b) Peers to peers
c) Workers to management
d) External stakeholders to company

2) An advantage of face-to-face communication over written communication is _____.
a) Permanent record b) Easier legal reference
c) Immediate feedback d) More formal tone

3) Which element is essential for an effective welcome speech?
a) Detailed technical data b) Acknowledgement of guests
c) Long biographical note d) Complex statistics

4) The main purpose of a vote of thanks at an event is to _____.
a) Introduce the keynote speaker
b) Summarize research findings
c) Express gratitude to contributors and audience
d) Present the event budget

5) Which is a best practice when delivering a professional presentation?
a) Reading every slide verbatim
b) Using too many small fonts
c) Maintaining eye contact and varying tone
d) Using no structure or flow

6) When a buyer is dissatisfied with delivered goods and asks for correction or refund, they should send a _____.

a) Enquiry letter b) Complaint letter
c) Order letter d) Quotation letter

7) A purchase order is principally used to _____.

a) Complain about defects
b) Request a quotation
c) Place an order for goods or services
d) Acknowledge receipt of payment

8) Which part of a business letter contains the main message or details the writer wants to communicate?

a) Heading b) Salutation
c) Body d) Signature block

9) Which report type is typically written to describe a workplace accident and recommend corrective actions?

a) Progress report b) Accident report
c) Sales report d) Quotation report

10) In the basic process of communication, the sender converts ideas into symbols; this step is called_____.

a) Decoding b) Encoding
c) Feedback d) Channeling

11) A message sent without words using facial expressions or gestures is called _____.

a) Written communication b) Verbal communication
c) Non-verbal communication d) Grapevine communication

12) Which channel characteristic most reduces chances of immediate feedback?

a) Face-to-face conversation b) Telephone call
c) Email d) Video conference

13) A major barrier to effective communication that arises from personal beliefs or selective attention is called _____.

a) Noise b) Semantic barrier
c) Perceptual barrier d) Channel barrier

14) Body language, eye contact and posture are examples of ____.

a) Verbal codes b) Non-verbal codes
c) Written codes d) Graphic communication

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Business Communication (OE-02G)

Day & Date: Friday, 22-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever needed and mention it clearly.

SECTION – I

Q.2 Solve following. (Any Two) **14**

a) Define communication and explain its meaning in professional life.

b) Explain the elements of communication with a neat diagram.

c) Describe the process of communication in detail.

Q.3 Solve following. (Any Two) **14**

a) Explain verbal and non-verbal communication with suitable examples.

b) Describe body language and its importance in communication.

c) Explain formal and informal communication in an organization.

SECTION – II

Q.4 Solve following. (Any Two) **14**

a) Explain the concept and importance of professional presentations.

b) Describe the steps involved in preparing and delivering a presentation.

c) Explain the Four P's of professional presentations.

Q.5 Solve following. (Any Two) **14**

a) Explain the style and structure of a business letter.

b) Write a detailed note on enquiry letters and quotation letters.

c) Explain purchase order, work order, and complaint letter.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

2) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

3) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

4) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

5) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

6) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

7) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

8) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

9) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

10) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

11) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

12) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

13) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

14) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

2) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

3) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

4) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

5) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

6) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

7) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

8) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

9) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

10) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

11) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

12) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

13) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

14) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

2) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

3) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

4) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

5) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

6) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

7) Which instruction loads immediate data into register?
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c) MVI d) STA

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9) Which register pair is used for memory addressing in 8085?
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c) SP d) BC

10) 8279 is mainly used for _____.
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c) Timing d) Keyboard/display interface

11) Which flag indicates negative result?
a) Carry b) Parity
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12) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

13) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

14) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

2) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

3) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

4) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

5) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

6) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

7) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

8) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

9) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

10) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

11) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

12) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

13) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

14) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

SLR-QH-202

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

2) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

3) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

4) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

5) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

6) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

7) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

8) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

9) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

10) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

11) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

12) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

13) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

14) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

2) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

3) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

4) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

5) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

6) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

7) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

8) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

9) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

10) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

11) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

12) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

13) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

14) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

2) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

3) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

4) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

5) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

6) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

7) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

8) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

9) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

10) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

11) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

12) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

13) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

14) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

2) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

3) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

4) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

5) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

6) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

7) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

8) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

9) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

10) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

11) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

12) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

13) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

14) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

SLR-QH-202

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

2) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

3) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

4) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

5) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

6) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

7) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

8) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

9) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

10) The stack pointer points to _____.
a) Address bus b) Data register
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11) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

12) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

13) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

14) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

2) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

3) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

4) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

5) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

6) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

7) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

8) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

9) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

10) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

11) Serial communication transfers data _____.
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c) One bit at a time d) 8 bits at a time

12) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

13) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

14) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

SLR-QH-202

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

2) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

3) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

4) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

5) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

6) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

7) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

8) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

9) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

10) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

11) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

12) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

13) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

14) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

SLR-QH-202

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

2) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

3) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

4) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

5) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

6) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

7) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

8) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

9) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

10) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

11) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

12) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

13) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

14) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

SLR-QH-202

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.

b) List and explain any four addressing modes of 8085.

c) What is address decoding? Why is it required?

d) Differentiate between RAM and ROM.

e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.

b) Explain logical and arithmetic instructions in 8085.

c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.

b) Draw and explain the architecture of 8255 PPI.

c) Define DMA and its features.

d) State need of peripheral interfacing.

e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.

b) Describe serial communication using SID and SOD.

c) Explain stepper motor interfacing using 8085.

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

2) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

3) Which instruction loads immediate data into register?
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c) Timing d) Keyboard/display interface

7) Which flag indicates negative result?
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c) Sign d) Zero

8) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

9) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

10) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

11) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

12) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

13) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

14) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

2) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

3) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

4) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

5) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

6) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

7) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

8) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

9) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

10) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

11) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

12) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

13) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

14) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

2) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

3) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

4) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

5) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

6) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

7) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

8) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

9) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

10) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

11) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

12) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

13) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

14) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

2) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

3) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

4) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

5) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

6) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

7) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
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8) 8255 operates in how many modes?
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9) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

10) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

11) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

12) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

13) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

14) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

SLR-QH-202

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

2) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

3) Which instruction loads immediate data into register?
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5) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

6) 8279 is mainly used for _____.
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c) Timing d) Keyboard/display interface

7) Which flag indicates negative result?
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c) Sign d) Zero

8) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

9) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

10) The stack pointer points to _____.
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13) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

14) Stepper motor control requires _____.
a) Continuous signal b) Random signal
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Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
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e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) 8086 supports how many address lines?
a) 32 b) 20
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14) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

2) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

3) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

4) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

5) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

6) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

7) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

8) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

9) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

10) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

11) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

12) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

13) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

14) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

2) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

3) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

4) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

5) The stack pointer points to _____.
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c) Next instruction d) Top of stack

6) Which device is used for address decoding?
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8) 8255 operates in how many modes?
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9) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

10) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

11) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

12) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

13) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

14) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

SLR-QH-202

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

2) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

3) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

4) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

5) Which register pair is used for memory addressing in 8085?
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c) SP d) BC

6) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

7) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

8) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

9) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

10) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

11) Which device is used for address decoding?
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c) Decoder d) Multiplexer

12) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

13) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

14) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

2) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

3) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

4) Which device is used for address decoding?
a) Flip-flop b) Encoder
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5) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

6) 8255 operates in how many modes?
a) 1 b) 4
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7) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

8) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

9) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

10) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

11) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

12) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

13) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

14) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

2) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

3) 8255 operates in how many modes?
a) 1 b) 4
c) 3 d) 2

4) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

5) Which interrupt is maskable?
a) HOLD b) TRAP
c) RST 7.5 d) RESET

6) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

7) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

8) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

9) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

10) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

11) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

12) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

13) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

14) The stack pointer points to _____.
a) Address bus b) Data register
c) Next instruction d) Top of stack

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) 8279 is mainly used for _____.
a) Memory b) Arithmetic
c) Timing d) Keyboard/display interface

2) Which flag indicates negative result?
a) Carry b) Parity
c) Sign d) Zero

3) 8086 supports how many address lines?
a) 32 b) 20
c) 16 d) 8

4) Which instruction is used to store accumulator content in memory?
a) ADD b) MOV
c) STA d) LDA

5) The stack pointer points to _____.
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6) Which device is used for address decoding?
a) Flip-flop b) Encoder
c) Decoder d) Multiplexer

7) In memory-mapped I/O, devices are treated as _____.
a) Flags b) Ports
c) Registers d) Memory locations

8) 8255 operates in how many modes?
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9) Stepper motor control requires _____.
a) Continuous signal b) Random signal
c) Pulse sequence d) Analog signal

10) Which interrupt is maskable?
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c) RST 7.5 d) RESET

11) The ALU performs _____.
a) Output operations
b) Memory storage
c) Arithmetic and logical operations
d) Input operations

12) Which instruction loads immediate data into register?
a) LXI b) MOV
c) MVI d) STA

13) Serial communication transfers data _____.
a) All bits simultaneously b) 16 bits at a time
c) One bit at a time d) 8 bits at a time

14) Which register pair is used for memory addressing in 8085?
a) DE b) HL
c) SP d) BC

SLR-QH-202

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Microprocessors and Peripherals (ECEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate between data transfer and arithmetic instructions.
b) List and explain any four addressing modes of 8085.
c) What is address decoding? Why is it required?
d) Differentiate between RAM and ROM.
e) Explain memory organization in 8085.

Q.3 Attempt the following. (Any Two) **12**

a) Write an ALP to multiply two 8-bit numbers and explain it.
b) Explain logical and arithmetic instructions in 8085.
c) Compare I/O mapped I/O and memory-mapped I/O.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) List and explain priority of interrupts in 8085.
b) Draw and explain the architecture of 8255 PPI.
c) Define DMA and its features.
d) State need of peripheral interfacing.
e) Differentiate between 8085 and 8086.

Q.5 Solve following. (Any Two) **12**

a) Draw and explain pin configuration of 8255 PPI.
b) Describe serial communication using SID and SOD.
c) Explain stepper motor interfacing using 8085.

SLR-QH-205

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Ai Technology- Sensors, actuators and embedded systems (ECEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Which sensor is used to detect light intensity?
a) Thermistor b) LDR
c) Strain gauge d) Piezoelectric sensor

2) The accuracy of a sensor refers to _____.
a) Speed of response b) Closeness to true value
c) Output variation d) Range

3) Which device converts digital signal into analog signal?
a) ADC b) DAC
c) Filter d) Amplifier

4) A 8-bit ADC provides how many discrete levels?
a) 128 b) 256
c) 512 d) 1024

5) Drift error in sensors is mainly caused by _____.
a) Sudden noise
b) Environmental changes over time
c) Power failure
d) Signal delay

6) Which actuator is commonly used for linear motion?
a) Motor b) Relay
c) Solenoid d) LED

7) Which protocol uses two wires for communication?
a) SPI b) I2C
c) UART d) CAN

8) Interrupts are mainly used to _____.
a) Increase memory
b) Execute sequential tasks
c) Respond to events immediately
d) Store data

9) Which scheduling algorithm is commonly used in RTOS?
a) FIFO b) Round Robin
c) Priority-based d) Random

10) EEPROM is _____.
a) Volatile memory
b) Temporary memory
c) Non-volatile programmable memory
d) Cache memory

11) Which circuit is used to remove noise from signals?
a) Amplifier b) Filter
c) ADC d) Sensor

12) Smart home systems are an example of _____.
a) Manual systems
b) Embedded systems with IoT
c) Mechanical systems
d) Offline systems

13) Firmware is stored in _____.
a) RAM b) Hard disk
c) ROM/Flash d) Cache

14) A key challenge in IoT systems is _____.
a) Unlimited power b) Data security
c) Large size d) No connectivity

SLR-QH-205

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Ai Technology- Sensors, actuators and embedded systems (ECEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve. (Any Four) **16**

a) Define sensors and list its types with examples.

b) Classify different types of Actuators and briefly explain any two.

c) Explain the following characteristics of sensors: sensitivity, accuracy and resolution.

d) Explain different types of filters used in signal processing.

e) Explain analog and digital signal processing with suitable examples.

Q.3 Solve. (Any Two) **12**

a) Describe different types of sensors (temperature, pressure, proximity, motion) with applications.

b) Explain calibration and why it is necessary for sensors and actuators.

c) Describe the working of ADC and DAC with diagrams.

SECTION – II

Q.4 Solve. (Any Four) **16**

a) What is an embedded system? Give two examples.

b) What is RTOS? Explain its advantages.

c) Define firmware and explain its importance.

d) Discuss criteria for selecting a microcontroller.

e) Write short notes on smart healthcare systems.

Q.5 Solve. (Any Two) **12**

a) Explain architecture of embedded system with diagram.

b) Explain memory types in embedded systems and optimization techniques.

c) Discuss applications of embedded systems in healthcare and industry.

SLR-QH-205

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Ai Technology- Sensors, actuators and embedded systems (ECEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. 14

1) Interrupts are mainly used to _____.
a) Increase memory
b) Execute sequential tasks
c) Respond to events immediately
d) Store data

2) Which scheduling algorithm is commonly used in RTOS?
a) FIFO b) Round Robin
c) Priority-based d) Random

3) EEPROM is _____.
a) Volatile memory
b) Temporary memory
c) Non-volatile programmable memory
d) Cache memory

4) Which circuit is used to remove noise from signals?
a) Amplifier b) Filter
c) ADC d) Sensor

5) Smart home systems are an example of _____.
a) Manual systems
b) Embedded systems with IoT
c) Mechanical systems
d) Offline systems

6) Firmware is stored in _____.
a) RAM b) Hard disk
c) ROM/Flash d) Cache

7) A key challenge in IoT systems is _____.
a) Unlimited power b) Data security
c) Large size d) No connectivity

8) Which sensor is used to detect light intensity?
a) Thermistor b) LDR
c) Strain gauge d) Piezoelectric sensor

9) The accuracy of a sensor refers to _____.
a) Speed of response b) Closeness to true value
c) Output variation d) Range

10) Which device converts digital signal into analog signal?
a) ADC b) DAC
c) Filter d) Amplifier

11) A 8-bit ADC provides how many discrete levels?
a) 128 b) 256
c) 512 d) 1024

12) Drift error in sensors is mainly caused by _____.
a) Sudden noise
b) Environmental changes over time
c) Power failure
d) Signal delay

13) Which actuator is commonly used for linear motion?
a) Motor b) Relay
c) Solenoid d) LED

14) Which protocol uses two wires for communication?
a) SPI b) I2C
c) UART d) CAN

SLR-QH-205

Seat No.		Set	Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Ai Technology- Sensors, actuators and embedded systems (ECEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Solve. (Any Four) **16**

a) Define sensors and list its types with examples.

b) Classify different types of Actuators and briefly explain any two.

c) Explain the following characteristics of sensors: sensitivity, accuracy and resolution.

d) Explain different types of filters used in signal processing.

e) Explain analog and digital signal processing with suitable examples.

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Q.4 Solve. (Any Four) **16**

a) What is an embedded system? Give two examples.

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c) Define firmware and explain its importance.

d) Discuss criteria for selecting a microcontroller.

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c) Discuss applications of embedded systems in healthcare and industry.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Ai Technology- Sensors, actuators and embedded systems (ECEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the option. **14**

1) Which circuit is used to remove noise from signals?
a) Amplifier b) Filter
c) ADC d) Sensor

2) Smart home systems are an example of _____.
a) Manual systems
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SLR-QH-205

Seat No.		Set	R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Ai Technology- Sensors, actuators and embedded systems (ECEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

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2) Figures to the right indicate full marks.

SECTION – I

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Q.4 Solve. (Any Four) **16**

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b) What is RTOS? Explain its advantages.

c) Define firmware and explain its importance.

d) Discuss criteria for selecting a microcontroller.

e) Write short notes on smart healthcare systems.

Q.5 Solve. (Any Two) **12**

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b) Explain memory types in embedded systems and optimization techniques.

c) Discuss applications of embedded systems in healthcare and industry.

SLR-QH-205

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Ai Technology- Sensors, actuators and embedded systems (ECEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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d) Signal delay

SLR-QH-205

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Ai Technology- Sensors, actuators and embedded systems (ECEHON-02B)

Day & Date: Tuesday, 26-05-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve. (Any Four) **16**

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d) Explain different types of filters used in signal processing.

e) Explain analog and digital signal processing with suitable examples.

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b) Explain calibration and why it is necessary for sensors and actuators.

c) Describe the working of ADC and DAC with diagrams.

SECTION – II

Q.4 Solve. (Any Four) **16**

a) What is an embedded system? Give two examples.

b) What is RTOS? Explain its advantages.

c) Define firmware and explain its importance.

d) Discuss criteria for selecting a microcontroller.

e) Write short notes on smart healthcare systems.

Q.5 Solve. (Any Two) **12**

a) Explain architecture of embedded system with diagram.

b) Explain memory types in embedded systems and optimization techniques.

c) Discuss applications of embedded systems in healthcare and industry.

SLR-QH-208

Seat No.		Set	P

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

2) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

3) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

4) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

5) The value of respect entails _____.
a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

6) Which value involves being accountable for one's decisions and actions?
a) Responsibility b) Flexibility
c) Confidence d) Arrogance

7) The value of integrity entails _____.
a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

8) Which value involves being considerate and thoughtful towards others?
a) Kindness
b) Determination
c) Independence
d) Indifference

9) The value of wisdom involves _____.
a) Making sound and informed judgments based on knowledge and experience
b) Pursuing personal interests at the expense of others
c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

10) Which value involves being truthful and sincere in one's actions and words?
a) Honesty
b) Tolerance
c) Flexibility
d) Arrogance

11) What is the primary goal of engineering ethics?
a) To maximize profits for companies
b) To ensure engineers work efficiently
c) To protect public safety and welfare
d) To follow industry standards

12) Which of the following is considered an ethical responsibility of an engineer?
a) Ignoring environmental concerns to meet deadlines
b) Ensuring the safety of the public
c) Disregarding laws and regulations
d) Making decisions based on personal interests

13) Ethical engineering practices promote _____.
a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
d) The minimization of safety regulations

14) Ethical engineers should consider which of the following when making decisions?
a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

15) Which of the following is NOT part of an engineer's ethical responsibility?
a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

16) Ethical engineering involves making decisions based on _____.
a) Personal opinions and values
b) Financial incentives and company pressure
c) Objective analysis, codes of ethics, and consideration for the public good
d) Trends in the field of engineering

17) What should an engineer do if they discover a colleague is involved in unethical practices?
a) Ignore the situation to avoid conflict
b) Report the unethical behavior to management or relevant authorities
c) Cover up the situation to protect the colleague
d) Allow the behavior to continue if it does not affect the project

18) Ethical engineering practices include _____.
a) Following industry standards and regulations
b) Ensuring profitability is the main priority
c) Cutting costs by any means necessary
d) Avoiding the reporting of safety hazards

19) What is the primary focus of Kohlberg's theory?
a) Cognitive development b) Social development
c) Moral development d) Emotional development

20) Which term refers to an agreement that is made through discussions and compromises among parties?
a) Conflict b) Consensus
c) Dispute d) Isolation

21) What is the primary goal of risk assessment?
a) To eliminate all risks
b) To identify and mitigate potential risks
c) To ignore potential risks
d) To transfer risks to others

22) What is the primary goal of safety protocols?
a) To increase productivity
b) To reduce costs
c) To prevent injuries and illnesses
d) To improve employee morale

23) What is the difference between a hazard and a risk?
- a) A hazard is a potential risk, while a risk is a real danger
- b) A hazard is a real danger, while a risk is a potential danger
- c) A hazard is a physical danger, while a risk is a financial danger
- d) A hazard is a financial danger, while a risk is a physical danger

24) What should you do if you identify a potential risk in the workplace?
- a) Ignore it and hope it goes away
- b) Report it to your supervisor or HR
- c) Try to mitigate it on your own
- d) Transfer the risk to someone else

25) According to the theory of ethical egoism, what should guide an individual's moral actions?
- a) The well-being of others
- b) The individual's own self-interest
- c) Social norms and conventions
- d) Universal moral principles

26) Collegiality in a professional setting refers to _____.
- a) Loyalty to your employer
- b) Cooperation and mutual respect among colleagues
- c) Competing for individual success
- d) Avoiding work conflicts

27) Professional loyalty involves _____.
- a) Reporting colleagues' mistakes publicly
- b) Protecting the interests of the team or organization
- c) Ignoring safety violations to avoid
- d) Disclosing confidential information for personal conflict gain

28) Employee rights include _____.
- a) The right to work without discrimination
- b) The right to disregard company policies
- c) The right to personal opinion but not affecting work
- d) The right to ignore workplace safety standards

29) Intellectual Property Rights (IPR) protect _____.
- a) The financial interests of corporations
- b) The ownership and use of creative ideas and inventions
- c) The physical assets of a company
- d) Workplace performance evaluations

30) *Risk assessment* is important because it helps in _____.
- a) Evaluating the potential impact of hazards on health and safety
- b) Minimizing workplace productivity
- c) Defining job roles
- d) Ignoring environmental issues

31) In risk management, mitigation strategies aim to _____.
a) Accept all risks in the workplace
b) Reduce or eliminate identified risks
c) Increase the likelihood of hazards
d) Focus only on maximizing profits

32) Which of the following is a potential consequence of *occupational crime?*
a) Increased workplace productivity
b) Legal consequences and loss of reputation
c) Improvement in company safety standards
d) Higher employee satisfaction

33) Risk reduction in engineering refers to _____.
a) Implementing measures to lower the work chances of accidents
b) Increasing the number of hazards in the work environment
c) Ignoring potential risks
d) Cutting costs by removing safety measures

34) Public safety regulations are primarily designed to _____.
a) Ensure the safety of the company's assets
b) Protect the general public from potential harm
c) Increase revenue for the government
d) Focus only on preventing natural disasters

35) Multinational corporations (MNCs) are characterized by _____.
a) Operations in multiple countries with a centralized headquarters
b) Operating only in their home country
c) Limited influence on global markets
d) No responsibility toward environmental concerns

36) Environmental ethics primarily deals with _____.
a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
d) Treating employees equally

37) Which of the following is NOT an example of environmental ethics?
a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

38) Computer ethics involves _____.
   a) Programming and coding without considering social consequences
   b) Understanding the moral implications of computing technologies
   c) Focusing only on technological innovation
   d) Ignoring privacy issues

39) Weapons development ethics deals with _____.
   a) The development of new technologies to enhance military capabilities
   b) Restricting the use of all technological advancements
   c) Focusing only on civilian safety
   d) Only addressing the legal aspects of weapon development

40) Engineers as managers are expected to _____.
   a) Focus solely on technical tasks
   b) Lead teams, make strategic decisions, and manage projects
   c) Ignore the business aspects of their work
   d) Avoid taking responsibility for team outcomes

41) Consulting engineers are hired to _____.
   a) Work on projects within the company they are employed
   b) Provide expert advice on technical and engineering problems
   c) Manage public relations for a company
   d) Conduct legal investigations

42) Engineers acting as expert witnesses typically _____.
   a) Present evidence and offer testimony in legal cases
   b) Focus on public relations during a case
   c) Manage engineering projects for legal firms
   d) Directly represent the interests of a company court

43) Sample Code of Ethics of professional organizations typically includes _____.
   a) Guidelines for acceptable behavior and decision-making
   b) Rules for maximizing profits at any cost
   c) Detailed technical specifications for projects
   d) Guidelines for political involvement in engineering

44) ASME stands for _____.
   a) American Society of Mechanical Engineers
   b) American Society of Management Engineers
   c) Association of Safety and Mechanical Engineers
   d) Association of Scientific and Mechanical Engineers

45) The ASCE Code of Ethics emphasizes _____.
a) Following only local regulations
b) Maintaining professional integrity and responsibility
c) Focusing on personal financial gain
d) Ignoring environmental impacts

46) The IEEE Code of Ethics is primarily concerned with _____.
a) Fostering professional competence and integrity
b) Protecting corporate secrets
c) Maximizing technological advancements at any cost
d) Developing weapons for defense purposes

47) Global issues in engineering ethics include _____.
a) Cultural differences in engineering practices
b) Lack of understanding between technical and ethical concerns
c) Addressing both local and international engineering challenges
d) All of the above

48) A key challenge faced by multinational corporations is _____.
a) Balancing profits with social and environmental
b) Competing only within their home country responsibilities
c) Focusing solely on domestic issues
d) Ignoring corporate social responsibility

49) Empathy is the ability to _____.
a) Solve problems logically
b) Understand and share the feelings of others
c) Be indifferent to others' emotions
d) Only care about your own well-being

50) The quality of "caring" includes _____.
a) Showing concern for others' well-being
b) Ignoring the needs of others
c) Only helping family and friends
d) Seeking praise for helping others

SLR-QH-208

Seat No.		Set	Q

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
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c) Manage engineering projects for legal firms
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23) Sample Code of Ethics of professional organizations typically includes _____.
a) Guidelines for acceptable behavior and decision-making
b) Rules for maximizing profits at any cost
c) Detailed technical specifications for projects
d) Guidelines for political involvement in engineering

24) ASME stands for _____.
a) American Society of Mechanical Engineers
b) American Society of Management Engineers
c) Association of Safety and Mechanical Engineers
d) Association of Scientific and Mechanical Engineers

25) The ASCE Code of Ethics emphasizes _____.
a) Following only local regulations
b) Maintaining professional integrity and responsibility
c) Focusing on personal financial gain
d) Ignoring environmental impacts

26) The IEEE Code of Ethics is primarily concerned with _____.
a) Fostering professional competence and integrity
b) Protecting corporate secrets
c) Maximizing technological advancements at any cost
d) Developing weapons for defense purposes

27) Global issues in engineering ethics include _____.
a) Cultural differences in engineering practices
b) Lack of understanding between technical and ethical concerns
c) Addressing both local and international engineering challenges
d) All of the above

28) A key challenge faced by multinational corporations is _____.
a) Balancing profits with social and environmental
b) Competing only within their home country responsibilities
c) Focusing solely on domestic issues
d) Ignoring corporate social responsibility

29) Empathy is the ability to _____.
a) Solve problems logically
b) Understand and share the feelings of others
c) Be indifferent to others' emotions
d) Only care about your own well-being

30) The quality of "caring" includes _____.
a) Showing concern for others' well-being
b) Ignoring the needs of others
c) Only helping family and friends
d) Seeking praise for helping others

31) What are fundamental human values?
a) Core beliefs and principles that guide human behavior and interactions
b) Economic indicators for social development
c) Religious doctrines that govern human life
d) Scientific facts that influence decision-making

32) Which value emphasizes treating others as you wish to be treated?
a) Respect b) Empathy
c) Honesty d) Kindness

33) The value of honesty is closely related to _____.
a) Truthfulness and sincerity b) Wealth and possessions
c) Power and influence d) Indifference and insensitivity

34) Which value involves considering the perspectives and feelings of others?
a) Empathy b) Courage
c) Determination d) Patience

35) The value of respect entails _____.
a) Recognizing the worth of every individual and their rights
b) Achieving personal success at any cost
c) Promoting competition among individuals
d) Pursuing material gains over relationships

36) Which value involves being accountable for one's decisions and actions?
a) Responsibility b) Flexibility
c) Confidence d) Arrogance

37) The value of integrity entails _____.
a) Being honest and true to oneself and others
b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

38) Which value involves being considerate and thoughtful towards others?

a) Kindness
b) Determination
c) Independence
d) Indifference

39) The value of wisdom involves _____.

a) Making sound and informed judgments based on knowledge and experience
b) Pursuing personal interests at the expense of others
c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

40) Which value involves being truthful and sincere in one's actions and words?

a) Honesty
b) Tolerance
c) Flexibility
d) Arrogance

41) What is the primary goal of engineering ethics?

a) To maximize profits for companies
b) To ensure engineers work efficiently
c) To protect public safety and welfare
d) To follow industry standards

42) Which of the following is considered an ethical responsibility of an engineer?

a) Ignoring environmental concerns to meet deadlines
b) Ensuring the safety of the public
c) Disregarding laws and regulations
d) Making decisions based on personal interests

43) Ethical engineering practices promote _____.

a) The continuous pursuit of profit
b) The advancement of technology at any cost
c) Public trust and confidence in engineering
d) The minimization of safety regulations

44) Ethical engineers should consider which of the following when making decisions?

a) Profit maximization
b) Only the interests of the employer
c) Public safety, environmental impact, and ethical codes
d) Personal comfort and convenience

45) Which of the following is NOT part of an engineer's ethical responsibility?

a) Designing for safety and sustainability
b) Falsifying data to ensure project success
c) Reporting safety concerns immediately
d) Following industry standards and regulations

46) Ethical engineering involves making decisions based on _____.

a) Personal opinions and values
b) Financial incentives and company pressure
c) Objective analysis, codes of ethics, and consideration for the public good
d) Trends in the field of engineering

47) What should an engineer do if they discover a colleague is involved in unethical practices?

a) Ignore the situation to avoid conflict
b) Report the unethical behavior to management or relevant authorities
c) Cover up the situation to protect the colleague
d) Allow the behavior to continue if it does not affect the project

48) Ethical engineering practices include _____.

a) Following industry standards and regulations
b) Ensuring profitability is the main priority
c) Cutting costs by any means necessary
d) Avoiding the reporting of safety hazards

49) What is the primary focus of Kohlberg's theory?

a) Cognitive development
b) Social development
c) Moral development
d) Emotional development

50) Which term refers to an agreement that is made through discussions and compromises among parties?

a) Conflict
b) Consensus
c) Dispute
d) Isolation

SLR-QH-208

Seat No.		Set	R

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) Consulting engineers are hired to _____.
a) Work on projects within the company they are employed
b) Provide expert advice on technical and engineering problems
c) Manage public relations for a company
d) Conduct legal investigations

2) Engineers acting as expert witnesses typically _____.
a) Present evidence and offer testimony in legal cases
b) Focus on public relations during a case
c) Manage engineering projects for legal firms
d) Directly represent the interests of a company court

3) Sample Code of Ethics of professional organizations typically includes _____.
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6) The IEEE Code of Ethics is primarily concerned with _____.
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   c) Maximizing technological advancements at any cost
   d) Developing weapons for defense purposes

7) Global issues in engineering ethics include _____.
   a) Cultural differences in engineering practices
   b) Lack of understanding between technical and ethical concerns
   c) Addressing both local and international engineering challenges
   d) All of the above

8) A key challenge faced by multinational corporations is _____.
   a) Balancing profits with social and environmental
   b) Competing only within their home country responsibilities
   c) Focusing solely on domestic issues
   d) Ignoring corporate social responsibility

9) Empathy is the ability to _____.
   a) Solve problems logically
   b) Understand and share the feelings of others
   c) Be indifferent to others' emotions
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10) The quality of "caring" includes _____.
   a) Showing concern for others' well-being
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11) What are fundamental human values?
   a) Core beliefs and principles that guide human behavior and interactions
   b) Economic indicators for social development
   c) Religious doctrines that govern human life
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12) Which value emphasizes treating others as you wish to be treated?
   a) Respect b) Empathy
   c) Honesty d) Kindness

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c) Confidence d) Arrogance

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b) Pursuing personal interests at any cost
c) Manipulating and deceiving others for personal gain
d) Ignoring the feelings and rights of other

18) Which value involves being considerate and thoughtful towards others?
a) Kindness b) Determination
c) Independence d) Indifference

19) The value of wisdom involves _____.
a) Making sound and informed judgments based on knowledge and experience
b) Pursuing personal interests at the expense of others
c) Ignoring the perspectives and concerns of others
d) Suppressing one's emotions and thoughts

20) Which value involves being truthful and sincere in one's actions and words?
a) Honesty b) Tolerance
c) Flexibility d) Arrogance

21) What is the primary goal of engineering ethics?
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b) To ensure engineers work efficiently
c) To protect public safety and welfare
d) To follow industry standards

22) Which of the following is considered an ethical responsibility of an engineer?
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d) Making decisions based on personal interests

23) Ethical engineering practices promote _____.
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28) Ethical engineering practices include _____.
a) Following industry standards and regulations
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d) Avoiding the reporting of safety hazards

29) What is the primary focus of Kohlberg's theory?
a) Cognitive development b) Social development
c) Moral development d) Emotional development

30) Which term refers to an agreement that is made through discussions and compromises among parties?
a) Conflict b) Consensus
c) Dispute d) Isolation

31) What is the primary goal of risk assessment?
a) To eliminate all risks
b) To identify and mitigate potential risks
c) To ignore potential risks
d) To transfer risks to others

32) What is the primary goal of safety protocols?
a) To increase productivity
b) To reduce costs
c) To prevent injuries and illnesses
d) To improve employee morale

33) What is the difference between a hazard and a risk?
a) A hazard is a potential risk, while a risk is a real danger
b) A hazard is a real danger, while a risk is a potential danger
c) A hazard is a physical danger, while a risk is a financial danger
d) A hazard is a financial danger, while a risk is a physical danger

34) What should you do if you identify a potential risk in the workplace?
a) Ignore it and hope it goes away
b) Report it to your supervisor or HR
c) Try to mitigate it on your own
d) Transfer the risk to someone else

35) According to the theory of ethical egoism, what should guide an individual's moral actions?
a) The well-being of others
b) The individual's own self-interest
c) Social norms and conventions
d) Universal moral principles

36) Collegiality in a professional setting refers to _____.
a) Loyalty to your employer
b) Cooperation and mutual respect among colleagues
c) Competing for individual success
d) Avoiding work conflicts

37) Professional loyalty involves _____.
a) Reporting colleagues' mistakes publicly
b) Protecting the interests of the team or organization
c) Ignoring safety violations to avoid
d) Disclosing confidential information for personal conflict gain

38) Employee rights include _____.
a) The right to work without discrimination
b) The right to disregard company policies
c) The right to personal opinion but not affecting work
d) The right to ignore workplace safety standards

39) Intellectual Property Rights (IPR) protect _____.
- a) The financial interests of corporations
- b) The ownership and use of creative ideas and inventions
- c) The physical assets of a company
- d) Workplace performance evaluations

40) *Risk assessment* is important because it helps in _____.
- a) Evaluating the potential impact of hazards on health and safety
- b) Minimizing workplace productivity
- c) Defining job roles
- d) Ignoring environmental issues

41) In risk management, mitigation strategies aim to _____.
- a) Accept all risks in the workplace
- b) Reduce or eliminate identified risks
- c) Increase the likelihood of hazards
- d) Focus only on maximizing profits

42) Which of the following is a potential consequence of *occupational crime?*
- a) Increased workplace productivity
- b) Legal consequences and loss of reputation
- c) Improvement in company safety standards
- d) Higher employee satisfaction

43) Risk reduction in engineering refers to _____.
- a) Implementing measures to lower the work chances of accidents
- b) Increasing the number of hazards in the work environment
- c) Ignoring potential risks
- d) Cutting costs by removing safety measures

44) Public safety regulations are primarily designed to _____.
- a) Ensure the safety of the company's assets
- b) Protect the general public from potential harm
- c) Increase revenue for the government
- d) Focus only on preventing natural disasters

45) Multinational corporations (MNCs) are characterized by _____.
- a) Operations in multiple countries with a centralized headquarters
- b) Operating only in their home country
- c) Limited influence on global markets
- d) No responsibility toward environmental concerns

46) Environmental ethics primarily deals with _____.

a) Human responsibility to manage the environment and natural resources
b) Minimizing corporate profits
c) Technological advancements in engineering
d) Treating employees equally

47) Which of the following is NOT an example of environmental ethics?

a) Reducing pollution and waste
b) Maximizing resource use regardless of environmental impact
c) Preserving biodiversity
d) Sustainable development

48) Computer ethics involves _____.

a) Programming and coding without considering social consequences
b) Understanding the moral implications of computing technologies
c) Focusing only on technological innovation
d) Ignoring privacy issues

49) Weapons development ethics deals with _____.

a) The development of new technologies to enhance military capabilities
b) Restricting the use of all technological advancements
c) Focusing only on civilian safety
d) Only addressing the legal aspects of weapon development

50) Engineers as managers are expected to _____.

a) Focus solely on technical tasks
b) Lead teams, make strategic decisions, and manage projects
c) Ignore the business aspects of their work
d) Avoid taking responsibility for team outcomes

SLR-QH-208

Seat No.		Set	S

Marks Obtained		Signature of Examiner		Signature of Junior Supervisor	

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (NEP CBCS) Examination: March/April - 2026
Professional Ethics (VEC-02)

Day & Date: Friday, 29-05-2026 Max. Marks: 50
Time: 10:00 AM To 11:30 AM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Mention Question Paper Set (P/Q/R/S) on Top of Page.

Q.1 Answer the following Objective Type Questions. **50** **Answer**

1) What is the primary goal of engineering ethics?
a) To maximize profits for companies
b) To ensure engineers work efficiently
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d) To follow industry standards

2) Which of the following is considered an ethical responsibility of an engineer?
a) Ignoring environmental concerns to meet deadlines
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3) Ethical engineering practices promote _____.
a) The continuous pursuit of profit
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4) Ethical engineers should consider which of the following when making decisions?
a) Profit maximization
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5) Which of the following is NOT part of an engineer's ethical responsibility?
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a) Honesty b) Tolerance
c) Flexibility d) Arrogance

SLR-QH-209

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

2) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

3) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

4) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

5) Which leadership style involves team participation?
a) Autocratic b) Democratic
c) Laissez-faire d) Transactional

6) Technology forecasting helps in _____.
a) Past analysis b) Predicting future trends
c) Cost cutting d) Marketing

7) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

8) Predictive analytics is used for _____.
a) Data storage
b) Future predictions
c) Data deletion
d) Communication

9) Service blueprint mainly represents _____.
a) Product cost
b) Service process
c) Marketing plan
d) Financial report

10) Which is a principle of service design?
a) Complexity
b) User focus
c) Random design
d) High cost

11) Lean Canvas is used for _____.
a) Detailed engineering design
b) Business model planning
c) Product testing
d) Marketing only

12) Intellectual Property protects _____.
a) Physical assets
b) Ideas and innovations
c) Labor
d) Machinery

13) Brainstorming is used for _____.
a) Decision making
b) Idea generation
c) Testing
d) Implementation

14) Journey mapping focuses on _____.
a) Financial data
b) User experience
c) Manufacturing
d) Cost analysis

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New)
(NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New)
(NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Predictive analytics is used for _____.
a) Data storage b) Future predictions
c) Data deletion d) Communication

2) Service blueprint mainly represents _____.
a) Product cost b) Service process
c) Marketing plan d) Financial report

3) Which is a principle of service design?
a) Complexity b) User focus
c) Random design d) High cost

4) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

5) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

6) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

7) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

8) Design Thinking primarily focuses on _____.
a) Profit maximization
b) User-centric solutions
c) Technical optimization
d) Cost reduction

9) Which is NOT a phase of Design Thinking?
a) Empathize
b) Define
c) Execute
d) Prototype

10) Creativity is best defined as _____.
a) Copying ideas
b) Generating novel ideas
c) Following standards
d) Improving efficiency

11) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

12) Which leadership style involves team participation?
a) Autocratic
b) Democratic
c) Laissez-faire
d) Transactional

13) Technology forecasting helps in _____.
a) Past analysis
b) Predicting future trends
c) Cost cutting
d) Marketing

14) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New)
(NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New)
(NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

2) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

3) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

4) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

5) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

6) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

7) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

8) Engineering design differs from design thinking because _____.
   a) It ignores users
   b) It is purely technical
   c) It is not iterative
   d) It focuses more on constraints than empathy

9) Which leadership style involves team participation?
   a) Autocratic
   b) Democratic
   c) Laissez-faire
   d) Transactional

10) Technology forecasting helps in _____.
   a) Past analysis
   b) Predicting future trends
   c) Cost cutting
   d) Marketing

11) Product Market Fit refers to _____.
   a) Product price alignment
   b) Matching product with market demand
   c) Product manufacturing
   d) Distribution channels

12) Predictive analytics is used for _____.
   a) Data storage
   b) Future predictions
   c) Data deletion
   d) Communication

13) Service blueprint mainly represents _____.
   a) Product cost
   b) Service process
   c) Marketing plan
   d) Financial report

14) Which is a principle of service design?
   a) Complexity
   b) User focus
   c) Random design
   d) High cost

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New)
(NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New)
(NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Technology forecasting helps in _____.
a) Past analysis b) Predicting future trends
c) Cost cutting d) Marketing

2) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

3) Predictive analytics is used for _____.
a) Data storage b) Future predictions
c) Data deletion d) Communication

4) Service blueprint mainly represents _____.
a) Product cost b) Service process
c) Marketing plan d) Financial report

5) Which is a principle of service design?
a) Complexity b) User focus
c) Random design d) High cost

6) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

7) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

8) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

9) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

10) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

11) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

12) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

13) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

14) Which leadership style involves team participation?
a) Autocratic b) Democratic
c) Laissez-faire d) Transactional

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New)
(NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

SLR-QH-209

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

2) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

3) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

4) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

5) Which leadership style involves team participation?
a) Autocratic b) Democratic
c) Laissez-faire d) Transactional

6) Technology forecasting helps in _____.
a) Past analysis b) Predicting future trends
c) Cost cutting d) Marketing

7) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

8) Predictive analytics is used for _____.
a) Data storage
b) Future predictions
c) Data deletion
d) Communication

9) Service blueprint mainly represents _____.
a) Product cost
b) Service process
c) Marketing plan
d) Financial report

10) Which is a principle of service design?
a) Complexity
b) User focus
c) Random design
d) High cost

11) Lean Canvas is used for _____.
a) Detailed engineering design
b) Business model planning
c) Product testing
d) Marketing only

12) Intellectual Property protects _____.
a) Physical assets
b) Ideas and innovations
c) Labor
d) Machinery

13) Brainstorming is used for _____.
a) Decision making
b) Idea generation
c) Testing
d) Implementation

14) Journey mapping focuses on _____.
a) Financial data
b) User experience
c) Manufacturing
d) Cost analysis

SLR-QH-209

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Predictive analytics is used for _____.
a) Data storage b) Future predictions
c) Data deletion d) Communication

2) Service blueprint mainly represents _____.
a) Product cost b) Service process
c) Marketing plan d) Financial report

3) Which is a principle of service design?
a) Complexity b) User focus
c) Random design d) High cost

4) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

5) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

6) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

7) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

8) Design Thinking primarily focuses on _____.
a) Profit maximization
b) User-centric solutions
c) Technical optimization
d) Cost reduction

9) Which is NOT a phase of Design Thinking?
a) Empathize
b) Define
c) Execute
d) Prototype

10) Creativity is best defined as _____.
a) Copying ideas
b) Generating novel ideas
c) Following standards
d) Improving efficiency

11) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

12) Which leadership style involves team participation?
a) Autocratic
b) Democratic
c) Laissez-faire
d) Transactional

13) Technology forecasting helps in _____.
a) Past analysis
b) Predicting future trends
c) Cost cutting
d) Marketing

14) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

SLR-QH-209

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

2) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

3) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

4) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

5) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

6) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

7) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

8) Engineering design differs from design thinking because _____.
   a) It ignores users
   b) It is purely technical
   c) It is not iterative
   d) It focuses more on constraints than empathy

9) Which leadership style involves team participation?
   a) Autocratic
   b) Democratic
   c) Laissez-faire
   d) Transactional

10) Technology forecasting helps in _____.
   a) Past analysis
   b) Predicting future trends
   c) Cost cutting
   d) Marketing

11) Product Market Fit refers to _____.
   a) Product price alignment
   b) Matching product with market demand
   c) Product manufacturing
   d) Distribution channels

12) Predictive analytics is used for _____.
   a) Data storage
   b) Future predictions
   c) Data deletion
   d) Communication

13) Service blueprint mainly represents _____.
   a) Product cost
   b) Service process
   c) Marketing plan
   d) Financial report

14) Which is a principle of service design?
   a) Complexity
   b) User focus
   c) Random design
   d) High cost

SLR-QH-209

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Technology forecasting helps in _____.
a) Past analysis b) Predicting future trends
c) Cost cutting d) Marketing

2) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

3) Predictive analytics is used for _____.
a) Data storage b) Future predictions
c) Data deletion d) Communication

4) Service blueprint mainly represents _____.
a) Product cost b) Service process
c) Marketing plan d) Financial report

5) Which is a principle of service design?
a) Complexity b) User focus
c) Random design d) High cost

6) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

7) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

8) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

9) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

10) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

11) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

12) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

13) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

14) Which leadership style involves team participation?
a) Autocratic b) Democratic
c) Laissez-faire d) Transactional

SLR-QH-209

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

SLR-QH-209

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

2) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

3) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

4) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

5) Which leadership style involves team participation?
a) Autocratic b) Democratic
c) Laissez-faire d) Transactional

6) Technology forecasting helps in _____.
a) Past analysis b) Predicting future trends
c) Cost cutting d) Marketing

7) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

8) Predictive analytics is used for _____.
a) Data storage
b) Future predictions
c) Data deletion
d) Communication

9) Service blueprint mainly represents _____.
a) Product cost
b) Service process
c) Marketing plan
d) Financial report

10) Which is a principle of service design?
a) Complexity
b) User focus
c) Random design
d) High cost

11) Lean Canvas is used for _____.
a) Detailed engineering design
b) Business model planning
c) Product testing
d) Marketing only

12) Intellectual Property protects _____.
a) Physical assets
b) Ideas and innovations
c) Labor
d) Machinery

13) Brainstorming is used for _____.
a) Decision making
b) Idea generation
c) Testing
d) Implementation

14) Journey mapping focuses on _____.
a) Financial data
b) User experience
c) Manufacturing
d) Cost analysis

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

SLR-QH-209

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Predictive analytics is used for _____.
a) Data storage b) Future predictions
c) Data deletion d) Communication

2) Service blueprint mainly represents _____.
a) Product cost b) Service process
c) Marketing plan d) Financial report

3) Which is a principle of service design?
a) Complexity b) User focus
c) Random design d) High cost

4) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

5) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

6) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

7) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

8) Design Thinking primarily focuses on _____.
a) Profit maximization
b) User-centric solutions
c) Technical optimization
d) Cost reduction

9) Which is NOT a phase of Design Thinking?
a) Empathize
b) Define
c) Execute
d) Prototype

10) Creativity is best defined as _____.
a) Copying ideas
b) Generating novel ideas
c) Following standards
d) Improving efficiency

11) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

12) Which leadership style involves team participation?
a) Autocratic
b) Democratic
c) Laissez-faire
d) Transactional

13) Technology forecasting helps in _____.
a) Past analysis
b) Predicting future trends
c) Cost cutting
d) Marketing

14) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

SLR-QH-209

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

2) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

3) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

4) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

5) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

6) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

7) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

8) Engineering design differs from design thinking because _____.
   a) It ignores users
   b) It is purely technical
   c) It is not iterative
   d) It focuses more on constraints than empathy

9) Which leadership style involves team participation?
   a) Autocratic
   b) Democratic
   c) Laissez-faire
   d) Transactional

10) Technology forecasting helps in _____.
   a) Past analysis
   b) Predicting future trends
   c) Cost cutting
   d) Marketing

11) Product Market Fit refers to _____.
   a) Product price alignment
   b) Matching product with market demand
   c) Product manufacturing
   d) Distribution channels

12) Predictive analytics is used for _____.
   a) Data storage
   b) Future predictions
   c) Data deletion
   d) Communication

13) Service blueprint mainly represents _____.
   a) Product cost
   b) Service process
   c) Marketing plan
   d) Financial report

14) Which is a principle of service design?
   a) Complexity
   b) User focus
   c) Random design
   d) High cost

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Technology forecasting helps in _____.
a) Past analysis b) Predicting future trends
c) Cost cutting d) Marketing

2) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

3) Predictive analytics is used for _____.
a) Data storage b) Future predictions
c) Data deletion d) Communication

4) Service blueprint mainly represents _____.
a) Product cost b) Service process
c) Marketing plan d) Financial report

5) Which is a principle of service design?
a) Complexity b) User focus
c) Random design d) High cost

6) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

7) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

8) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

9) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

10) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

11) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

12) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

13) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

14) Which leadership style involves team participation?
a) Autocratic b) Democratic
c) Laissez-faire d) Transactional

SLR-QH-209

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

SLR-QH-209

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

2) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

3) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

4) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

5) Which leadership style involves team participation?
a) Autocratic b) Democratic
c) Laissez-faire d) Transactional

6) Technology forecasting helps in _____.
a) Past analysis b) Predicting future trends
c) Cost cutting d) Marketing

7) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

8) Predictive analytics is used for _____.
a) Data storage
b) Future predictions
c) Data deletion
d) Communication

9) Service blueprint mainly represents _____.
a) Product cost
b) Service process
c) Marketing plan
d) Financial report

10) Which is a principle of service design?
a) Complexity
b) User focus
c) Random design
d) High cost

11) Lean Canvas is used for _____.
a) Detailed engineering design
b) Business model planning
c) Product testing
d) Marketing only

12) Intellectual Property protects _____.
a) Physical assets
b) Ideas and innovations
c) Labor
d) Machinery

13) Brainstorming is used for _____.
a) Decision making
b) Idea generation
c) Testing
d) Implementation

14) Journey mapping focuses on _____.
a) Financial data
b) User experience
c) Manufacturing
d) Cost analysis

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Predictive analytics is used for _____.
a) Data storage b) Future predictions
c) Data deletion d) Communication

2) Service blueprint mainly represents _____.
a) Product cost b) Service process
c) Marketing plan d) Financial report

3) Which is a principle of service design?
a) Complexity b) User focus
c) Random design d) High cost

4) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

5) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

6) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

7) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

8) Design Thinking primarily focuses on _____.
a) Profit maximization
b) User-centric solutions
c) Technical optimization
d) Cost reduction

9) Which is NOT a phase of Design Thinking?
a) Empathize
b) Define
c) Execute
d) Prototype

10) Creativity is best defined as _____.
a) Copying ideas
b) Generating novel ideas
c) Following standards
d) Improving efficiency

11) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

12) Which leadership style involves team participation?
a) Autocratic
b) Democratic
c) Laissez-faire
d) Transactional

13) Technology forecasting helps in _____.
a) Past analysis
b) Predicting future trends
c) Cost cutting
d) Marketing

14) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

SLR-QH-209

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

2) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

3) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

4) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

5) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

6) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

7) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

8) Engineering design differs from design thinking because _____.
   a) It ignores users
   b) It is purely technical
   c) It is not iterative
   d) It focuses more on constraints than empathy

9) Which leadership style involves team participation?
   a) Autocratic
   b) Democratic
   c) Laissez-faire
   d) Transactional

10) Technology forecasting helps in _____.
   a) Past analysis
   b) Predicting future trends
   c) Cost cutting
   d) Marketing

11) Product Market Fit refers to _____.
   a) Product price alignment
   b) Matching product with market demand
   c) Product manufacturing
   d) Distribution channels

12) Predictive analytics is used for _____.
   a) Data storage
   b) Future predictions
   c) Data deletion
   d) Communication

13) Service blueprint mainly represents _____.
   a) Product cost
   b) Service process
   c) Marketing plan
   d) Financial report

14) Which is a principle of service design?
   a) Complexity
   b) User focus
   c) Random design
   d) High cost

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Technology forecasting helps in _____.
a) Past analysis b) Predicting future trends
c) Cost cutting d) Marketing

2) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

3) Predictive analytics is used for _____.
a) Data storage b) Future predictions
c) Data deletion d) Communication

4) Service blueprint mainly represents _____.
a) Product cost b) Service process
c) Marketing plan d) Financial report

5) Which is a principle of service design?
a) Complexity b) User focus
c) Random design d) High cost

6) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

7) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

8) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

9) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

10) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

11) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

12) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

13) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

14) Which leadership style involves team participation?
a) Autocratic b) Democratic
c) Laissez-faire d) Transactional

SLR-QH-209

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

SLR-QH-209

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

2) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

3) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

4) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

5) Which leadership style involves team participation?
a) Autocratic b) Democratic
c) Laissez-faire d) Transactional

6) Technology forecasting helps in _____.
a) Past analysis b) Predicting future trends
c) Cost cutting d) Marketing

7) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

8) Predictive analytics is used for _____.
a) Data storage
b) Future predictions
c) Data deletion
d) Communication

9) Service blueprint mainly represents _____.
a) Product cost
b) Service process
c) Marketing plan
d) Financial report

10) Which is a principle of service design?
a) Complexity
b) User focus
c) Random design
d) High cost

11) Lean Canvas is used for _____.
a) Detailed engineering design
b) Business model planning
c) Product testing
d) Marketing only

12) Intellectual Property protects _____.
a) Physical assets
b) Ideas and innovations
c) Labor
d) Machinery

13) Brainstorming is used for _____.
a) Decision making
b) Idea generation
c) Testing
d) Implementation

14) Journey mapping focuses on _____.
a) Financial data
b) User experience
c) Manufacturing
d) Cost analysis

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Predictive analytics is used for _____.
a) Data storage b) Future predictions
c) Data deletion d) Communication

2) Service blueprint mainly represents _____.
a) Product cost b) Service process
c) Marketing plan d) Financial report

3) Which is a principle of service design?
a) Complexity b) User focus
c) Random design d) High cost

4) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

5) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

6) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

7) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

8) Design Thinking primarily focuses on _____.
a) Profit maximization
b) User-centric solutions
c) Technical optimization
d) Cost reduction

9) Which is NOT a phase of Design Thinking?
a) Empathize
b) Define
c) Execute
d) Prototype

10) Creativity is best defined as _____.
a) Copying ideas
b) Generating novel ideas
c) Following standards
d) Improving efficiency

11) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

12) Which leadership style involves team participation?
a) Autocratic
b) Democratic
c) Laissez-faire
d) Transactional

13) Technology forecasting helps in _____.
a) Past analysis
b) Predicting future trends
c) Cost cutting
d) Marketing

14) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

2) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

3) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

4) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

5) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

6) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

7) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

8) Engineering design differs from design thinking because _____.
   a) It ignores users
   b) It is purely technical
   c) It is not iterative
   d) It focuses more on constraints than empathy

9) Which leadership style involves team participation?
   a) Autocratic
   b) Democratic
   c) Laissez-faire
   d) Transactional

10) Technology forecasting helps in _____.
   a) Past analysis
   b) Predicting future trends
   c) Cost cutting
   d) Marketing

11) Product Market Fit refers to _____.
   a) Product price alignment
   b) Matching product with market demand
   c) Product manufacturing
   d) Distribution channels

12) Predictive analytics is used for _____.
   a) Data storage
   b) Future predictions
   c) Data deletion
   d) Communication

13) Service blueprint mainly represents _____.
   a) Product cost
   b) Service process
   c) Marketing plan
   d) Financial report

14) Which is a principle of service design?
   a) Complexity
   b) User focus
   c) Random design
   d) High cost

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Technology forecasting helps in _____.
a) Past analysis b) Predicting future trends
c) Cost cutting d) Marketing

2) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

3) Predictive analytics is used for _____.
a) Data storage b) Future predictions
c) Data deletion d) Communication

4) Service blueprint mainly represents _____.
a) Product cost b) Service process
c) Marketing plan d) Financial report

5) Which is a principle of service design?
a) Complexity b) User focus
c) Random design d) High cost

6) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

7) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

8) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

9) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

10) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

11) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

12) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

13) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

14) Which leadership style involves team participation?
a) Autocratic b) Democratic
c) Laissez-faire d) Transactional

SLR-QH-209

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

SLR-QH-209

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

2) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

3) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

4) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

5) Which leadership style involves team participation?
a) Autocratic b) Democratic
c) Laissez-faire d) Transactional

6) Technology forecasting helps in _____.
a) Past analysis b) Predicting future trends
c) Cost cutting d) Marketing

7) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

8) Predictive analytics is used for _____.
a) Data storage
b) Future predictions
c) Data deletion
d) Communication

9) Service blueprint mainly represents _____.
a) Product cost
b) Service process
c) Marketing plan
d) Financial report

10) Which is a principle of service design?
a) Complexity
b) User focus
c) Random design
d) High cost

11) Lean Canvas is used for _____.
a) Detailed engineering design
b) Business model planning
c) Product testing
d) Marketing only

12) Intellectual Property protects _____.
a) Physical assets
b) Ideas and innovations
c) Labor
d) Machinery

13) Brainstorming is used for _____.
a) Decision making
b) Idea generation
c) Testing
d) Implementation

14) Journey mapping focuses on _____.
a) Financial data
b) User experience
c) Manufacturing
d) Cost analysis

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Predictive analytics is used for _____.
a) Data storage b) Future predictions
c) Data deletion d) Communication

2) Service blueprint mainly represents _____.
a) Product cost b) Service process
c) Marketing plan d) Financial report

3) Which is a principle of service design?
a) Complexity b) User focus
c) Random design d) High cost

4) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

5) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

6) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

7) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

8) Design Thinking primarily focuses on _____.
a) Profit maximization
b) User-centric solutions
c) Technical optimization
d) Cost reduction

9) Which is NOT a phase of Design Thinking?
a) Empathize
b) Define
c) Execute
d) Prototype

10) Creativity is best defined as _____.
a) Copying ideas
b) Generating novel ideas
c) Following standards
d) Improving efficiency

11) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

12) Which leadership style involves team participation?
a) Autocratic
b) Democratic
c) Laissez-faire
d) Transactional

13) Technology forecasting helps in _____.
a) Past analysis
b) Predicting future trends
c) Cost cutting
d) Marketing

14) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

2) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

3) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

4) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

5) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

6) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

7) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

8) Engineering design differs from design thinking because _____.
   a) It ignores users
   b) It is purely technical
   c) It is not iterative
   d) It focuses more on constraints than empathy

9) Which leadership style involves team participation?
   a) Autocratic
   b) Democratic
   c) Laissez-faire
   d) Transactional

10) Technology forecasting helps in _____.
   a) Past analysis
   b) Predicting future trends
   c) Cost cutting
   d) Marketing

11) Product Market Fit refers to _____.
   a) Product price alignment
   b) Matching product with market demand
   c) Product manufacturing
   d) Distribution channels

12) Predictive analytics is used for _____.
   a) Data storage
   b) Future predictions
   c) Data deletion
   d) Communication

13) Service blueprint mainly represents _____.
   a) Product cost
   b) Service process
   c) Marketing plan
   d) Financial report

14) Which is a principle of service design?
   a) Complexity
   b) User focus
   c) Random design
   d) High cost

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions. **14**

1) Technology forecasting helps in _____.
a) Past analysis b) Predicting future trends
c) Cost cutting d) Marketing

2) Product Market Fit refers to _____.
a) Product price alignment
b) Matching product with market demand
c) Product manufacturing
d) Distribution channels

3) Predictive analytics is used for _____.
a) Data storage b) Future predictions
c) Data deletion d) Communication

4) Service blueprint mainly represents _____.
a) Product cost b) Service process
c) Marketing plan d) Financial report

5) Which is a principle of service design?
a) Complexity b) User focus
c) Random design d) High cost

6) Lean Canvas is used for _____.
a) Detailed engineering design b) Business model planning
c) Product testing d) Marketing only

7) Intellectual Property protects _____.
a) Physical assets b) Ideas and innovations
c) Labor d) Machinery

8) Brainstorming is used for _____.
a) Decision making b) Idea generation
c) Testing d) Implementation

9) Journey mapping focuses on _____.
a) Financial data b) User experience
c) Manufacturing d) Cost analysis

10) Design Thinking primarily focuses on _____.
a) Profit maximization b) User-centric solutions
c) Technical optimization d) Cost reduction

11) Which is NOT a phase of Design Thinking?
a) Empathize b) Define
c) Execute d) Prototype

12) Creativity is best defined as _____.
a) Copying ideas b) Generating novel ideas
c) Following standards d) Improving efficiency

13) Engineering design differs from design thinking because _____.
a) It ignores users
b) It is purely technical
c) It is not iterative
d) It focuses more on constraints than empathy

14) Which leadership style involves team participation?
a) Autocratic b) Democratic
c) Laissez-faire d) Transactional

SLR-QH-209

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Design Thinking: Business Innovation Framework (CIVMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of non-programmable calculators is allowed.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Answer the following questions. **10**

a) Define Design Thinking and explain its objectives.

b) Explain tools of Design Thinking (any two).

Q.3 Answer the following questions. (Any Three) **18**

a) Explain phases of the Design Thinking process.

b) Discuss the role of creativity and innovation in organizations.

c) Differentiate between engineering design and design thinking.

d) Explain types of leadership with examples.

e) Describe technology forecasting and its importance.

Section – II

Q.4 Answer the following questions. **10**

a) Explain Product Solution Fit.

b) Describe decision-making process in innovation.

Q.5 Answer the following questions. (Any Three) **18**

a) Explain principles of service design.

b) Describe Lean Canvas model.

c) Explain Agile industrial design concepts.

d) Discuss intellectual property in product development.

e) Explain design thinking for sustainability.

SLR-QH-210

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) DBMS stands for _____.
a) Database Management System
b) Database Monitoring System
c) Database Manufacturing System
d) Database Mixing Station

2) The scientist Roger Tomlinson who coined it was given _____ title.
a) father of GIS b) father of Globe
c) Doctorate d) None of the above

3) DEM stands for _____.
a) Digital Elevation Meter b) Distance Elevation Model
c) Digital Elevation Model d) Distance Elevation Meter

4) Data that describe the characteristics of spatial features is _____.
a) Coverage b) Data Exploration
c) Geospatial Data d) Attribute Data

5) Which of the following is NOT a type of GIS data?
a) Field data b) Statistical data
c) Digital clock data d) Satellite data

6) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

7) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

8) Which data model in DBMS organizes data as tables with rows and columns?

a) Hierarchical model
b) Relational model
c) Network model
d) Object-oriented model

9) Run-length encoding is used for _____.

a) Audio compression
b) Spatial data format
c) Raster data compression
d) Command execution

10) Passive sensors detect _____.

a) Emitted energy only
b) Reflected sunlight
c) Radar pulses
d) Laser beams

11) A key characteristic of imaging systems that determines ground detail _____.

a) Temporal resolution
b) Spectral resolution
c) Spatial resolution
d) Atmospheric resolution

12) GIS helps update existing maps through _____.

a) Map matching
b) Map revision
c) Map printing
d) Data deletion

13) LULC stands for _____.

a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

14) The first step in a GIS project is _____.

a) Database creation
b) Understanding user requirements
c) Map digitization
d) Data conversion

SLR-QH-210

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.		Set	Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

2) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

3) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

4) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

5) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

6) LULC stands for _____.
a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

7) The first step in a GIS project is _____.
   a) Database creation
   b) Understanding user requirements
   c) Map digitization
   d) Data conversion

8) DBMS stands for _____.
   a) Database Management System
   b) Database Monitoring System
   c) Database Manufacturing System
   d) Database Mixing Station

9) The scientist Roger Tomlinson who coined it was given _____ title.
   a) father of GIS
   b) father of Globe
   c) Doctorate
   d) None of the above

10) DEM stands for _____.
   a) Digital Elevation Meter
   b) Distance Elevation Model
   c) Digital Elevation Model
   d) Distance Elevation Meter

11) Data that describe the characteristics of spatial features is _____.
   a) Coverage
   b) Data Exploration
   c) Geospatial Data
   d) Attribute Data

12) Which of the following is NOT a type of GIS data?
   a) Field data
   b) Statistical data
   c) Digital clock data
   d) Satellite data

13) Which format is used to store vector data in GIS?
   a) .shp
   b) .jpg
   c) .tif
   d) .bmp

14) Conversion of raster data to vector data called _____.
   a) Vectorisation
   b) Rasterisation
   c) Classification
   d) None of the above

SLR-QH-210

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.		Set	R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

2) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

3) LULC stands for _____.
a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

4) The first step in a GIS project is _____.
a) Database creation
b) Understanding user requirements
c) Map digitization
d) Data conversion

5) DBMS stands for _____.
a) Database Management System
b) Database Monitoring System
c) Database Manufacturing System
d) Database Mixing Station

6) The scientist Roger Tomlinson who coined it was given _____ title.
a) father of GIS b) father of Globe
c) Doctorate d) None of the above

7) DEM stands for _____.
a) Digital Elevation Meter b) Distance Elevation Model
c) Digital Elevation Model d) Distance Elevation Meter

8) Data that describe the characteristics of spatial features is _____.
a) Coverage b) Data Exploration
c) Geospatial Data d) Attribute Data

9) Which of the following is NOT a type of GIS data?
a) Field data b) Statistical data
c) Digital clock data d) Satellite data

10) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

11) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

12) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

13) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

14) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

SLR-QH-210

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

2) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

3) Which data model in DBMS organizes data as tables with rows and columns?
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c) Network model d) Object-oriented model

4) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

5) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

6) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

7) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

8) LULC stands for _____.
   a) Land Use and Land Change
   b) Land Utility and Land Control
   c) Land Use and Land Cover
   d) Land Underground Layer Control

9) The first step in a GIS project is _____.
   a) Database creation
   b) Understanding user requirements
   c) Map digitization
   d) Data conversion

10) DBMS stands for _____.
   a) Database Management System
   b) Database Monitoring System
   c) Database Manufacturing System
   d) Database Mixing Station

11) The scientist Roger Tomlinson who coined it was given _____ title.
   a) father of GIS
   b) father of Globe
   c) Doctorate
   d) None of the above

12) DEM stands for _____.
   a) Digital Elevation Meter
   b) Distance Elevation Model
   c) Digital Elevation Model
   d) Distance Elevation Meter

13) Data that describe the characteristics of spatial features is _____.
   a) Coverage
   b) Data Exploration
   c) Geospatial Data
   d) Attribute Data

14) Which of the following is NOT a type of GIS data?
   a) Field data
   b) Statistical data
   c) Digital clock data
   d) Satellite data

SLR-QH-210

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

SLR-QH-210

Seat No.		Set	P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) DBMS stands for _____.
a) Database Management System
b) Database Monitoring System
c) Database Manufacturing System
d) Database Mixing Station

2) The scientist Roger Tomlinson who coined it was given _____ title.
a) father of GIS b) father of Globe
c) Doctorate d) None of the above

3) DEM stands for _____.
a) Digital Elevation Meter b) Distance Elevation Model
c) Digital Elevation Model d) Distance Elevation Meter

4) Data that describe the characteristics of spatial features is _____.
a) Coverage b) Data Exploration
c) Geospatial Data d) Attribute Data

5) Which of the following is NOT a type of GIS data?
a) Field data b) Statistical data
c) Digital clock data d) Satellite data

6) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

7) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

8) Which data model in DBMS organizes data as tables with rows and columns?

a) Hierarchical model
b) Relational model
c) Network model
d) Object-oriented model

9) Run-length encoding is used for _____.

a) Audio compression
b) Spatial data format
c) Raster data compression
d) Command execution

10) Passive sensors detect _____.

a) Emitted energy only
b) Reflected sunlight
c) Radar pulses
d) Laser beams

11) A key characteristic of imaging systems that determines ground detail _____.

a) Temporal resolution
b) Spectral resolution
c) Spatial resolution
d) Atmospheric resolution

12) GIS helps update existing maps through _____.

a) Map matching
b) Map revision
c) Map printing
d) Data deletion

13) LULC stands for _____.

a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

14) The first step in a GIS project is _____.

a) Database creation
b) Understanding user requirements
c) Map digitization
d) Data conversion

SLR-QH-210

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.		Set	Q

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

2) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

3) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

4) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

5) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

6) LULC stands for _____.
a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

7) The first step in a GIS project is _____.
   a) Database creation
   b) Understanding user requirements
   c) Map digitization
   d) Data conversion

8) DBMS stands for _____.
   a) Database Management System
   b) Database Monitoring System
   c) Database Manufacturing System
   d) Database Mixing Station

9) The scientist Roger Tomlinson who coined it was given _____ title.
   a) father of GIS
   b) father of Globe
   c) Doctorate
   d) None of the above

10) DEM stands for _____.
   a) Digital Elevation Meter
   b) Distance Elevation Model
   c) Digital Elevation Model
   d) Distance Elevation Meter

11) Data that describe the characteristics of spatial features is _____.
   a) Coverage
   b) Data Exploration
   c) Geospatial Data
   d) Attribute Data

12) Which of the following is NOT a type of GIS data?
   a) Field data
   b) Statistical data
   c) Digital clock data
   d) Satellite data

13) Which format is used to store vector data in GIS?
   a) .shp
   b) .jpg
   c) .tif
   d) .bmp

14) Conversion of raster data to vector data called _____.
   a) Vectorisation
   b) Rasterisation
   c) Classification
   d) None of the above

SLR-QH-210

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.		Set	R

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

2) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

3) LULC stands for _____.
a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

4) The first step in a GIS project is _____.
a) Database creation
b) Understanding user requirements
c) Map digitization
d) Data conversion

5) DBMS stands for _____.
a) Database Management System
b) Database Monitoring System
c) Database Manufacturing System
d) Database Mixing Station

6) The scientist Roger Tomlinson who coined it was given _____ title.
a) father of GIS b) father of Globe
c) Doctorate d) None of the above

7) DEM stands for _____.
a) Digital Elevation Meter b) Distance Elevation Model
c) Digital Elevation Model d) Distance Elevation Meter

8) Data that describe the characteristics of spatial features is _____.
a) Coverage b) Data Exploration
c) Geospatial Data d) Attribute Data

9) Which of the following is NOT a type of GIS data?
a) Field data b) Statistical data
c) Digital clock data d) Satellite data

10) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

11) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

12) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

13) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

14) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

SLR-QH-210

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

2) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

3) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

4) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

5) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

6) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

7) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

8) LULC stands for _____.
   a) Land Use and Land Change
   b) Land Utility and Land Control
   c) Land Use and Land Cover
   d) Land Underground Layer Control

9) The first step in a GIS project is _____.
   a) Database creation
   b) Understanding user requirements
   c) Map digitization
   d) Data conversion

10) DBMS stands for _____.
   a) Database Management System
   b) Database Monitoring System
   c) Database Manufacturing System
   d) Database Mixing Station

11) The scientist Roger Tomlinson who coined it was given _____ title.
   a) father of GIS
   b) father of Globe
   c) Doctorate
   d) None of the above

12) DEM stands for _____.
   a) Digital Elevation Meter
   b) Distance Elevation Model
   c) Digital Elevation Model
   d) Distance Elevation Meter

13) Data that describe the characteristics of spatial features is _____.
   a) Coverage
   b) Data Exploration
   c) Geospatial Data
   d) Attribute Data

14) Which of the following is NOT a type of GIS data?
   a) Field data
   b) Statistical data
   c) Digital clock data
   d) Satellite data

SLR-QH-210

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

SLR-QH-210

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) DBMS stands for _____.
a) Database Management System
b) Database Monitoring System
c) Database Manufacturing System
d) Database Mixing Station

2) The scientist Roger Tomlinson who coined it was given _____ title.
a) father of GIS b) father of Globe
c) Doctorate d) None of the above

3) DEM stands for _____.
a) Digital Elevation Meter b) Distance Elevation Model
c) Digital Elevation Model d) Distance Elevation Meter

4) Data that describe the characteristics of spatial features is _____.
a) Coverage b) Data Exploration
c) Geospatial Data d) Attribute Data

5) Which of the following is NOT a type of GIS data?
a) Field data b) Statistical data
c) Digital clock data d) Satellite data

6) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

7) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

8) Which data model in DBMS organizes data as tables with rows and columns?

a) Hierarchical model
b) Relational model
c) Network model
d) Object-oriented model

9) Run-length encoding is used for _____.

a) Audio compression
b) Spatial data format
c) Raster data compression
d) Command execution

10) Passive sensors detect _____.

a) Emitted energy only
b) Reflected sunlight
c) Radar pulses
d) Laser beams

11) A key characteristic of imaging systems that determines ground detail _____.

a) Temporal resolution
b) Spectral resolution
c) Spatial resolution
d) Atmospheric resolution

12) GIS helps update existing maps through _____.

a) Map matching
b) Map revision
c) Map printing
d) Data deletion

13) LULC stands for _____.

a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

14) The first step in a GIS project is _____.

a) Database creation
b) Understanding user requirements
c) Map digitization
d) Data conversion

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

2) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

3) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

4) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

5) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

6) LULC stands for _____.
a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

7) The first step in a GIS project is _____.
   a) Database creation
   b) Understanding user requirements
   c) Map digitization
   d) Data conversion

8) DBMS stands for _____.
   a) Database Management System
   b) Database Monitoring System
   c) Database Manufacturing System
   d) Database Mixing Station

9) The scientist Roger Tomlinson who coined it was given _____ title.
   a) father of GIS
   b) father of Globe
   c) Doctorate
   d) None of the above

10) DEM stands for _____.
   a) Digital Elevation Meter
   b) Distance Elevation Model
   c) Digital Elevation Model
   d) Distance Elevation Meter

11) Data that describe the characteristics of spatial features is _____.
   a) Coverage
   b) Data Exploration
   c) Geospatial Data
   d) Attribute Data

12) Which of the following is NOT a type of GIS data?
   a) Field data
   b) Statistical data
   c) Digital clock data
   d) Satellite data

13) Which format is used to store vector data in GIS?
   a) .shp
   b) .jpg
   c) .tif
   d) .bmp

14) Conversion of raster data to vector data called _____.
   a) Vectorisation
   b) Rasterisation
   c) Classification
   d) None of the above

SLR-QH-210

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.		Set	R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

2) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

3) LULC stands for _____.
a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

4) The first step in a GIS project is _____.
a) Database creation
b) Understanding user requirements
c) Map digitization
d) Data conversion

5) DBMS stands for _____.
a) Database Management System
b) Database Monitoring System
c) Database Manufacturing System
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6) The scientist Roger Tomlinson who coined it was given _____ title.
a) father of GIS b) father of Globe
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7) DEM stands for _____.
a) Digital Elevation Meter b) Distance Elevation Model
c) Digital Elevation Model d) Distance Elevation Meter

8) Data that describe the characteristics of spatial features is _____.
a) Coverage b) Data Exploration
c) Geospatial Data d) Attribute Data

9) Which of the following is NOT a type of GIS data?
a) Field data b) Statistical data
c) Digital clock data d) Satellite data

10) Which format is used to store vector data in GIS?
a) .shp b) .jpg
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11) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

12) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

13) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

14) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

SLR-QH-210

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

2) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

3) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

4) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

5) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

6) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

7) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

8) LULC stands for _____.
   a) Land Use and Land Change
   b) Land Utility and Land Control
   c) Land Use and Land Cover
   d) Land Underground Layer Control

9) The first step in a GIS project is _____.
   a) Database creation
   b) Understanding user requirements
   c) Map digitization
   d) Data conversion

10) DBMS stands for _____.
   a) Database Management System
   b) Database Monitoring System
   c) Database Manufacturing System
   d) Database Mixing Station

11) The scientist Roger Tomlinson who coined it was given _____ title.
   a) father of GIS
   b) father of Globe
   c) Doctorate
   d) None of the above

12) DEM stands for _____.
   a) Digital Elevation Meter
   b) Distance Elevation Model
   c) Digital Elevation Model
   d) Distance Elevation Meter

13) Data that describe the characteristics of spatial features is _____.
   a) Coverage
   b) Data Exploration
   c) Geospatial Data
   d) Attribute Data

14) Which of the following is NOT a type of GIS data?
   a) Field data
   b) Statistical data
   c) Digital clock data
   d) Satellite data

SLR-QH-210

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

SLR-QH-210

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) DBMS stands for _____.
a) Database Management System
b) Database Monitoring System
c) Database Manufacturing System
d) Database Mixing Station

2) The scientist Roger Tomlinson who coined it was given _____ title.
a) father of GIS b) father of Globe
c) Doctorate d) None of the above

3) DEM stands for _____.
a) Digital Elevation Meter b) Distance Elevation Model
c) Digital Elevation Model d) Distance Elevation Meter

4) Data that describe the characteristics of spatial features is _____.
a) Coverage b) Data Exploration
c) Geospatial Data d) Attribute Data

5) Which of the following is NOT a type of GIS data?
a) Field data b) Statistical data
c) Digital clock data d) Satellite data

6) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

7) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

8) Which data model in DBMS organizes data as tables with rows and columns?

a) Hierarchical model
b) Relational model
c) Network model
d) Object-oriented model

9) Run-length encoding is used for _____.

a) Audio compression
b) Spatial data format
c) Raster data compression
d) Command execution

10) Passive sensors detect _____.

a) Emitted energy only
b) Reflected sunlight
c) Radar pulses
d) Laser beams

11) A key characteristic of imaging systems that determines ground detail _____.

a) Temporal resolution
b) Spectral resolution
c) Spatial resolution
d) Atmospheric resolution

12) GIS helps update existing maps through _____.

a) Map matching
b) Map revision
c) Map printing
d) Data deletion

13) LULC stands for _____.

a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

14) The first step in a GIS project is _____.

a) Database creation
b) Understanding user requirements
c) Map digitization
d) Data conversion

SLR-QH-210

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

2) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

3) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

4) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

5) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

6) LULC stands for _____.
a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

7) The first step in a GIS project is _____.
   a) Database creation
   b) Understanding user requirements
   c) Map digitization
   d) Data conversion

8) DBMS stands for _____.
   a) Database Management System
   b) Database Monitoring System
   c) Database Manufacturing System
   d) Database Mixing Station

9) The scientist Roger Tomlinson who coined it was given _____ title.
   a) father of GIS
   b) father of Globe
   c) Doctorate
   d) None of the above

10) DEM stands for _____.
   a) Digital Elevation Meter
   b) Distance Elevation Model
   c) Digital Elevation Model
   d) Distance Elevation Meter

11) Data that describe the characteristics of spatial features is _____.
   a) Coverage
   b) Data Exploration
   c) Geospatial Data
   d) Attribute Data

12) Which of the following is NOT a type of GIS data?
   a) Field data
   b) Statistical data
   c) Digital clock data
   d) Satellite data

13) Which format is used to store vector data in GIS?
   a) .shp
   b) .jpg
   c) .tif
   d) .bmp

14) Conversion of raster data to vector data called _____.
   a) Vectorisation
   b) Rasterisation
   c) Classification
   d) None of the above

SLR-QH-210

Seat No.		Set	Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

SLR-QH-210

Seat No.		Set	R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

2) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

3) LULC stands for _____.
a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
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4) The first step in a GIS project is _____.
a) Database creation
b) Understanding user requirements
c) Map digitization
d) Data conversion

5) DBMS stands for _____.
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12) Which data model in DBMS organizes data as tables with rows and columns?
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13) Run-length encoding is used for _____.
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c) Raster data compression d) Command execution

14) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

SLR-QH-210

Seat No.		Set	R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

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Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

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Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data whenever needed & mention it clearly.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) Which format is used to store vector data in GIS?
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6) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
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7) GIS helps update existing maps through _____.
a) Map matching b) Map revision
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8) LULC stands for _____.
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9) The first step in a GIS project is _____.
   a) Database creation
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   d) None of the above

12) DEM stands for _____.
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   b) Distance Elevation Model
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13) Data that describe the characteristics of spatial features is _____.
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14) Which of the following is NOT a type of GIS data?
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SLR-QH-210

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Draw neat sketches wherever necessary.
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Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
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c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

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d) Discuss GIS applications in municipal and urban planning.

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SLR-QH-210

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
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Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) DBMS stands for _____.
a) Database Management System
b) Database Monitoring System
c) Database Manufacturing System
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2) The scientist Roger Tomlinson who coined it was given _____ title.
a) father of GIS b) father of Globe
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3) DEM stands for _____.
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4) Data that describe the characteristics of spatial features is _____.
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c) Land Use and Land Cover
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a) Database creation
b) Understanding user requirements
c) Map digitization
d) Data conversion

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

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a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

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e) Explain the phases involved in GIS project planning.

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a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

2) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

3) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

4) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

5) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

6) LULC stands for _____.
a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

7) The first step in a GIS project is _____.
   a) Database creation
   b) Understanding user requirements
   c) Map digitization
   d) Data conversion

8) DBMS stands for _____.
   a) Database Management System
   b) Database Monitoring System
   c) Database Manufacturing System
   d) Database Mixing Station

9) The scientist Roger Tomlinson who coined it was given _____ title.
   a) father of GIS
   b) father of Globe
   c) Doctorate
   d) None of the above

10) DEM stands for _____.
   a) Digital Elevation Meter
   b) Distance Elevation Model
   c) Digital Elevation Model
   d) Distance Elevation Meter

11) Data that describe the characteristics of spatial features is _____.
   a) Coverage
   b) Data Exploration
   c) Geospatial Data
   d) Attribute Data

12) Which of the following is NOT a type of GIS data?
   a) Field data
   b) Statistical data
   c) Digital clock data
   d) Satellite data

13) Which format is used to store vector data in GIS?
   a) .shp
   b) .jpg
   c) .tif
   d) .bmp

14) Conversion of raster data to vector data called _____.
   a) Vectorisation
   b) Rasterisation
   c) Classification
   d) None of the above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.		Set	R

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

2) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

3) LULC stands for _____.
a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

4) The first step in a GIS project is _____.
a) Database creation
b) Understanding user requirements
c) Map digitization
d) Data conversion

5) DBMS stands for _____.
a) Database Management System
b) Database Monitoring System
c) Database Manufacturing System
d) Database Mixing Station

6) The scientist Roger Tomlinson who coined it was given _____ title.
a) father of GIS b) father of Globe
c) Doctorate d) None of the above

7) DEM stands for _____.
a) Digital Elevation Meter b) Distance Elevation Model
c) Digital Elevation Model d) Distance Elevation Meter

8) Data that describe the characteristics of spatial features is _____.
a) Coverage b) Data Exploration
c) Geospatial Data d) Attribute Data

9) Which of the following is NOT a type of GIS data?
a) Field data b) Statistical data
c) Digital clock data d) Satellite data

10) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

11) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

12) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

13) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

14) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

2) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

3) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

4) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

5) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

6) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

7) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

8) LULC stands for _____.
   a) Land Use and Land Change
   b) Land Utility and Land Control
   c) Land Use and Land Cover
   d) Land Underground Layer Control

9) The first step in a GIS project is _____.
   a) Database creation
   b) Understanding user requirements
   c) Map digitization
   d) Data conversion

10) DBMS stands for _____.
   a) Database Management System
   b) Database Monitoring System
   c) Database Manufacturing System
   d) Database Mixing Station

11) The scientist Roger Tomlinson who coined it was given _____ title.
   a) father of GIS
   b) father of Globe
   c) Doctorate
   d) None of the above

12) DEM stands for _____.
   a) Digital Elevation Meter
   b) Distance Elevation Model
   c) Digital Elevation Model
   d) Distance Elevation Meter

13) Data that describe the characteristics of spatial features is _____.
   a) Coverage
   b) Data Exploration
   c) Geospatial Data
   d) Attribute Data

14) Which of the following is NOT a type of GIS data?
   a) Field data
   b) Statistical data
   c) Digital clock data
   d) Satellite data

SLR-QH-210

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

SLR-QH-210

Seat No.		Set	P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) DBMS stands for _____.
a) Database Management System
b) Database Monitoring System
c) Database Manufacturing System
d) Database Mixing Station

2) The scientist Roger Tomlinson who coined it was given _____ title.
a) father of GIS b) father of Globe
c) Doctorate d) None of the above

3) DEM stands for _____.
a) Digital Elevation Meter b) Distance Elevation Model
c) Digital Elevation Model d) Distance Elevation Meter

4) Data that describe the characteristics of spatial features is _____.
a) Coverage b) Data Exploration
c) Geospatial Data d) Attribute Data

5) Which of the following is NOT a type of GIS data?
a) Field data b) Statistical data
c) Digital clock data d) Satellite data

6) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

7) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

8) Which data model in DBMS organizes data as tables with rows and columns?

a) Hierarchical model
b) Relational model
c) Network model
d) Object-oriented model

9) Run-length encoding is used for _____.

a) Audio compression
b) Spatial data format
c) Raster data compression
d) Command execution

10) Passive sensors detect _____.

a) Emitted energy only
b) Reflected sunlight
c) Radar pulses
d) Laser beams

11) A key characteristic of imaging systems that determines ground detail _____.

a) Temporal resolution
b) Spectral resolution
c) Spatial resolution
d) Atmospheric resolution

12) GIS helps update existing maps through _____.

a) Map matching
b) Map revision
c) Map printing
d) Data deletion

13) LULC stands for _____.

a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

14) The first step in a GIS project is _____.

a) Database creation
b) Understanding user requirements
c) Map digitization
d) Data conversion

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

2) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

3) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

4) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

5) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

6) LULC stands for _____.
a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

7) The first step in a GIS project is _____.
   a) Database creation
   b) Understanding user requirements
   c) Map digitization
   d) Data conversion

8) DBMS stands for _____.
   a) Database Management System
   b) Database Monitoring System
   c) Database Manufacturing System
   d) Database Mixing Station

9) The scientist Roger Tomlinson who coined it was given _____ title.
   a) father of GIS
   b) father of Globe
   c) Doctorate
   d) None of the above

10) DEM stands for _____.
   a) Digital Elevation Meter
   b) Distance Elevation Model
   c) Digital Elevation Model
   d) Distance Elevation Meter

11) Data that describe the characteristics of spatial features is _____.
   a) Coverage
   b) Data Exploration
   c) Geospatial Data
   d) Attribute Data

12) Which of the following is NOT a type of GIS data?
   a) Field data
   b) Statistical data
   c) Digital clock data
   d) Satellite data

13) Which format is used to store vector data in GIS?
   a) .shp
   b) .jpg
   c) .tif
   d) .bmp

14) Conversion of raster data to vector data called _____.
   a) Vectorisation
   b) Rasterisation
   c) Classification
   d) None of the above

SLR-QH-210

Seat No.		Set	Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.		Set	R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

2) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

3) LULC stands for _____.
a) Land Use and Land Change
b) Land Utility and Land Control
c) Land Use and Land Cover
d) Land Underground Layer Control

4) The first step in a GIS project is _____.
a) Database creation
b) Understanding user requirements
c) Map digitization
d) Data conversion

5) DBMS stands for _____.
a) Database Management System
b) Database Monitoring System
c) Database Manufacturing System
d) Database Mixing Station

6) The scientist Roger Tomlinson who coined it was given _____ title.
a) father of GIS b) father of Globe
c) Doctorate d) None of the above

7) DEM stands for _____.
a) Digital Elevation Meter b) Distance Elevation Model
c) Digital Elevation Model d) Distance Elevation Meter

8) Data that describe the characteristics of spatial features is _____.
a) Coverage b) Data Exploration
c) Geospatial Data d) Attribute Data

9) Which of the following is NOT a type of GIS data?
a) Field data b) Statistical data
c) Digital clock data d) Satellite data

10) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

11) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

12) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

13) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

14) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.
5) Draw neat sketches wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Solve following Multiple Choice Questions. **14**

1) Which format is used to store vector data in GIS?
a) .shp b) .jpg
c) .tif d) .bmp

2) Conversion of raster data to vector data called _____.
a) Vectorisation b) Rasterisation
c) Classification d) None of the above

3) Which data model in DBMS organizes data as tables with rows and columns?
a) Hierarchical model b) Relational model
c) Network model d) Object-oriented model

4) Run-length encoding is used for _____.
a) Audio compression b) Spatial data format
c) Raster data compression d) Command execution

5) Passive sensors detect _____.
a) Emitted energy only b) Reflected sunlight
c) Radar pulses d) Laser beams

6) A key characteristic of imaging systems that determines ground detail _____.
a) Temporal resolution b) Spectral resolution
c) Spatial resolution d) Atmospheric resolution

7) GIS helps update existing maps through _____.
a) Map matching b) Map revision
c) Map printing d) Data deletion

8) LULC stands for _____.
   a) Land Use and Land Change
   b) Land Utility and Land Control
   c) Land Use and Land Cover
   d) Land Underground Layer Control

9) The first step in a GIS project is _____.
   a) Database creation
   b) Understanding user requirements
   c) Map digitization
   d) Data conversion

10) DBMS stands for _____.
   a) Database Management System
   b) Database Monitoring System
   c) Database Manufacturing System
   d) Database Mixing Station

11) The scientist Roger Tomlinson who coined it was given _____ title.
   a) father of GIS
   b) father of Globe
   c) Doctorate
   d) None of the above

12) DEM stands for _____.
   a) Digital Elevation Meter
   b) Distance Elevation Model
   c) Digital Elevation Model
   d) Distance Elevation Meter

13) Data that describe the characteristics of spatial features is _____.
   a) Coverage
   b) Data Exploration
   c) Geospatial Data
   d) Attribute Data

14) Which of the following is NOT a type of GIS data?
   a) Field data
   b) Statistical data
   c) Digital clock data
   d) Satellite data

SLR-QH-210

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Introduction to Geographic Information System (CIVMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat sketches wherever necessary.
4) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Solve following. (Any Four) **16**

a) Define GIS and explain its need and importance in Civil Engineering.

b) Define the following terms:
i) Map Scale ii) Topology

c) List and explain the various sources of data used in GIS.

d) Write a short note on:
i) Query in GIS ii) Buffer in GIS

e) What is Rasterization? Explain steps involved in Rasterization.

Q.3 Solve following. (Any Two) **12**

a) Discuss in detail applications of GIS.

b) Explain GIS plugins, their applications, advantages, and limitations.

c) Explain map overlay and write a short note on raster map overlay.

Section – II

Q.4 Solve following. (Any Four) **16**

a) Describe how metric and descriptive information is extracted from remotely sensed images.

b) Write a short note on satellite image interpretation for GIS applications.

c) Explain the use of GIS in archeological studies.

d) Discuss GIS applications in municipal and urban planning.

e) Explain the phases involved in GIS project planning.

Q.5 Solve following. (Any Two) **12**

a) Explain the process and stages of Remote sensing with neat sketch.

b) Explain integration of remote sensing and GIS with suitable examples.

c) Explain various specifications to be considered during GIS project planning.

SLR-QH-211

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius b) Atomic Packing Fraction
c) Coordination Number d) Lattice Parameter

2) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52 b) 0.68
c) 0.74 d) 0.3

3) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line b) Liquidus Line
c) Tie Line d) Solidus Line

4) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C b) 912 C
c) 723 C d) 600 C

5) Pearlite is a combination of _____.
a) Austenite + Cementite b) Ferrite + Cementite
c) Austenite + Ferrite d) Martensite + Bainite

6) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

7) Brass is an alloy of _____.
a) Copper and Tin
b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

8) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

9) Babbitt metal is commonly used for _____.
a) Cutting tools
b) Bearings
c) Pressure vessels
d) Gear wheels

10) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

11) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization
b) Crystallization
c) Annealing
d) Vulcanization

12) Ceramics generally exhibit which type of bonding?
a) Metallic
b) Covalent and ionic
c) Hydrogen
d) Van der Waals

13) Glass is considered a _____.
a) Fully crystalline solid
b) Metallic material
c) Amorphous ceramic
d) Polycrystalline alloy

14) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

SLR-QH-211

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

2) Babbitt metal is commonly used for _____.
a) Cutting tools b) Bearings
c) Pressure vessels d) Gear wheels

3) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

4) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization b) Crystallization
c) Annealing d) Vulcanization

5) Ceramics generally exhibit which type of bonding?
a) Metallic b) Covalent and ionic
c) Hydrogen d) Van der Waals

6) Glass is considered a _____.
a) Fully crystalline solid b) Metallic material
c) Amorphous ceramic d) Polycrystalline alloy

7) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

8) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius
b) Atomic Packing Fraction
c) Coordination Number
d) Lattice Parameter

9) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52
b) 0.68
c) 0.74
d) 0.3

10) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line
b) Liquidus Line
c) Tie Line
d) Solidus Line

11) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C
b) 912 C
c) 723 C
d) 600 C

12) Pearlite is a combination of _____.
a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

13) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

14) Brass is an alloy of _____.
a) Copper and Tin
b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization b) Crystallization
c) Annealing d) Vulcanization

2) Ceramics generally exhibit which type of bonding?
a) Metallic b) Covalent and ionic
c) Hydrogen d) Van der Waals

3) Glass is considered a _____.
a) Fully crystalline solid b) Metallic material
c) Amorphous ceramic d) Polycrystalline alloy

4) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite b) Polymer composite
c) Metal matrix composite d) Nano material

5) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius b) Atomic Packing Fraction
c) Coordination Number d) Lattice Parameter

6) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52 b) 0.68
c) 0.74 d) 0.3

7) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line
b) Liquidus Line
c) Tie Line
d) Solidus Line

8) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C
b) 912 C
c) 723 C
d) 600 C

9) Pearlite is a combination of _____.
a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

10) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

11) Brass is an alloy of _____.
a) Copper and Tin
b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

12) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

13) Babbitt metal is commonly used for _____.
a) Cutting tools
b) Bearings
c) Pressure vessels
d) Gear wheels

14) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

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b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

2) Brass is an alloy of _____.
a) Copper and Tin b) Copper and Zinc
c) Copper and Aluminum d) Copper and Nickel

3) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

4) Babbitt metal is commonly used for _____.
a) Cutting tools b) Bearings
c) Pressure vessels d) Gear wheels

5) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

6) The process of adding sulfur to rubber to improve elasticity is called _____.

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b) Crystallization
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7) Ceramics generally exhibit which type of bonding?

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8) Glass is considered a _____.

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Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

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Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

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b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

SLR-QH-211

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius b) Atomic Packing Fraction
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a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

Seat No.	

Set | P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

2) Babbitt metal is commonly used for _____.
a) Cutting tools b) Bearings
c) Pressure vessels d) Gear wheels

3) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

4) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization b) Crystallization
c) Annealing d) Vulcanization

5) Ceramics generally exhibit which type of bonding?
a) Metallic b) Covalent and ionic
c) Hydrogen d) Van der Waals

6) Glass is considered a _____.
a) Fully crystalline solid b) Metallic material
c) Amorphous ceramic d) Polycrystalline alloy

7) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

8) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius
b) Atomic Packing Fraction
c) Coordination Number
d) Lattice Parameter

9) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52
b) 0.68
c) 0.74
d) 0.3

10) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line
b) Liquidus Line
c) Tie Line
d) Solidus Line

11) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C
b) 912 C
c) 723 C
d) 600 C

12) Pearlite is a combination of _____.
a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

13) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

14) Brass is an alloy of _____.
a) Copper and Tin
b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization b) Crystallization
c) Annealing d) Vulcanization

2) Ceramics generally exhibit which type of bonding?
a) Metallic b) Covalent and ionic
c) Hydrogen d) Van der Waals

3) Glass is considered a _____.
a) Fully crystalline solid b) Metallic material
c) Amorphous ceramic d) Polycrystalline alloy

4) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite b) Polymer composite
c) Metal matrix composite d) Nano material

5) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius b) Atomic Packing Fraction
c) Coordination Number d) Lattice Parameter

6) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52 b) 0.68
c) 0.74 d) 0.3

7) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line
b) Liquidus Line
c) Tie Line
d) Solidus Line

8) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C
b) 912 C
c) 723 C
d) 600 C

9) Pearlite is a combination of _____.
a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

10) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

11) Brass is an alloy of _____.
a) Copper and Tin
b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

12) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

13) Babbitt metal is commonly used for _____.
a) Cutting tools
b) Bearings
c) Pressure vessels
d) Gear wheels

14) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

2) Brass is an alloy of _____.
a) Copper and Tin b) Copper and Zinc
c) Copper and Aluminum d) Copper and Nickel

3) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

4) Babbitt metal is commonly used for _____.
a) Cutting tools b) Bearings
c) Pressure vessels d) Gear wheels

5) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

6) The process of adding sulfur to rubber to improve elasticity is called _____.

a) Polymerization
b) Crystallization
c) Annealing
d) Vulcanization

7) Ceramics generally exhibit which type of bonding?

a) Metallic
b) Covalent and ionic
c) Hydrogen
d) Van der Waals

8) Glass is considered a _____.

a) Fully crystalline solid
b) Metallic material
c) Amorphous ceramic
d) Polycrystalline alloy

9) Carbon fiber reinforced polymer (CFRP) is an example of _____.

a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

10) The number of nearest neighboring atoms surrounding a given atom is called _____.

a) Atomic Radius
b) Atomic Packing Fraction
c) Coordination Number
d) Lattice Parameter

11) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.

a) 0.52
b) 0.68
c) 0.74
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12) The line that separates liquid and solid phases on a phase diagram is called _____.

a) Eutectic line
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13) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.

a) 1147 C
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14) Pearlite is a combination of _____.

a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
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iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

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Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

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Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius b) Atomic Packing Fraction
c) Coordination Number d) Lattice Parameter

2) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52 b) 0.68
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3) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line b) Liquidus Line
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4) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
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5) Pearlite is a combination of _____.
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c) Austenite + Ferrite d) Martensite + Bainite

6) HSLA steels are mainly developed to improve _____.
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b) High strength and low alloying
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7) Brass is an alloy of _____.
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d) Copper and Nickel

8) The main strengthening mechanism in precipitation hardening is _____.
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b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

9) Babbitt metal is commonly used for _____.
a) Cutting tools
b) Bearings
c) Pressure vessels
d) Gear wheels

10) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

11) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization
b) Crystallization
c) Annealing
d) Vulcanization

12) Ceramics generally exhibit which type of bonding?
a) Metallic
b) Covalent and ionic
c) Hydrogen
d) Van der Waals

13) Glass is considered a _____.
a) Fully crystalline solid
b) Metallic material
c) Amorphous ceramic
d) Polycrystalline alloy

14) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

Seat No.	

Set | P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
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4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

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Q.4 Write Short Notes on. (Any Two)

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iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

2) Babbitt metal is commonly used for _____.
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3) Thermosetting polymers become _____.
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6) Glass is considered a _____.
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8) The number of nearest neighboring atoms surrounding a given atom is called _____.
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a) Eutectic line
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11) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C
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c) 723 C
d) 600 C

12) Pearlite is a combination of _____.
a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

13) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

14) Brass is an alloy of _____.
a) Copper and Tin
b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization b) Crystallization
c) Annealing d) Vulcanization

2) Ceramics generally exhibit which type of bonding?
a) Metallic b) Covalent and ionic
c) Hydrogen d) Van der Waals

3) Glass is considered a _____.
a) Fully crystalline solid b) Metallic material
c) Amorphous ceramic d) Polycrystalline alloy

4) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite b) Polymer composite
c) Metal matrix composite d) Nano material

5) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius b) Atomic Packing Fraction
c) Coordination Number d) Lattice Parameter

6) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52 b) 0.68
c) 0.74 d) 0.3

7) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line
b) Liquidus Line
c) Tie Line
d) Solidus Line

8) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C
b) 912 C
c) 723 C
d) 600 C

9) Pearlite is a combination of _____.
a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

10) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

11) Brass is an alloy of _____.
a) Copper and Tin
b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

12) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

13) Babbitt metal is commonly used for _____.
a) Cutting tools
b) Bearings
c) Pressure vessels
d) Gear wheels

14) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

2) Brass is an alloy of _____.
a) Copper and Tin b) Copper and Zinc
c) Copper and Aluminum d) Copper and Nickel

3) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

4) Babbitt metal is commonly used for _____.
a) Cutting tools b) Bearings
c) Pressure vessels d) Gear wheels

5) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

6) The process of adding sulfur to rubber to improve elasticity is called _____.

a) Polymerization
b) Crystallization
c) Annealing
d) Vulcanization

7) Ceramics generally exhibit which type of bonding?

a) Metallic
b) Covalent and ionic
c) Hydrogen
d) Van der Waals

8) Glass is considered a _____.

a) Fully crystalline solid
b) Metallic material
c) Amorphous ceramic
d) Polycrystalline alloy

9) Carbon fiber reinforced polymer (CFRP) is an example of _____.

a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

10) The number of nearest neighboring atoms surrounding a given atom is called _____.

a) Atomic Radius
b) Atomic Packing Fraction
c) Coordination Number
d) Lattice Parameter

11) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.

a) 0.52
b) 0.68
c) 0.74
d) 0.3

12) The line that separates liquid and solid phases on a phase diagram is called _____.

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b) Liquidus Line
c) Tie Line
d) Solidus Line

13) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.

a) 1147 C
b) 912 C
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d) 600 C

14) Pearlite is a combination of _____.

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b) Ferrite + Cementite
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Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
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iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

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Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius b) Atomic Packing Fraction
c) Coordination Number d) Lattice Parameter

2) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52 b) 0.68
c) 0.74 d) 0.3

3) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line b) Liquidus Line
c) Tie Line d) Solidus Line

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5) Pearlite is a combination of _____.
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c) Austenite + Ferrite d) Martensite + Bainite

6) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

7) Brass is an alloy of _____.
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b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

8) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

9) Babbitt metal is commonly used for _____.
a) Cutting tools
b) Bearings
c) Pressure vessels
d) Gear wheels

10) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

11) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization
b) Crystallization
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d) Vulcanization

12) Ceramics generally exhibit which type of bonding?
a) Metallic
b) Covalent and ionic
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13) Glass is considered a _____.
a) Fully crystalline solid
b) Metallic material
c) Amorphous ceramic
d) Polycrystalline alloy

14) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

2) Babbitt metal is commonly used for _____.
a) Cutting tools b) Bearings
c) Pressure vessels d) Gear wheels

3) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

4) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization b) Crystallization
c) Annealing d) Vulcanization

5) Ceramics generally exhibit which type of bonding?
a) Metallic b) Covalent and ionic
c) Hydrogen d) Van der Waals

6) Glass is considered a _____.
a) Fully crystalline solid b) Metallic material
c) Amorphous ceramic d) Polycrystalline alloy

7) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

8) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius
b) Atomic Packing Fraction
c) Coordination Number
d) Lattice Parameter

9) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
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b) 0.68
c) 0.74
d) 0.3

10) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line
b) Liquidus Line
c) Tie Line
d) Solidus Line

11) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C
b) 912 C
c) 723 C
d) 600 C

12) Pearlite is a combination of _____.
a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

13) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

14) Brass is an alloy of _____.
a) Copper and Tin
b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization b) Crystallization
c) Annealing d) Vulcanization

2) Ceramics generally exhibit which type of bonding?
a) Metallic b) Covalent and ionic
c) Hydrogen d) Van der Waals

3) Glass is considered a _____.
a) Fully crystalline solid b) Metallic material
c) Amorphous ceramic d) Polycrystalline alloy

4) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite b) Polymer composite
c) Metal matrix composite d) Nano material

5) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius b) Atomic Packing Fraction
c) Coordination Number d) Lattice Parameter

6) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52 b) 0.68
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7) The line that separates liquid and solid phases on a phase diagram is called _____.
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8) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C
b) 912 C
c) 723 C
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9) Pearlite is a combination of _____.
a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
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10) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
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d) Magnetic properties

11) Brass is an alloy of _____.
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b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

12) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

13) Babbitt metal is commonly used for _____.
a) Cutting tools
b) Bearings
c) Pressure vessels
d) Gear wheels

14) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

Seat No.	

Set | R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

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Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
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b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
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d) Lattice Parameter

11) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.

a) 0.52
b) 0.68
c) 0.74
d) 0.3

12) The line that separates liquid and solid phases on a phase diagram is called _____.

a) Eutectic line
b) Liquidus Line
c) Tie Line
d) Solidus Line

13) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.

a) 1147 C
b) 912 C
c) 723 C
d) 600 C

14) Pearlite is a combination of _____.

a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

SLR-QH-211

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius b) Atomic Packing Fraction
c) Coordination Number d) Lattice Parameter

2) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52 b) 0.68
c) 0.74 d) 0.3

3) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line b) Liquidus Line
c) Tie Line d) Solidus Line

4) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C b) 912 C
c) 723 C d) 600 C

5) Pearlite is a combination of _____.
a) Austenite + Cementite b) Ferrite + Cementite
c) Austenite + Ferrite d) Martensite + Bainite

6) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

7) Brass is an alloy of _____.
a) Copper and Tin
b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

8) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

9) Babbitt metal is commonly used for _____.
a) Cutting tools
b) Bearings
c) Pressure vessels
d) Gear wheels

10) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

11) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization
b) Crystallization
c) Annealing
d) Vulcanization

12) Ceramics generally exhibit which type of bonding?
a) Metallic
b) Covalent and ionic
c) Hydrogen
d) Van der Waals

13) Glass is considered a _____.
a) Fully crystalline solid
b) Metallic material
c) Amorphous ceramic
d) Polycrystalline alloy

14) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

Seat No.	

Set | P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

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a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

2) Babbitt metal is commonly used for _____.
a) Cutting tools b) Bearings
c) Pressure vessels d) Gear wheels

3) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

4) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization b) Crystallization
c) Annealing d) Vulcanization

5) Ceramics generally exhibit which type of bonding?
a) Metallic b) Covalent and ionic
c) Hydrogen d) Van der Waals

6) Glass is considered a _____.
a) Fully crystalline solid b) Metallic material
c) Amorphous ceramic d) Polycrystalline alloy

7) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

8) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius
b) Atomic Packing Fraction
c) Coordination Number
d) Lattice Parameter

9) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52
b) 0.68
c) 0.74
d) 0.3

10) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line
b) Liquidus Line
c) Tie Line
d) Solidus Line

11) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C
b) 912 C
c) 723 C
d) 600 C

12) Pearlite is a combination of _____.
a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

13) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

14) Brass is an alloy of _____.
a) Copper and Tin
b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization b) Crystallization
c) Annealing d) Vulcanization

2) Ceramics generally exhibit which type of bonding?
a) Metallic b) Covalent and ionic
c) Hydrogen d) Van der Waals

3) Glass is considered a _____.
a) Fully crystalline solid b) Metallic material
c) Amorphous ceramic d) Polycrystalline alloy

4) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite b) Polymer composite
c) Metal matrix composite d) Nano material

5) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius b) Atomic Packing Fraction
c) Coordination Number d) Lattice Parameter

6) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52 b) 0.68
c) 0.74 d) 0.3

7) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line
b) Liquidus Line
c) Tie Line
d) Solidus Line

8) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C
b) 912 C
c) 723 C
d) 600 C

9) Pearlite is a combination of _____.
a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

10) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

11) Brass is an alloy of _____.
a) Copper and Tin
b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

12) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

13) Babbitt metal is commonly used for _____.
a) Cutting tools
b) Bearings
c) Pressure vessels
d) Gear wheels

14) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

Seat No.	

Set | **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

2) Brass is an alloy of _____.
a) Copper and Tin b) Copper and Zinc
c) Copper and Aluminum d) Copper and Nickel

3) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

4) Babbitt metal is commonly used for _____.
a) Cutting tools b) Bearings
c) Pressure vessels d) Gear wheels

5) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

6) The process of adding sulfur to rubber to improve elasticity is called _____.

a) Polymerization
b) Crystallization
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7) Ceramics generally exhibit which type of bonding?

a) Metallic
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8) Glass is considered a _____.

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10) The number of nearest neighboring atoms surrounding a given atom is called _____.

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b) Atomic Packing Fraction
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d) Lattice Parameter

11) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.

a) 0.52
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a) 1147 C
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14) Pearlite is a combination of _____.

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Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
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b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

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c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

SLR-QH-211

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius b) Atomic Packing Fraction
c) Coordination Number d) Lattice Parameter

2) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
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a) Eutectic line b) Liquidus Line
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4) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
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10) Thermosetting polymers become _____.
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a) Fully crystalline solid
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14) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

Seat No.		Set	P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

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a) Write short notes on any two: **04**
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ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

2) Babbitt metal is commonly used for _____.
a) Cutting tools b) Bearings
c) Pressure vessels d) Gear wheels

3) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

4) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization b) Crystallization
c) Annealing d) Vulcanization

5) Ceramics generally exhibit which type of bonding?
a) Metallic b) Covalent and ionic
c) Hydrogen d) Van der Waals

6) Glass is considered a _____.
a) Fully crystalline solid b) Metallic material
c) Amorphous ceramic d) Polycrystalline alloy

7) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

8) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius
b) Atomic Packing Fraction
c) Coordination Number
d) Lattice Parameter

9) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52
b) 0.68
c) 0.74
d) 0.3

10) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line
b) Liquidus Line
c) Tie Line
d) Solidus Line

11) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C
b) 912 C
c) 723 C
d) 600 C

12) Pearlite is a combination of _____.
a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

13) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

14) Brass is an alloy of _____.
a) Copper and Tin
b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) The process of adding sulfur to rubber to improve elasticity is called _____.
a) Polymerization b) Crystallization
c) Annealing d) Vulcanization

2) Ceramics generally exhibit which type of bonding?
a) Metallic b) Covalent and ionic
c) Hydrogen d) Van der Waals

3) Glass is considered a _____.
a) Fully crystalline solid b) Metallic material
c) Amorphous ceramic d) Polycrystalline alloy

4) Carbon fiber reinforced polymer (CFRP) is an example of _____.
a) Ceramic composite b) Polymer composite
c) Metal matrix composite d) Nano material

5) The number of nearest neighboring atoms surrounding a given atom is called _____.
a) Atomic Radius b) Atomic Packing Fraction
c) Coordination Number d) Lattice Parameter

6) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.
a) 0.52 b) 0.68
c) 0.74 d) 0.3

7) The line that separates liquid and solid phases on a phase diagram is called _____.
a) Eutectic line
b) Liquidus Line
c) Tie Line
d) Solidus Line

8) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.
a) 1147 C
b) 912 C
c) 723 C
d) 600 C

9) Pearlite is a combination of _____.
a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

10) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

11) Brass is an alloy of _____.
a) Copper and Tin
b) Copper and Zinc
c) Copper and Aluminum
d) Copper and Nickel

12) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

13) Babbitt metal is commonly used for _____.
a) Cutting tools
b) Bearings
c) Pressure vessels
d) Gear wheels

14) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

Seat No.	

Set | R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) HSLA steels are mainly developed to improve _____.
a) Electrical conductivity
b) High strength and low alloying
c) Corrosion without coatings
d) Magnetic properties

2) Brass is an alloy of _____.
a) Copper and Tin b) Copper and Zinc
c) Copper and Aluminum d) Copper and Nickel

3) The main strengthening mechanism in precipitation hardening is _____.
a) Grain growth
b) Diffusion of carbon
c) Formation of fine precipitates
d) Work hardening

4) Babbitt metal is commonly used for _____.
a) Cutting tools b) Bearings
c) Pressure vessels d) Gear wheels

5) Thermosetting polymers become _____.
a) Soft on heating
b) Brittle on cooling
c) Permanently hard after curing
d) Recyclable easily

6) The process of adding sulfur to rubber to improve elasticity is called _____.

a) Polymerization
b) Crystallization
c) Annealing
d) Vulcanization

7) Ceramics generally exhibit which type of bonding?

a) Metallic
b) Covalent and ionic
c) Hydrogen
d) Van der Waals

8) Glass is considered a _____.

a) Fully crystalline solid
b) Metallic material
c) Amorphous ceramic
d) Polycrystalline alloy

9) Carbon fiber reinforced polymer (CFRP) is an example of _____.

a) Ceramic composite
b) Polymer composite
c) Metal matrix composite
d) Nano material

10) The number of nearest neighboring atoms surrounding a given atom is called _____.

a) Atomic Radius
b) Atomic Packing Fraction
c) Coordination Number
d) Lattice Parameter

11) For a BCC structure, the Atomic Packing Factor (APF) is approximately _____.

a) 0.52
b) 0.68
c) 0.74
d) 0.3

12) The line that separates liquid and solid phases on a phase diagram is called _____.

a) Eutectic line
b) Liquidus Line
c) Tie Line
d) Solidus Line

13) The eutectoid reaction in the Fe-Fe_3C diagram occurs at _____.

a) 1147 C
b) 912 C
c) 723 C
d) 600 C

14) Pearlite is a combination of _____.

a) Austenite + Cementite
b) Ferrite + Cementite
c) Austenite + Ferrite
d) Martensite + Bainite

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026

Fundamentals of Material Science and Engineering (MECHMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Draw neat and proper diagrams wherever necessary.
4) Make suitable assumptions if necessary and state them clearly.

Section – I

Q.2 Attempt Any Two Questions.

a) Explain the difference between unit cell and space lattice with neat sketches. **05**

b) What is the lever rule? Explain its significance in phase diagrams. **05**

c) Draw the Fe-Fe_3C equilibrium diagram and label the eutectic and eutectoid points. **05**

Q.3 Attempt Any Two Questions.

a) List and briefly explain the three steps in precipitation hardening. **05**

b) Explain the composition and applications of any two: Brass, Bronze, or Babbitt metal. **05**

c) Explain the Gibbs phase rule and calculate no. of degrees of freedom for pure metal and binary solid solution. **05**

Q.4 Write Short Notes on. (Any Two)

a) Write short notes on any two: **04**
i) HSLA steels,
ii) Invar steel,
iii) Spring steel

b) What is the difference between brass and bronze? Write two applications of each. **04**

c) What are the effects of adding alloying elements like Mn, Cr, and Ni to steel? **04**

Section – II

Q.5 Attempt Any Two Questions.

a) Differentiate between thermoplastic and thermosetting polymers with examples. **05**

b) Explain classification of ceramics. What are the different applications of ceramics in advanced technologies. **05**

c) Define electronic materials and give two examples and their uses. **05**

Q.6 Attempt Any Two Questions.

a) What are advanced ceramics? Explain their bonding and two important properties. **05**

b) Explain addition polymerization with one example. **05**

c) Explain the steps involved in preparation and characterization of ceramic powders. **05**

Q.7 Write Short Notes on. (Any Two)

a) What is crystallinity in polymers? How does it affect polymer properties? **04**

b) What are the main mechanical properties of ceramics? **04**

c) What are nanomaterials? Mention any four applications. **04**

SLR-QH-212

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

2) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

3) _____ is defined as "the discipline dealing with what is good and bad and with moral duty and obligation".
a) Rule b) Organization culture
c) Protocol d) Ethics

4) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power b) Authority
c) Post d) Leadership

5) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing b) Selling
c) Management d) Operations

6) _____ skills are the greatest importance at the supervisory level.
a) Intellectual b) Technical
c) Analytical d) Problem Solving

7) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

8) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

9) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

10) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

11) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

12) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

13) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

14) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain the system approach to management process.	**05**
	b)	Explain the functions of management.	**05**
Q.3	**a)**	What is planning? Explain steps in planning.	**05**
	b)	What are the types of organization structures? Explain any one with all details.	**04**
Q.4	**a)**	Define Leadership. Explain four extreme styles.	**05**
	b)	What is motivation? Explain Maslow's theory of motivation.	**04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing
b) Carrot & Stick theory
c) Methods of Departmentation
d) Types of communications
e) Decision making

Section – II

Q.6	**a)**	Define quality and state elements of quality.	**05**
	b)	Explain factors affecting quality of design & quality of conformance.	**05**
Q.7	**a)**	Explain types of production with their advantages & disadvantages.	**05**
	b)	What are the factors to improve productivity? Explain.	**04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

2) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

3) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

4) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

5) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

6) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

7) Which of the following process typically assumes a one-of-kind production output?

a) Job process
b) Project
c) Batch process
d) Flow process

8) _____ involves selecting missions and objectives and the actions to achieve them.

a) Planning
b) Mission
c) Strategy
d) Goals

9) At the _____, the conceptual and design abilities and human skills are especially valuable.

a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

10) _____ is defined as “the discipline dealing with what is good and bad and with moral duty and obligation”.

a) Rule
b) Organization culture
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d) Ethics

11) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.

a) Power
b) Authority
c) Post
d) Leadership

12) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.

a) Marketing
b) Selling
c) Management
d) Operations

13) _____ skills are the greatest importance at the supervisory level.

a) Intellectual
b) Technical
c) Analytical
d) Problem Solving

14) Which motivational theory considers mainly the ‘Hierarchy of needs’?

a) ‘X’ theory
b) ‘Y’ theory
c) Maslow theory
d) Carrot & Stick theory

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

2) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

3) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

4) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

5) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

6) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

7) _____ is defined as "the discipline dealing with what is good and bad and with moral duty and obligation".
a) Rule
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c) Protocol
d) Ethics

8) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power
b) Authority
c) Post
d) Leadership

9) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing
b) Selling
c) Management
d) Operations

10) _____ skills are the greatest importance at the supervisory level.
a) Intellectual
b) Technical
c) Analytical
d) Problem Solving

11) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory
b) 'Y' theory
c) Maslow theory
d) Carrot & Stick theory

12) Which of the following is not an element of management process?
a) Pricing
b) Staffing
c) Planning
d) Controlling

13) Human resource management emphasis _____.
a) Development of people
b) Punishment of people
c) Adoption of people
d) None of these

14) Quality is defined as the _____ for use.
a) Fitness
b) Standard
c) Requirement
d) Availability

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ skills are the greatest importance at the supervisory level.
a) Intellectual b) Technical
c) Analytical d) Problem Solving

2) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

3) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

4) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

5) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

6) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

7) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

8) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

9) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

10) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

11) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

12) _____ is defined as “the discipline dealing with what is good and bad and with moral duty and obligation”.
a) Rule b) Organization culture
c) Protocol d) Ethics

13) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power b) Authority
c) Post d) Leadership

14) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing b) Selling
c) Management d) Operations

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

SLR-QH-212

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

2) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

3) _____ is defined as "the discipline dealing with what is good and bad and with moral duty and obligation".
a) Rule b) Organization culture
c) Protocol d) Ethics

4) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power b) Authority
c) Post d) Leadership

5) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing b) Selling
c) Management d) Operations

6) _____ skills are the greatest importance at the supervisory level.
a) Intellectual b) Technical
c) Analytical d) Problem Solving

7) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

8) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

9) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

10) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

11) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

12) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

13) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

14) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2	**a)**	Explain the system approach to management process.	**05**
	b)	Explain the functions of management.	**05**
Q.3	**a)**	What is planning? Explain steps in planning.	**05**
	b)	What are the types of organization structures? Explain any one with all details.	**04**
Q.4	**a)**	Define Leadership. Explain four extreme styles.	**05**
	b)	What is motivation? Explain Maslow's theory of motivation.	**04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing
b) Carrot & Stick theory
c) Methods of Departmentation
d) Types of communications
e) Decision making

Section – II

Q.6	**a)**	Define quality and state elements of quality.	**05**
	b)	Explain factors affecting quality of design & quality of conformance.	**05**
Q.7	**a)**	Explain types of production with their advantages & disadvantages.	**05**
	b)	What are the factors to improve productivity? Explain.	**04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. **14**

1) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

2) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

3) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

4) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

5) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

6) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

7) Which of the following process typically assumes a one-of-kind production output?

a) Job process
b) Project
c) Batch process
d) Flow process

8) _____ involves selecting missions and objectives and the actions to achieve them.

a) Planning
b) Mission
c) Strategy
d) Goals

9) At the _____, the conceptual and design abilities and human skills are especially valuable.

a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

10) _____ is defined as “the discipline dealing with what is good and bad and with moral duty and obligation”.

a) Rule
b) Organization culture
c) Protocol
d) Ethics

11) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.

a) Power
b) Authority
c) Post
d) Leadership

12) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.

a) Marketing
b) Selling
c) Management
d) Operations

13) _____ skills are the greatest importance at the supervisory level.

a) Intellectual
b) Technical
c) Analytical
d) Problem Solving

14) Which motivational theory considers mainly the ‘Hierarchy of needs’?

a) ‘X’ theory
b) ‘Y’ theory
c) Maslow theory
d) Carrot & Stick theory

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

2) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

3) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

4) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

5) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

6) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

7) _____ is defined as "the discipline dealing with what is good and bad and with moral duty and obligation".
a) Rule
b) Organization culture
c) Protocol
d) Ethics

8) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power
b) Authority
c) Post
d) Leadership

9) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing
b) Selling
c) Management
d) Operations

10) _____ skills are the greatest importance at the supervisory level.
a) Intellectual
b) Technical
c) Analytical
d) Problem Solving

11) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory
b) 'Y' theory
c) Maslow theory
d) Carrot & Stick theory

12) Which of the following is not an element of management process?
a) Pricing
b) Staffing
c) Planning
d) Controlling

13) Human resource management emphasis _____.
a) Development of people
b) Punishment of people
c) Adoption of people
d) None of these

14) Quality is defined as the _____ for use.
a) Fitness
b) Standard
c) Requirement
d) Availability

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ skills are the greatest importance at the supervisory level.
a) Intellectual b) Technical
c) Analytical d) Problem Solving

2) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

3) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

4) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

5) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

6) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

7) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

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a) Dispatching b) Routing
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9) Which of the following process typically assumes a one-of-kind production output?
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c) Batch process d) Flow process

10) _____ involves selecting missions and objectives and the actions to achieve them.
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11) At the _____, the conceptual and design abilities and human skills are especially valuable.
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b) Top management level
c) Lower management level
d) All levels for an inelastic product

12) _____ is defined as “the discipline dealing with what is good and bad and with moral duty and obligation”.
a) Rule b) Organization culture
c) Protocol d) Ethics

13) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power b) Authority
c) Post d) Leadership

14) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing b) Selling
c) Management d) Operations

SLR-QH-212

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

SLR-QH-212

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

2) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

3) _____ is defined as "the discipline dealing with what is good and bad and with moral duty and obligation".
a) Rule b) Organization culture
c) Protocol d) Ethics

4) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power b) Authority
c) Post d) Leadership

5) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing b) Selling
c) Management d) Operations

6) _____ skills are the greatest importance at the supervisory level.
a) Intellectual b) Technical
c) Analytical d) Problem Solving

7) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

8) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

9) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

10) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

11) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

12) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

13) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

14) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

Seat No.	

Set | P

S.Y. (B.Tech.) (Electronics & Computer Engineering (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. **14**

1) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

2) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

3) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

4) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

5) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

6) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

7) Which of the following process typically assumes a one-of-kind production output?

a) Job process
b) Project
c) Batch process
d) Flow process

8) _____ involves selecting missions and objectives and the actions to achieve them.

a) Planning
b) Mission
c) Strategy
d) Goals

9) At the _____, the conceptual and design abilities and human skills are especially valuable.

a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

10) _____ is defined as “the discipline dealing with what is good and bad and with moral duty and obligation”.

a) Rule
b) Organization culture
c) Protocol
d) Ethics

11) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.

a) Power
b) Authority
c) Post
d) Leadership

12) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.

a) Marketing
b) Selling
c) Management
d) Operations

13) _____ skills are the greatest importance at the supervisory level.

a) Intellectual
b) Technical
c) Analytical
d) Problem Solving

14) Which motivational theory considers mainly the ‘Hierarchy of needs’?

a) ‘X’ theory
b) ‘Y’ theory
c) Maslow theory
d) Carrot & Stick theory

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.		Set	R

S.Y. (B.Tech.) (Electronics & Computer Engineering (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

2) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

3) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

4) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

5) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

6) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

7) _____ is defined as "the discipline dealing with what is good and bad and with moral duty and obligation".
a) Rule
b) Organization culture
c) Protocol
d) Ethics

8) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power
b) Authority
c) Post
d) Leadership

9) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing
b) Selling
c) Management
d) Operations

10) _____ skills are the greatest importance at the supervisory level.
a) Intellectual
b) Technical
c) Analytical
d) Problem Solving

11) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory
b) 'Y' theory
c) Maslow theory
d) Carrot & Stick theory

12) Which of the following is not an element of management process?
a) Pricing
b) Staffing
c) Planning
d) Controlling

13) Human resource management emphasis _____.
a) Development of people
b) Punishment of people
c) Adoption of people
d) None of these

14) Quality is defined as the _____ for use.
a) Fitness
b) Standard
c) Requirement
d) Availability

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ skills are the greatest importance at the supervisory level.
a) Intellectual b) Technical
c) Analytical d) Problem Solving

2) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

3) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

4) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

5) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

6) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

7) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

8) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

9) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

10) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

11) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

12) _____ is defined as “the discipline dealing with what is good and bad and with moral duty and obligation”.
a) Rule b) Organization culture
c) Protocol d) Ethics

13) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power b) Authority
c) Post d) Leadership

14) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing b) Selling
c) Management d) Operations

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

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Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

2) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

3) _____ is defined as "the discipline dealing with what is good and bad and with moral duty and obligation".
a) Rule b) Organization culture
c) Protocol d) Ethics

4) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power b) Authority
c) Post d) Leadership

5) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing b) Selling
c) Management d) Operations

6) _____ skills are the greatest importance at the supervisory level.
a) Intellectual b) Technical
c) Analytical d) Problem Solving

7) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

8) Which of the following is not an element of management process?
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c) Planning d) Controlling

9) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

10) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

11) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

12) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
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13) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
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c) Expediting d) Estimating

14) Which of the following process typically assumes a one-of-kind production output?
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c) Batch process d) Flow process

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.		Set	Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

2) Human resource management emphasis _____.
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c) Adoption of people d) None of these

3) Quality is defined as the _____ for use.
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c) Minimizing Equipment Utilization
d) Increasing Production Downtime

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c) Lower management level
d) All levels for an inelastic product

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b) Technical
c) Analytical
d) Problem Solving

14) Which motivational theory considers mainly the ‘Hierarchy of needs’?

a) ‘X’ theory
b) ‘Y’ theory
c) Maslow theory
d) Carrot & Stick theory

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.		Set	R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

2) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

3) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

4) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

5) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

6) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

7) _____ is defined as "the discipline dealing with what is good and bad and with moral duty and obligation".
a) Rule
b) Organization culture
c) Protocol
d) Ethics

8) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power
b) Authority
c) Post
d) Leadership

9) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing
b) Selling
c) Management
d) Operations

10) _____ skills are the greatest importance at the supervisory level.
a) Intellectual
b) Technical
c) Analytical
d) Problem Solving

11) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory
b) 'Y' theory
c) Maslow theory
d) Carrot & Stick theory

12) Which of the following is not an element of management process?
a) Pricing
b) Staffing
c) Planning
d) Controlling

13) Human resource management emphasis _____.
a) Development of people
b) Punishment of people
c) Adoption of people
d) None of these

14) Quality is defined as the _____ for use.
a) Fitness
b) Standard
c) Requirement
d) Availability

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ skills are the greatest importance at the supervisory level.
a) Intellectual b) Technical
c) Analytical d) Problem Solving

2) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

3) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

4) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

5) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

6) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

7) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

8) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

9) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

10) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

11) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

12) _____ is defined as “the discipline dealing with what is good and bad and with moral duty and obligation”.
a) Rule b) Organization culture
c) Protocol d) Ethics

13) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power b) Authority
c) Post d) Leadership

14) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing b) Selling
c) Management d) Operations

SLR-QH-212

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

SLR-QH-212

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

2) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

3) _____ is defined as "the discipline dealing with what is good and bad and with moral duty and obligation".
a) Rule b) Organization culture
c) Protocol d) Ethics

4) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power b) Authority
c) Post d) Leadership

5) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing b) Selling
c) Management d) Operations

6) _____ skills are the greatest importance at the supervisory level.
a) Intellectual b) Technical
c) Analytical d) Problem Solving

7) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

8) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

9) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

10) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

11) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

12) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

13) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

14) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. **14**

1) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

2) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

3) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

4) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

5) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

6) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

7) Which of the following process typically assumes a one-of-kind production output?

a) Job process
b) Project
c) Batch process
d) Flow process

8) _____ involves selecting missions and objectives and the actions to achieve them.

a) Planning
b) Mission
c) Strategy
d) Goals

9) At the _____, the conceptual and design abilities and human skills are especially valuable.

a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

10) _____ is defined as “the discipline dealing with what is good and bad and with moral duty and obligation”.

a) Rule
b) Organization culture
c) Protocol
d) Ethics

11) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.

a) Power
b) Authority
c) Post
d) Leadership

12) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.

a) Marketing
b) Selling
c) Management
d) Operations

13) _____ skills are the greatest importance at the supervisory level.

a) Intellectual
b) Technical
c) Analytical
d) Problem Solving

14) Which motivational theory considers mainly the ‘Hierarchy of needs’?

a) ‘X’ theory
b) ‘Y’ theory
c) Maslow theory
d) Carrot & Stick theory

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.		Set	R

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

2) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

3) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

4) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

5) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

6) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

7) _____ is defined as "the discipline dealing with what is good and bad and with moral duty and obligation".
a) Rule
b) Organization culture
c) Protocol
d) Ethics

8) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power
b) Authority
c) Post
d) Leadership

9) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing
b) Selling
c) Management
d) Operations

10) _____ skills are the greatest importance at the supervisory level.
a) Intellectual
b) Technical
c) Analytical
d) Problem Solving

11) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory
b) 'Y' theory
c) Maslow theory
d) Carrot & Stick theory

12) Which of the following is not an element of management process?
a) Pricing
b) Staffing
c) Planning
d) Controlling

13) Human resource management emphasis _____.
a) Development of people
b) Punishment of people
c) Adoption of people
d) None of these

14) Quality is defined as the _____ for use.
a) Fitness
b) Standard
c) Requirement
d) Availability

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ skills are the greatest importance at the supervisory level.
a) Intellectual b) Technical
c) Analytical d) Problem Solving

2) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

3) Which of the following is not an element of management process?
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c) Planning d) Controlling

4) Human resource management emphasis _____.
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c) Adoption of people d) None of these

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c) Requirement d) Availability

6) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

7) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

8) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

9) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

10) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

11) At the _____, the conceptual and design abilities and human skills are especially valuable.
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b) Top management level
c) Lower management level
d) All levels for an inelastic product

12) _____ is defined as “the discipline dealing with what is good and bad and with moral duty and obligation”.
a) Rule b) Organization culture
c) Protocol d) Ethics

13) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power b) Authority
c) Post d) Leadership

14) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing b) Selling
c) Management d) Operations

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

SLR-QH-212

Seat No.		Set	P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

2) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

3) _____ is defined as "the discipline dealing with what is good and bad and with moral duty and obligation".
a) Rule b) Organization culture
c) Protocol d) Ethics

4) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power b) Authority
c) Post d) Leadership

5) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing b) Selling
c) Management d) Operations

6) _____ skills are the greatest importance at the supervisory level.
a) Intellectual b) Technical
c) Analytical d) Problem Solving

7) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

8) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

9) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

10) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

11) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

12) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

13) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

14) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.		Set	Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

2) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

3) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

4) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

5) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

6) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

7) Which of the following process typically assumes a one-of-kind production output?

a) Job process
b) Project
c) Batch process
d) Flow process

8) _____ involves selecting missions and objectives and the actions to achieve them.

a) Planning
b) Mission
c) Strategy
d) Goals

9) At the _____, the conceptual and design abilities and human skills are especially valuable.

a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

10) _____ is defined as “the discipline dealing with what is good and bad and with moral duty and obligation”.

a) Rule
b) Organization culture
c) Protocol
d) Ethics

11) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.

a) Power
b) Authority
c) Post
d) Leadership

12) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.

a) Marketing
b) Selling
c) Management
d) Operations

13) _____ skills are the greatest importance at the supervisory level.

a) Intellectual
b) Technical
c) Analytical
d) Problem Solving

14) Which motivational theory considers mainly the ‘Hierarchy of needs’?

a) ‘X’ theory
b) ‘Y’ theory
c) Maslow theory
d) Carrot & Stick theory

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

2) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

3) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

4) Which of the following process typically assumes a one-of-kind production output?
a) Job process b) Project
c) Batch process d) Flow process

5) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

6) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

7) _____ is defined as "the discipline dealing with what is good and bad and with moral duty and obligation".
a) Rule
b) Organization culture
c) Protocol
d) Ethics

8) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power
b) Authority
c) Post
d) Leadership

9) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing
b) Selling
c) Management
d) Operations

10) _____ skills are the greatest importance at the supervisory level.
a) Intellectual
b) Technical
c) Analytical
d) Problem Solving

11) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory
b) 'Y' theory
c) Maslow theory
d) Carrot & Stick theory

12) Which of the following is not an element of management process?
a) Pricing
b) Staffing
c) Planning
d) Controlling

13) Human resource management emphasis _____.
a) Development of people
b) Punishment of people
c) Adoption of people
d) None of these

14) Quality is defined as the _____ for use.
a) Fitness
b) Standard
c) Requirement
d) Availability

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answers from the given options. 14

1) _____ skills are the greatest importance at the supervisory level.
a) Intellectual b) Technical
c) Analytical d) Problem Solving

2) Which motivational theory considers mainly the 'Hierarchy of needs'?
a) 'X' theory b) 'Y' theory
c) Maslow theory d) Carrot & Stick theory

3) Which of the following is not an element of management process?
a) Pricing b) Staffing
c) Planning d) Controlling

4) Human resource management emphasis _____.
a) Development of people b) Punishment of people
c) Adoption of people d) None of these

5) Quality is defined as the _____ for use.
a) Fitness b) Standard
c) Requirement d) Availability

6) _____ leaders uses his or her power very little, if at all, giving subordinates a high degree of independence in their operations.
a) Autocratic b) Democratic
c) The free rein d) Ideal

7) Which of the following is a key objective of Production Planning and Control (PPC)?
a) Maximizing Employee Overtime
b) Optimizing Production Scheduling
c) Minimizing Equipment Utilization
d) Increasing Production Downtime

8) The process of dealing with production orders to initiate operations under the Production Planning and Control starts with _____.
a) Dispatching b) Routing
c) Expediting d) Estimating

9) Which of the following process typically assumes a one-of-kind production output?
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c) Batch process d) Flow process

10) _____ involves selecting missions and objectives and the actions to achieve them.
a) Planning b) Mission
c) Strategy d) Goals

11) At the _____, the conceptual and design abilities and human skills are especially valuable.
a) Middle management level
b) Top management level
c) Lower management level
d) All levels for an inelastic product

12) _____ is defined as “the discipline dealing with what is good and bad and with moral duty and obligation”.
a) Rule b) Organization culture
c) Protocol d) Ethics

13) _____ is the ability of individual or groups to induce or influence the beliefs or action of other persons or groups.
a) Power b) Authority
c) Post d) Leadership

14) _____ is the process of designing & maintaining an environment in which individuals, working together in groups, efficiently accomplish selected aims.
a) Marketing b) Selling
c) Management d) Operations

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Industrial Management (MECHMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) Question no. 2 is compulsory in section I, and solve any two questions from the remaining.
2) Question no. 6 is compulsory in section II, and solve any two questions from the remaining
3) Figures to the right indicates full marks.
4) Draw neat-labelled diagrams wherever necessary.
5) Use of log table and non-programmable calculator is allowed.

Section – I

Q.2 **a)** Explain the system approach to management process. **05**

b) Explain the functions of management. **05**

Q.3 **a)** What is planning? Explain steps in planning. **05**

b) What are the types of organization structures? Explain any one with all details. **04**

Q.4 **a)** Define Leadership. Explain four extreme styles. **05**

b) What is motivation? Explain Maslow's theory of motivation. **04**

Q.5 Write Short Notes. (Any Three) **09**

a) Ethics and social responsibility in Managing

b) Carrot & Stick theory

c) Methods of Departmentation

d) Types of communications

e) Decision making

Section – II

Q.6 **a)** Define quality and state elements of quality. **05**

b) Explain factors affecting quality of design & quality of conformance. **05**

Q.7 **a)** Explain types of production with their advantages & disadvantages. **05**

b) What are the factors to improve productivity? Explain. **04**

Q.8 **a)** Explain process of performance appraisal. **05**

b) What the challenges to HR professionals? **04**

Q.9 **Write Short Notes. (Any Three)** **09**

a) Training & Development in HRD

b) Dispatching

c) Benchmarking

d) Routing

e) Quality cost

SLR-QH-213

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

2) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

3) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

4) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

5) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

6) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

7) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____

a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

8) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?

a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

9) In S-R flip-flop, if Q = 1 the output is said to be _____.

a) Set b) Reset
c) Previous state d) Current state

10) One flip-flop unit can store _____ of data.

a) One nibble b) One bit
c) One byte d) One kilo-bit

11) Race around condition can be rectified by _____.

a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

12) The full form of PISO is _____.

a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

13) Which of the following is not the type of shift register?

a) SISO b) PISO
c) PIPO d) BIBO

14) How many flip-flops are required to construct a decade counter?

a) 4 b) 8
c) 5 d) 10

SLR-QH-213

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F(A,B,C)} = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F\ (A,B,C,D)} = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

SLR-QH-213

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?
a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

2) In S-R flip-flop, if Q = 1 the output is said to be _____.
a) Set b) Reset
c) Previous state d) Current state

3) One flip-flop unit can store _____ of data.
a) One nibble b) One bit
c) One byte d) One kilo-bit

4) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

5) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

6) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

7) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

8) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

9) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

10) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

11) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

12) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

13) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

14) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____
a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

SLR-QH-213

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F}(\mathrm{A},\mathrm{B},\mathrm{C}) = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F}\ (\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

2) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

3) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

4) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

5) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

6) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

7) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

8) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

9) Half adder is used to perform subtraction of _____.

a) 2 bits
b) 3 bits
c) 4 bits
d) 5 bits

10) Let the inputof a subtractor is A and B then what the output will be if $A = B$?

a) 0
b) 1
c) A
d) B

11) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____

a) 1, 0
b) 0, 1
c) 1, 1
d) 0, 0

12) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?

a) AND or OR gates
b) XOR or XNOR gates
c) NOR or NAND gates
d) AND or NOR gates

13) In S-R flip-flop, if Q = 1 the output is said to be _____.

a) Set
b) Reset
c) Previous state
d) Current state

14) One flip-flop unit can store _____ of data.

a) One nibble
b) One bit
c) One byte
d) One kilo-bit

SLR-QH-213

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F(A,B,C)} = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F\ (A,B,C,D)} = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

2) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____
a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

3) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?
a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

4) In S-R flip-flop, if Q = 1 the output is said to be _____.
a) Set b) Reset
c) Previous state d) Current state

5) One flip-flop unit can store _____ of data.
a) One nibble b) One bit
c) One byte d) One kilo-bit

6) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

7) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

8) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

9) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

10) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

11) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

12) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

13) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

14) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

SLR-QH-213

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F(A,B,C)} = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F\ (A,B,C,D)} = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

2) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

3) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

4) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

5) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

6) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

7) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____

a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

8) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?

a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

9) In S-R flip-flop, if Q = 1 the output is said to be _____.

a) Set b) Reset
c) Previous state d) Current state

10) One flip-flop unit can store _____ of data.

a) One nibble b) One bit
c) One byte d) One kilo-bit

11) Race around condition can be rectified by _____.

a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

12) The full form of PISO is _____.

a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

13) Which of the following is not the type of shift register?

a) SISO b) PISO
c) PIPO d) BIBO

14) How many flip-flops are required to construct a decade counter?

a) 4 b) 8
c) 5 d) 10

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F}(\mathrm{A},\mathrm{B},\mathrm{C}) = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F}\ (\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?
a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

2) In S-R flip-flop, if Q = 1 the output is said to be _____.
a) Set b) Reset
c) Previous state d) Current state

3) One flip-flop unit can store _____ of data.
a) One nibble b) One bit
c) One byte d) One kilo-bit

4) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

5) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

6) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

7) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

8) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

9) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

10) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

11) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

12) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

13) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

14) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____
a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

SLR-QH-213

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F}(\mathrm{A},\mathrm{B},\mathrm{C}) = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F}\ (\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

2) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

3) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

4) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

5) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

6) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

7) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

8) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

9) Half adder is used to perform subtraction of _____.

a) 2 bits
b) 3 bits
c) 4 bits
d) 5 bits

10) Let the inputof a subtractor is A and B then what the output will be if $A = B$?

a) 0
b) 1
c) A
d) B

11) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____

a) 1, 0
b) 0, 1
c) 1, 1
d) 0, 0

12) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?

a) AND or OR gates
b) XOR or XNOR gates
c) NOR or NAND gates
d) AND or NOR gates

13) In S-R flip-flop, if Q = 1 the output is said to be _____.

a) Set
b) Reset
c) Previous state
d) Current state

14) One flip-flop unit can store _____ of data.

a) One nibble
b) One bit
c) One byte
d) One kilo-bit

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F}(\mathrm{A},\mathrm{B},\mathrm{C}) = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F}\ (\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

2) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____
a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

3) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?
a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

4) In S-R flip-flop, if Q = 1 the output is said to be _____.
a) Set b) Reset
c) Previous state d) Current state

5) One flip-flop unit can store _____ of data.
a) One nibble b) One bit
c) One byte d) One kilo-bit

6) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

7) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

8) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

9) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

10) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

11) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

12) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

13) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

14) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

SLR-QH-213

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F}(\mathrm{A},\mathrm{B},\mathrm{C}) = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F}\ (\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

SLR-QH-213

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

2) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

3) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

4) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

5) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

6) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

7) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____

a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

8) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?

a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

9) In S-R flip-flop, if Q = 1 the output is said to be _____.

a) Set b) Reset
c) Previous state d) Current state

10) One flip-flop unit can store _____ of data.

a) One nibble b) One bit
c) One byte d) One kilo-bit

11) Race around condition can be rectified by _____.

a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

12) The full form of PISO is _____.

a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

13) Which of the following is not the type of shift register?

a) SISO b) PISO
c) PIPO d) BIBO

14) How many flip-flops are required to construct a decade counter?

a) 4 b) 8
c) 5 d) 10

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F}(\mathrm{A},\mathrm{B},\mathrm{C}) = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F}\ (\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?
a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

2) In S-R flip-flop, if Q = 1 the output is said to be _____.
a) Set b) Reset
c) Previous state d) Current state

3) One flip-flop unit can store _____ of data.
a) One nibble b) One bit
c) One byte d) One kilo-bit

4) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

5) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

6) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

7) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

8) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

9) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

10) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

11) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

12) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

13) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

14) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____
a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F(A,B,C)} = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F\ (A,B,C,D)} = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

2) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

3) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

4) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

5) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

6) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

7) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

8) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

9) Half adder is used to perform subtraction of _____.

a) 2 bits
b) 3 bits
c) 4 bits
d) 5 bits

10) Let the inputof a subtractor is A and B then what the output will be if $A = B$?

a) 0
b) 1
c) A
d) B

11) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____

a) 1, 0
b) 0, 1
c) 1, 1
d) 0, 0

12) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?

a) AND or OR gates
b) XOR or XNOR gates
c) NOR or NAND gates
d) AND or NOR gates

13) In S-R flip-flop, if Q = 1 the output is said to be _____.

a) Set
b) Reset
c) Previous state
d) Current state

14) One flip-flop unit can store _____ of data.

a) One nibble
b) One bit
c) One byte
d) One kilo-bit

SLR-QH-213

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $F(A, B, C) = \sum(0, 2, 4, 6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$F(A, B, C, D) = \sum(0, 2, 4, 5, 6, 7, 8, 10, 13, 15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

2) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____
a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

3) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?
a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

4) In S-R flip-flop, if Q = 1 the output is said to be _____.
a) Set b) Reset
c) Previous state d) Current state

5) One flip-flop unit can store _____ of data.
a) One nibble b) One bit
c) One byte d) One kilo-bit

6) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

7) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

8) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

9) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

10) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

11) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

12) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

13) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

14) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

SLR-QH-213

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F(A,B,C)} = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F\ (A,B,C,D)} = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

SLR-QH-213

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

2) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

3) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

4) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

5) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

6) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

7) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____

a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

8) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?

a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

9) In S-R flip-flop, if Q = 1 the output is said to be _____.

a) Set b) Reset
c) Previous state d) Current state

10) One flip-flop unit can store _____ of data.

a) One nibble b) One bit
c) One byte d) One kilo-bit

11) Race around condition can be rectified by _____.

a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

12) The full form of PISO is _____.

a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

13) Which of the following is not the type of shift register?

a) SISO b) PISO
c) PIPO d) BIBO

14) How many flip-flops are required to construct a decade counter?

a) 4 b) 8
c) 5 d) 10

SLR-QH-213

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F}(\mathrm{A},\mathrm{B},\mathrm{C}) = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F}\ (\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?
a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

2) In S-R flip-flop, if Q = 1 the output is said to be _____.
a) Set b) Reset
c) Previous state d) Current state

3) One flip-flop unit can store _____ of data.
a) One nibble b) One bit
c) One byte d) One kilo-bit

4) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

5) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

6) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

7) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

8) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

9) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

10) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

11) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

12) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

13) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

14) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____
a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F(A,B,C)} = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F\ (A,B,C,D)} = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

2) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

3) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

4) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

5) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

6) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

7) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

8) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

9) Half adder is used to perform subtraction of _____.

a) 2 bits
b) 3 bits
c) 4 bits
d) 5 bits

10) Let the inputof a subtractor is A and B then what the output will be if $A = B$?

a) 0
b) 1
c) A
d) B

11) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____

a) 1, 0
b) 0, 1
c) 1, 1
d) 0, 0

12) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?

a) AND or OR gates
b) XOR or XNOR gates
c) NOR or NAND gates
d) AND or NOR gates

13) In S-R flip-flop, if Q = 1 the output is said to be _____.

a) Set
b) Reset
c) Previous state
d) Current state

14) One flip-flop unit can store _____ of data.

a) One nibble
b) One bit
c) One byte
d) One kilo-bit

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F}(\mathrm{A},\mathrm{B},\mathrm{C}) = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F}\ (\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

2) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____
a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

3) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?
a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

4) In S-R flip-flop, if Q = 1 the output is said to be _____.
a) Set b) Reset
c) Previous state d) Current state

5) One flip-flop unit can store _____ of data.
a) One nibble b) One bit
c) One byte d) One kilo-bit

6) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

7) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

8) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

9) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

10) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

11) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

12) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

13) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

14) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

SLR-QH-213

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F}(\mathrm{A},\mathrm{B},\mathrm{C}) = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F}\ (\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

SLR-QH-213

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

2) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

3) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

4) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

5) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

6) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

7) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____

a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

8) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?

a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

9) In S-R flip-flop, if Q = 1 the output is said to be _____.

a) Set b) Reset
c) Previous state d) Current state

10) One flip-flop unit can store _____ of data.

a) One nibble b) One bit
c) One byte d) One kilo-bit

11) Race around condition can be rectified by _____.

a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

12) The full form of PISO is _____.

a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

13) Which of the following is not the type of shift register?

a) SISO b) PISO
c) PIPO d) BIBO

14) How many flip-flops are required to construct a decade counter?

a) 4 b) 8
c) 5 d) 10

SLR-QH-213

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F}(\mathrm{A},\mathrm{B},\mathrm{C}) = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F}\ (\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?
a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

2) In S-R flip-flop, if Q = 1 the output is said to be _____.
a) Set b) Reset
c) Previous state d) Current state

3) One flip-flop unit can store _____ of data.
a) One nibble b) One bit
c) One byte d) One kilo-bit

4) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

5) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

6) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

7) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

8) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

9) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

10) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

11) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

12) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

13) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

14) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____
a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F(A,B,C)} = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F\ (A,B,C,D)} = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

2) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

3) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

4) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

5) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

6) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

7) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

8) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

9) Half adder is used to perform subtraction of _____.

a) 2 bits
b) 3 bits
c) 4 bits
d) 5 bits

10) Let the inputof a subtractor is A and B then what the output will be if $A = B$?

a) 0
b) 1
c) A
d) B

11) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____

a) 1, 0
b) 0, 1
c) 1, 1
d) 0, 0

12) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?

a) AND or OR gates
b) XOR or XNOR gates
c) NOR or NAND gates
d) AND or NOR gates

13) In S-R flip-flop, if Q = 1 the output is said to be _____.

a) Set
b) Reset
c) Previous state
d) Current state

14) One flip-flop unit can store _____ of data.

a) One nibble
b) One bit
c) One byte
d) One kilo-bit

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F}(\mathrm{A},\mathrm{B},\mathrm{C}) = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F}\ (\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

2) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____
a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

3) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?
a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

4) In S-R flip-flop, if Q = 1 the output is said to be _____.
a) Set b) Reset
c) Previous state d) Current state

5) One flip-flop unit can store _____ of data.
a) One nibble b) One bit
c) One byte d) One kilo-bit

6) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

7) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

8) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

9) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

10) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

11) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

12) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

13) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

14) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

SLR-QH-213

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F(A,B,C)} = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F\ (A,B,C,D)} = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

SLR-QH-213

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

2) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

3) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

4) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

5) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

6) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

7) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____

a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

8) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?

a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

9) In S-R flip-flop, if Q = 1 the output is said to be _____.

a) Set b) Reset
c) Previous state d) Current state

10) One flip-flop unit can store _____ of data.

a) One nibble b) One bit
c) One byte d) One kilo-bit

11) Race around condition can be rectified by _____.

a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

12) The full form of PISO is _____.

a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

13) Which of the following is not the type of shift register?

a) SISO b) PISO
c) PIPO d) BIBO

14) How many flip-flops are required to construct a decade counter?

a) 4 b) 8
c) 5 d) 10

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F}(\mathrm{A},\mathrm{B},\mathrm{C}) = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F}\ (\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?
a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

2) In S-R flip-flop, if Q = 1 the output is said to be _____.
a) Set b) Reset
c) Previous state d) Current state

3) One flip-flop unit can store _____ of data.
a) One nibble b) One bit
c) One byte d) One kilo-bit

4) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

5) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

6) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

7) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

8) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

9) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

10) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

11) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

12) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

13) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

14) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____
a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

SLR-QH-213

Seat No.		Set	Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F(A,B,C)} = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F\ (A,B,C,D)} = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

2) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

3) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

4) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

5) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

6) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

7) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

8) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

9) Half adder is used to perform subtraction of _____.

a) 2 bits
b) 3 bits
c) 4 bits
d) 5 bits

10) Let the inputof a subtractor is A and B then what the output will be if $A = B$?

a) 0
b) 1
c) A
d) B

11) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____

a) 1, 0
b) 0, 1
c) 1, 1
d) 0, 0

12) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?

a) AND or OR gates
b) XOR or XNOR gates
c) NOR or NAND gates
d) AND or NOR gates

13) In S-R flip-flop, if Q = 1 the output is said to be _____.

a) Set
b) Reset
c) Previous state
d) Current state

14) One flip-flop unit can store _____ of data.

a) One nibble
b) One bit
c) One byte
d) One kilo-bit

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F}(\mathrm{A},\mathrm{B},\mathrm{C}) = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F}\ (\mathrm{A},\mathrm{B},\mathrm{C},\mathrm{D}) = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple choice questions: **14**

1) Let the inputof a subtractor is A and B then what the output will be if $A = B$?
a) 0 b) 1
c) A d) B

2) For Half Adder, if inputs are 1, 0, the sum and carry outputs are _____ and _____
a) 1, 0 b) 0, 1
c) 1, 1 d) 0, 0

3) A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?
a) AND or OR gates b) XOR or XNOR gates
c) NOR or NAND gates d) AND or NOR gates

4) In S-R flip-flop, if Q = 1 the output is said to be _____.
a) Set b) Reset
c) Previous state d) Current state

5) One flip-flop unit can store _____ of data.
a) One nibble b) One bit
c) One byte d) One kilo-bit

6) Race around condition can be rectified by _____.
a) SR flip flop b) JK flip flop
c) JK master slave flip flop d) D flip flop

7) The full form of PISO is _____.
a) Serial-in Parallel-out b) Parallel-in Serial-out
c) Serial-in Serial-out d) Serial-In Peripheral-Out

8) Which of the following is not the type of shift register?
a) SISO b) PISO
c) PIPO d) BIBO

9) How many flip-flops are required to construct a decade counter?
a) 4 b) 8
c) 5 d) 10

10) In K-Map, Don't care condition is represented by _____ symbol.
a) X b) 0
c) Y d) None of these

11) The terms in POS are called _____.
a) max terms b) min terms
c) mid-terms d) sum terms

12) The number of _____ cells in a K-map with 4-variables.
a) 4 b) 8
c) 16 d) 32

13) The logical sum of two or more logical product terms is called _____.
a) SOP b) POS
c) OR operation d) NAND operation

14) Half adder is used to perform subtraction of _____.
a) 2 bits b) 3 bits
c) 4 bits d) 5 bits

SLR-QH-213

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Digital Techniques (ENTMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt Any Four. **16**

a) Explain POS and SOP form of logic function.
b) Solve using K-Map for $\mathrm{F(A,B,C)} = \sum(0,2,4,6)$
c) Explain Half Subtractor with logic diagram and truth table.
d) Explain 4:1 Multiplexer with truth Table and logic diagram.
e) Compare between De-Multiplexer and Multiplexer.

Q.3 Attempt Any Two. **12**

a) Explain Gray to Binary conversion in details.
b) Explain Full Adder with suitable diagram.
c) Solve using K Map-
$\mathrm{F\ (A,B,C,D)} = \sum\ (0,2,4,5,6,7,8,10,13,15)$

Section – II

Q.4 Attempt Any Four. **16**

a) Explain SR Flip-flop using logic gates.
b) Explain D-Flip-Flop with suitable diagram.
c) Differentiate between Synchronous and Asynchronous sequential circuit.
d) Explain with suitable diagram, PISO shift register.
e) What is Race-Round condition? How this condition will overcome?

Q.5 Attempt Any Two. **12**

a) Design MOD-10 Counter.
b) Explain 4-bit DOWN counter with suitable diagram.
c) Explain JK Flip flop with suitable diagram, and truth table.

SLR-QH-214

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

2) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

3) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

4) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

5) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

6) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

7) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

8) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

9) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

10) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

11) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

12) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

13) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

14) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

2) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

3) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

4) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

5) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

6) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

7) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

8) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

9) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

10) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

11) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

12) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

13) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

14) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

SLR-QH-214

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set | **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

2) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

3) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

4) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

5) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

6) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

7) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

8) A device that converts non-electrical quantity into electrical form is called _____.

a) Sensor b) Transducer
c) Modulator d) Actuator

9) Which factor is least important while selecting a sensor?

a) Sensitivity b) Cost
c) Colour d) Accuracy

10) Light intensity can be detected using _____.

a) LDR b) Thermistor
c) RTD d) Tachometer

11) Strain gauges are primarily used to measure _____.

a) Humidity b) Deformation
c) Voltage d) Light

12) Which magnetic field sensor works on Hall Effect?

a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

13) Motion Transducer Selection mainly depends on _____.

a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

14) Mutual Induction Proximity Sensor works on principle of _____.

a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

2) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

3) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

4) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

5) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

6) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

7) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

8) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

9) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

10) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

11) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

12) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

13) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

14) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

SLR-QH-214

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

SLR-QH-214

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

2) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

3) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

4) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

5) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

6) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

7) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

8) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

9) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

10) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

11) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

12) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

13) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

14) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

2) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

3) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

4) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

5) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

6) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

7) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

8) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

9) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

10) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

11) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

12) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

13) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

14) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

2) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

3) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

4) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

5) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

6) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

7) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

8) A device that converts non-electrical quantity into electrical form is called _____.

a) Sensor b) Transducer
c) Modulator d) Actuator

9) Which factor is least important while selecting a sensor?

a) Sensitivity b) Cost
c) Colour d) Accuracy

10) Light intensity can be detected using _____.

a) LDR b) Thermistor
c) RTD d) Tachometer

11) Strain gauges are primarily used to measure _____.

a) Humidity b) Deformation
c) Voltage d) Light

12) Which magnetic field sensor works on Hall Effect?

a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

13) Motion Transducer Selection mainly depends on _____.

a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

14) Mutual Induction Proximity Sensor works on principle of _____.

a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

SLR-QH-214

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

2) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

3) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

4) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

5) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

6) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

7) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

8) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

9) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

10) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

11) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

12) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

13) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

14) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

SLR-QH-214

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

SLR-QH-214

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

2) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

3) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

4) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

5) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

6) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

7) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

8) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

9) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

10) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

11) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

12) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

13) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

14) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

2) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

3) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

4) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

5) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

6) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

7) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

8) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

9) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

10) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

11) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

12) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

13) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

14) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

2) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

3) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

4) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

5) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

6) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

7) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

8) A device that converts non-electrical quantity into electrical form is called _____.

a) Sensor b) Transducer
c) Modulator d) Actuator

9) Which factor is least important while selecting a sensor?

a) Sensitivity b) Cost
c) Colour d) Accuracy

10) Light intensity can be detected using _____.

a) LDR b) Thermistor
c) RTD d) Tachometer

11) Strain gauges are primarily used to measure _____.

a) Humidity b) Deformation
c) Voltage d) Light

12) Which magnetic field sensor works on Hall Effect?

a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

13) Motion Transducer Selection mainly depends on _____.

a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

14) Mutual Induction Proximity Sensor works on principle of _____.

a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set | S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

2) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

3) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

4) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

5) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

6) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

7) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

8) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

9) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

10) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

11) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

12) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

13) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

14) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

SLR-QH-214

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

SLR-QH-214

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

2) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

3) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

4) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

5) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

6) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

7) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

8) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

9) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

10) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

11) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

12) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

13) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

14) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

2) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

3) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

4) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

5) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

6) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

7) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

8) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

9) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

10) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

11) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

12) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

13) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

14) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

2) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

3) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

4) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

5) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

6) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

7) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

8) A device that converts non-electrical quantity into electrical form is called _____.

a) Sensor b) Transducer
c) Modulator d) Actuator

9) Which factor is least important while selecting a sensor?

a) Sensitivity b) Cost
c) Colour d) Accuracy

10) Light intensity can be detected using _____.

a) LDR b) Thermistor
c) RTD d) Tachometer

11) Strain gauges are primarily used to measure _____.

a) Humidity b) Deformation
c) Voltage d) Light

12) Which magnetic field sensor works on Hall Effect?

a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

13) Motion Transducer Selection mainly depends on _____.

a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

14) Mutual Induction Proximity Sensor works on principle of _____.

a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set | S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

2) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

3) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

4) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

5) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

6) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

7) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

8) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

9) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

10) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

11) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

12) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

13) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

14) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

SLR-QH-214

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

SLR-QH-214

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

2) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

3) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

4) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

5) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

6) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

7) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

8) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

9) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

10) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

11) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

12) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

13) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

14) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

2) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

3) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

4) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

5) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

6) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

7) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

8) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

9) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

10) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

11) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

12) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

13) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

14) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

2) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

3) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

4) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

5) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

6) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

7) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

8) A device that converts non-electrical quantity into electrical form is called _____.

a) Sensor b) Transducer
c) Modulator d) Actuator

9) Which factor is least important while selecting a sensor?

a) Sensitivity b) Cost
c) Colour d) Accuracy

10) Light intensity can be detected using _____.

a) LDR b) Thermistor
c) RTD d) Tachometer

11) Strain gauges are primarily used to measure _____.

a) Humidity b) Deformation
c) Voltage d) Light

12) Which magnetic field sensor works on Hall Effect?

a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

13) Motion Transducer Selection mainly depends on _____.

a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

14) Mutual Induction Proximity Sensor works on principle of _____.

a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

SLR-QH-214

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

SLR-QH-214

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

2) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

3) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

4) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

5) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

6) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

7) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

8) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

9) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

10) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

11) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

12) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

13) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

14) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

SLR-QH-214

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

SLR-QH-214

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

2) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

3) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

4) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

5) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

6) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

7) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

8) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

9) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

10) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

11) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

12) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

13) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

14) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

2) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

3) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

4) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

5) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

6) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

7) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

8) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

9) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

10) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

11) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

12) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

13) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

14) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

2) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

3) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

4) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

5) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

6) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

7) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

8) A device that converts non-electrical quantity into electrical form is called _____.

a) Sensor b) Transducer
c) Modulator d) Actuator

9) Which factor is least important while selecting a sensor?

a) Sensitivity b) Cost
c) Colour d) Accuracy

10) Light intensity can be detected using _____.

a) LDR b) Thermistor
c) RTD d) Tachometer

11) Strain gauges are primarily used to measure _____.

a) Humidity b) Deformation
c) Voltage d) Light

12) Which magnetic field sensor works on Hall Effect?

a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

13) Motion Transducer Selection mainly depends on _____.

a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

14) Mutual Induction Proximity Sensor works on principle of _____.

a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

SLR-QH-214

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer: 14

1) Light intensity can be detected using _____.
a) LDR b) Thermistor
c) RTD d) Tachometer

2) Strain gauges are primarily used to measure _____.
a) Humidity b) Deformation
c) Voltage d) Light

3) Which magnetic field sensor works on Hall Effect?
a) RTD b) Eddy Current Sensor
c) Hall Sensor d) DC Tachometer

4) Motion Transducer Selection mainly depends on _____.
a) Sensor Colour b) Range & Resolution
c) Packing Material d) Ambient Light

5) Mutual Induction Proximity Sensor works on principle of _____.
a) Seebeck Effect b) Electromagnetic Induction
c) Laser Reflection d) pH Variation

6) Which of the following is a Medical Sensor?
a) RVDT b) Thermocouple
c) DC Tachometer d) Capacitive Level Sensor

7) Pulse Oximetry (SpO_2) sensor measures _____.
a) Blood Pressure b) Oxygen Saturation
c) Heart Rate only d) Humidity

8) Which sensor is commonly used to detect vibration?
a) LVDT b) RTD
c) Accelerometer d) pH sensor

9) The output of a typical pH sensor is _____.
a) Frequency b) Voltage
c) Torque d) Light

10) Which of the following is an example of an active device?
a) Thermistor b) LDR
c) Strain Gauge d) Passive resistor

11) Measurand refers to _____.
a) Output of sensor b) Quantity being measured
c) Calibration signal d) AC supply

12) Which of the following is a digital sensor?
a) RTD b) Ultrasonic sensor
c) Thermocouple d) Thermistor

13) A device that converts non-electrical quantity into electrical form is called _____.
a) Sensor b) Transducer
c) Modulator d) Actuator

14) Which factor is least important while selecting a sensor?
a) Sensitivity b) Cost
c) Colour d) Accuracy

SLR-QH-214

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Sensor Technology (ENTMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.

Section – I

Q.2 Attempt Any Four. **16**

a) Define Sensor & Transducer. Distinguish between them.
b) Explain Analog & Digital Sensors with examples.
c) Write short note on Sensor Classification Based on Measurand.
d) What is Sensor Signal Conditioning? Explain briefly.
e) Explain Strain Gauge with application.
f) Describe Magnetic Field Sensors.

Q.3 Attempt Any Two. **12**

a) Explain Pure, Passive & Active Devices with suitable examples.
b) Write a detailed note on Motion Transducer & its selection.
c) What is Sensor Selection? Discuss the factors affecting sensor selection in detail.

Section – II

Q.4 Attempt Any Four. **16**

a) With a neat sketch explain LVDT.
b) Explain the working of AC Tachometer.
c) Describe Capacitive Liquid Level Sensor.
d) Explain the construction & working of RVDT.
e) Explain Eddy Current Transducer.
f) Write short note on Resolver.

Q.5 Attempt Any Two. **12**

a) With a neat block diagram explain Pulse Oximetry (SpO_2) Sensor.
b) Explain Thermocouple and Thermistor in detail.
c) Describe Humidity Sensor, Vibration Sensor & Chemical/Gas Sensor.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is a Python interpreter?
a) A tool that converts Python code into machine code directly
b) A program that executes Python code line by line
c) A compiler that creates an executable file
d) A debugger for Python programs

2) Which command is used to run a Python program from the command line?
a) run python program.py b) python program.py
c) exec program.py d) start program

3) Which of the following is not a variation of the Python execution model?
a) CPython b) Jython
c) PyRuby d) PyPy

4) Which of the following is a mutable data type in Python?
a) tuple b) string
c) int d) list

5) Which of the following is used to define a function in Python?
a) def b) define
c) func d) function

6) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

7) What is called when a function is defined inside a class?
a) class b) function
c) method d) module

8) What is inheritance in Python?
   a) Defining multiple methods with the same name
   b) The ability to acquire properties and behaviors from another class
   c) Creating multiple instances of a class
   d) Converting functions into classes

9) Which of the following returns the current date and time?
   a) datetime.date.today()
   b) datetime.datetime.now()
   c) datetime.time.now()
   d) datetime.now.time()

10) Which of these mathematical constants is available in the math module?
   a) math.pi
   b) math.root
   c) math.epsilon
   d) math.cube

11) Which method is used to read data from a CSV file?
   a) csv.read()
   b) csv.reader()
   c) csv.input()
   d) csv.open()

12) Which Python module is commonly used for GUI programming?
   a) tkinter
   b) gui
   c) pywindow
   d) graphics

13) Which built-in Python module can be used to measure the execution time of small code snippets?
   a) timeit
   b) datetime
   c) logging
   d) os

14) Which module is used for writing unit tests in Python?
   a) doctest
   b) testcase
   c) pytest
   d) unittest

SLR-QH-215

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is inheritance in Python?
a) Defining multiple methods with the same name
b) The ability to acquire properties and behaviors from another class
c) Creating multiple instances of a class
d) Converting functions into classes

2) Which of the following returns the current date and time?
a) datetime.date.today() b) datetime.datetime.now()
c) datetime.time.now() d) datetime.now.time()

3) Which of these mathematical constants is available in the math module?
a) math.pi b) math.root
c) math.epsilon d) math.cube

4) Which method is used to read data from a CSV file?
a) csv.read() b) csv.reader()
c) csv.input() d) csv.open()

5) Which Python module is commonly used for GUI programming?
a) tkinter b) gui
c) pywindow d) graphics

6) Which built-in Python module can be used to measure the execution time of small code snippets?
a) timeit b) datetime
c) logging d) os

7) Which module is used for writing unit tests in Python?
a) doctest b) testcase
c) pytest d) unittest

8) What is a Python interpreter?
   a) A tool that converts Python code into machine code directly
   b) A program that executes Python code line by line
   c) A compiler that creates an executable file
   d) A debugger for Python programs

9) Which command is used to run a Python program from the command line?
   a) run python program.py
   b) python program.py
   c) exec program.py
   d) start program

10) Which of the following is not a variation of the Python execution model?
   a) CPython
   b) Jython
   c) PyRuby
   d) PyPy

11) Which of the following is a mutable data type in Python?
   a) tuple
   b) string
   c) int
   d) list

12) Which of the following is used to define a function in Python?
   a) def
   b) define
   c) func
   d) function

13) Which keyword is used to handle exceptions in Python?
   a) throw
   b) try
   c) catch
   d) error

14) What is called when a function is defined inside a class?
   a) class
   b) function
   c) method
   d) module

SLR-QH-215

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which method is used to read data from a CSV file?
a) csv.read() b) csv.reader()
c) csv.input() d) csv.open()

2) Which Python module is commonly used for GUI programming?
a) tkinter b) gui
c) pywindow d) graphics

3) Which built-in Python module can be used to measure the execution time of small code snippets?
a) timeit b) datetime
c) logging d) os

4) Which module is used for writing unit tests in Python?
a) doctest b) testcase
c) pytest d) unittest

5) What is a Python interpreter?
a) A tool that converts Python code into machine code directly
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6) Which command is used to run a Python program from the command line?
a) run python program.py b) python program.py
c) exec program.py d) start program

7) Which of the following is not a variation of the Python execution model?
a) CPython b) Jython
c) PyRuby d) PyPy

8) Which of the following is a mutable data type in Python?
a) tuple b) string
c) int d) list

9) Which of the following is used to define a function in Python?
a) def b) define
c) func d) function

10) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

11) What is called when a function is defined inside a class?
a) class b) function
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12) What is inheritance in Python?
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13) Which of the following returns the current date and time?
a) datetime.date.today() b) datetime.datetime.now()
c) datetime.time.now() d) datetime.now.time()

14) Which of these mathematical constants is available in the math module?
a) math.pi b) math.root
c) math.epsilon d) math.cube

SLR-QH-215

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

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c) What is debugging in python? Explain Logging facility in python.

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

2) What is called when a function is defined inside a class?
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c) method d) module

3) What is inheritance in Python?
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13) Which of the following is a mutable data type in Python?

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b) string
c) int
d) list

14) Which of the following is used to define a function in Python?

a) def
b) define
c) func
d) function

SLR-QH-215

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
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3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

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e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

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Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is a Python interpreter?
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13) Which built-in Python module can be used to measure the execution time of small code snippets?
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   b) datetime
   c) logging
   d) os

14) Which module is used for writing unit tests in Python?
   a) doctest
   b) testcase
   c) pytest
   d) unittest

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

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c) Differentiate between list and tuples in python.

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a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

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a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is inheritance in Python?
a) Defining multiple methods with the same name
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   b) A program that executes Python code line by line
   c) A compiler that creates an executable file
   d) A debugger for Python programs

9) Which command is used to run a Python program from the command line?
   a) run python program.py
   b) python program.py
   c) exec program.py
   d) start program

10) Which of the following is not a variation of the Python execution model?
   a) CPython
   b) Jython
   c) PyRuby
   d) PyPy

11) Which of the following is a mutable data type in Python?
   a) tuple
   b) string
   c) int
   d) list

12) Which of the following is used to define a function in Python?
   a) def
   b) define
   c) func
   d) function

13) Which keyword is used to handle exceptions in Python?
   a) throw
   b) try
   c) catch
   d) error

14) What is called when a function is defined inside a class?
   a) class
   b) function
   c) method
   d) module

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which method is used to read data from a CSV file?
a) csv.read() b) csv.reader()
c) csv.input() d) csv.open()

2) Which Python module is commonly used for GUI programming?
a) tkinter b) gui
c) pywindow d) graphics

3) Which built-in Python module can be used to measure the execution time of small code snippets?
a) timeit b) datetime
c) logging d) os

4) Which module is used for writing unit tests in Python?
a) doctest b) testcase
c) pytest d) unittest

5) What is a Python interpreter?
a) A tool that converts Python code into machine code directly
b) A program that executes Python code line by line
c) A compiler that creates an executable file
d) A debugger for Python programs

6) Which command is used to run a Python program from the command line?
a) run python program.py b) python program.py
c) exec program.py d) start program

7) Which of the following is not a variation of the Python execution model?
a) CPython b) Jython
c) PyRuby d) PyPy

8) Which of the following is a mutable data type in Python?
a) tuple b) string
c) int d) list

9) Which of the following is used to define a function in Python?
a) def b) define
c) func d) function

10) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

11) What is called when a function is defined inside a class?
a) class b) function
c) method d) module

12) What is inheritance in Python?
a) Defining multiple methods with the same name
b) The ability to acquire properties and behaviors from another class
c) Creating multiple instances of a class
d) Converting functions into classes

13) Which of the following returns the current date and time?
a) datetime.date.today() b) datetime.datetime.now()
c) datetime.time.now() d) datetime.now.time()

14) Which of these mathematical constants is available in the math module?
a) math.pi b) math.root
c) math.epsilon d) math.cube

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

SLR-QH-215

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

2) What is called when a function is defined inside a class?
a) class b) function
c) method d) module

3) What is inheritance in Python?
a) Defining multiple methods with the same name
b) The ability to acquire properties and behaviors from another class
c) Creating multiple instances of a class
d) Converting functions into classes

4) Which of the following returns the current date and time?
a) datetime.date.today() b) datetime.datetime.now()
c) datetime.time.now() d) datetime.now.time()

5) Which of these mathematical constants is available in the math module?
a) math.pi b) math.root
c) math.epsilon d) math.cube

6) Which method is used to read data from a CSV file?
a) csv.read() b) csv.reader()
c) csv.input() d) csv.open()

7) Which Python module is commonly used for GUI programming?
a) tkinter b) gui
c) pywindow d) graphics

8) Which built-in Python module can be used to measure the execution time of small code snippets?

a) timeit
b) datetime
c) logging
d) os

9) Which module is used for writing unit tests in Python?

a) doctest
b) testcase
c) pytest
d) unittest

10) What is a Python interpreter?

a) A tool that converts Python code into machine code directly
b) A program that executes Python code line by line
c) A compiler that creates an executable file
d) A debugger for Python programs

11) Which command is used to run a Python program from the command line?

a) run python program.py
b) python program.py
c) exec program.py
d) start program

12) Which of the following is not a variation of the Python execution model?

a) CPython
b) Jython
c) PyRuby
d) PyPy

13) Which of the following is a mutable data type in Python?

a) tuple
b) string
c) int
d) list

14) Which of the following is used to define a function in Python?

a) def
b) define
c) func
d) function

SLR-QH-215

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is a Python interpreter?
a) A tool that converts Python code into machine code directly
b) A program that executes Python code line by line
c) A compiler that creates an executable file
d) A debugger for Python programs

2) Which command is used to run a Python program from the command line?
a) run python program.py b) python program.py
c) exec program.py d) start program

3) Which of the following is not a variation of the Python execution model?
a) CPython b) Jython
c) PyRuby d) PyPy

4) Which of the following is a mutable data type in Python?
a) tuple b) string
c) int d) list

5) Which of the following is used to define a function in Python?
a) def b) define
c) func d) function

6) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

7) What is called when a function is defined inside a class?
a) class b) function
c) method d) module

8) What is inheritance in Python?
   a) Defining multiple methods with the same name
   b) The ability to acquire properties and behaviors from another class
   c) Creating multiple instances of a class
   d) Converting functions into classes

9) Which of the following returns the current date and time?
   a) datetime.date.today()
   b) datetime.datetime.now()
   c) datetime.time.now()
   d) datetime.now.time()

10) Which of these mathematical constants is available in the math module?
   a) math.pi
   b) math.root
   c) math.epsilon
   d) math.cube

11) Which method is used to read data from a CSV file?
   a) csv.read()
   b) csv.reader()
   c) csv.input()
   d) csv.open()

12) Which Python module is commonly used for GUI programming?
   a) tkinter
   b) gui
   c) pywindow
   d) graphics

13) Which built-in Python module can be used to measure the execution time of small code snippets?
   a) timeit
   b) datetime
   c) logging
   d) os

14) Which module is used for writing unit tests in Python?
   a) doctest
   b) testcase
   c) pytest
   d) unittest

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is inheritance in Python?
a) Defining multiple methods with the same name
b) The ability to acquire properties and behaviors from another class
c) Creating multiple instances of a class
d) Converting functions into classes

2) Which of the following returns the current date and time?
a) datetime.date.today() b) datetime.datetime.now()
c) datetime.time.now() d) datetime.now.time()

3) Which of these mathematical constants is available in the math module?
a) math.pi b) math.root
c) math.epsilon d) math.cube

4) Which method is used to read data from a CSV file?
a) csv.read() b) csv.reader()
c) csv.input() d) csv.open()

5) Which Python module is commonly used for GUI programming?
a) tkinter b) gui
c) pywindow d) graphics

6) Which built-in Python module can be used to measure the execution time of small code snippets?
a) timeit b) datetime
c) logging d) os

7) Which module is used for writing unit tests in Python?
a) doctest b) testcase
c) pytest d) unittest

8) What is a Python interpreter?
   a) A tool that converts Python code into machine code directly
   b) A program that executes Python code line by line
   c) A compiler that creates an executable file
   d) A debugger for Python programs

9) Which command is used to run a Python program from the command line?
   a) run python program.py
   b) python program.py
   c) exec program.py
   d) start program

10) Which of the following is not a variation of the Python execution model?
   a) CPython
   b) Jython
   c) PyRuby
   d) PyPy

11) Which of the following is a mutable data type in Python?
   a) tuple
   b) string
   c) int
   d) list

12) Which of the following is used to define a function in Python?
   a) def
   b) define
   c) func
   d) function

13) Which keyword is used to handle exceptions in Python?
   a) throw
   b) try
   c) catch
   d) error

14) What is called when a function is defined inside a class?
   a) class
   b) function
   c) method
   d) module

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which method is used to read data from a CSV file?
a) csv.read() b) csv.reader()
c) csv.input() d) csv.open()

2) Which Python module is commonly used for GUI programming?
a) tkinter b) gui
c) pywindow d) graphics

3) Which built-in Python module can be used to measure the execution time of small code snippets?
a) timeit b) datetime
c) logging d) os

4) Which module is used for writing unit tests in Python?
a) doctest b) testcase
c) pytest d) unittest

5) What is a Python interpreter?
a) A tool that converts Python code into machine code directly
b) A program that executes Python code line by line
c) A compiler that creates an executable file
d) A debugger for Python programs

6) Which command is used to run a Python program from the command line?
a) run python program.py b) python program.py
c) exec program.py d) start program

7) Which of the following is not a variation of the Python execution model?
a) CPython b) Jython
c) PyRuby d) PyPy

8) Which of the following is a mutable data type in Python?
a) tuple b) string
c) int d) list

9) Which of the following is used to define a function in Python?
a) def b) define
c) func d) function

10) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

11) What is called when a function is defined inside a class?
a) class b) function
c) method d) module

12) What is inheritance in Python?
a) Defining multiple methods with the same name
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13) Which of the following returns the current date and time?
a) datetime.date.today() b) datetime.datetime.now()
c) datetime.time.now() d) datetime.now.time()

14) Which of these mathematical constants is available in the math module?
a) math.pi b) math.root
c) math.epsilon d) math.cube

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
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Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

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Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

2) What is called when a function is defined inside a class?
a) class b) function
c) method d) module

3) What is inheritance in Python?
a) Defining multiple methods with the same name
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a) math.pi b) math.root
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6) Which method is used to read data from a CSV file?
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c) PyRuby
d) PyPy

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a) tuple
b) string
c) int
d) list

14) Which of the following is used to define a function in Python?

a) def
b) define
c) func
d) function

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is a Python interpreter?
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b) A program that executes Python code line by line
c) A compiler that creates an executable file
d) A debugger for Python programs

2) Which command is used to run a Python program from the command line?
a) run python program.py b) python program.py
c) exec program.py d) start program

3) Which of the following is not a variation of the Python execution model?
a) CPython b) Jython
c) PyRuby d) PyPy

4) Which of the following is a mutable data type in Python?
a) tuple b) string
c) int d) list

5) Which of the following is used to define a function in Python?
a) def b) define
c) func d) function

6) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

7) What is called when a function is defined inside a class?
a) class b) function
c) method d) module

8) What is inheritance in Python?
   a) Defining multiple methods with the same name
   b) The ability to acquire properties and behaviors from another class
   c) Creating multiple instances of a class
   d) Converting functions into classes

9) Which of the following returns the current date and time?
   a) datetime.date.today()
   b) datetime.datetime.now()
   c) datetime.time.now()
   d) datetime.now.time()

10) Which of these mathematical constants is available in the math module?
   a) math.pi
   b) math.root
   c) math.epsilon
   d) math.cube

11) Which method is used to read data from a CSV file?
   a) csv.read()
   b) csv.reader()
   c) csv.input()
   d) csv.open()

12) Which Python module is commonly used for GUI programming?
   a) tkinter
   b) gui
   c) pywindow
   d) graphics

13) Which built-in Python module can be used to measure the execution time of small code snippets?
   a) timeit
   b) datetime
   c) logging
   d) os

14) Which module is used for writing unit tests in Python?
   a) doctest
   b) testcase
   c) pytest
   d) unittest

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

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Section – I

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d) Explain Class and Instance Objects in Python.

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a) Explain python operators and expression with syntax and example.

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c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

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c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

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Seat No.	

Set **Q**

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

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b) The ability to acquire properties and behaviors from another class
c) Creating multiple instances of a class
d) Converting functions into classes

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6) Which built-in Python module can be used to measure the execution time of small code snippets?
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c) logging d) os

7) Which module is used for writing unit tests in Python?
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   b) Jython
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   d) PyPy

11) Which of the following is a mutable data type in Python?
   a) tuple
   b) string
   c) int
   d) list

12) Which of the following is used to define a function in Python?
   a) def
   b) define
   c) func
   d) function

13) Which keyword is used to handle exceptions in Python?
   a) throw
   b) try
   c) catch
   d) error

14) What is called when a function is defined inside a class?
   a) class
   b) function
   c) method
   d) module

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
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Section – I

Q.2 Write answer to any three questions. **12**

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b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

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Time: 10:00 AM To 01:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which method is used to read data from a CSV file?
a) csv.read() b) csv.reader()
c) csv.input() d) csv.open()

2) Which Python module is commonly used for GUI programming?
a) tkinter b) gui
c) pywindow d) graphics

3) Which built-in Python module can be used to measure the execution time of small code snippets?
a) timeit b) datetime
c) logging d) os

4) Which module is used for writing unit tests in Python?
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c) pytest d) unittest

5) What is a Python interpreter?
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6) Which command is used to run a Python program from the command line?
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7) Which of the following is not a variation of the Python execution model?
a) CPython b) Jython
c) PyRuby d) PyPy

8) Which of the following is a mutable data type in Python?
a) tuple b) string
c) int d) list

9) Which of the following is used to define a function in Python?
a) def b) define
c) func d) function

10) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

11) What is called when a function is defined inside a class?
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c) method d) module

12) What is inheritance in Python?
a) Defining multiple methods with the same name
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13) Which of the following returns the current date and time?
a) datetime.date.today() b) datetime.datetime.now()
c) datetime.time.now() d) datetime.now.time()

14) Which of these mathematical constants is available in the math module?
a) math.pi b) math.root
c) math.epsilon d) math.cube

Seat No.		Set	R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

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Section – I

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Q.3 Write answer to any two questions. **16**

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c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

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Seat No.	

Set | S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

2) What is called when a function is defined inside a class?
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Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
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Section – I

Q.2 Write answer to any three questions. **12**

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Section – II

Q.4 Write answer to any three questions. **12**

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Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Set **P**

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Section – II

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
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Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which method is used to read data from a CSV file?
a) csv.read() b) csv.reader()
c) csv.input() d) csv.open()

2) Which Python module is commonly used for GUI programming?
a) tkinter b) gui
c) pywindow d) graphics

3) Which built-in Python module can be used to measure the execution time of small code snippets?
a) timeit b) datetime
c) logging d) os

4) Which module is used for writing unit tests in Python?
a) doctest b) testcase
c) pytest d) unittest

5) What is a Python interpreter?
a) A tool that converts Python code into machine code directly
b) A program that executes Python code line by line
c) A compiler that creates an executable file
d) A debugger for Python programs

6) Which command is used to run a Python program from the command line?
a) run python program.py b) python program.py
c) exec program.py d) start program

7) Which of the following is not a variation of the Python execution model?
a) CPython b) Jython
c) PyRuby d) PyPy

8) Which of the following is a mutable data type in Python?
a) tuple b) string
c) int d) list

9) Which of the following is used to define a function in Python?
a) def b) define
c) func d) function

10) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

11) What is called when a function is defined inside a class?
a) class b) function
c) method d) module

12) What is inheritance in Python?
a) Defining multiple methods with the same name
b) The ability to acquire properties and behaviors from another class
c) Creating multiple instances of a class
d) Converting functions into classes

13) Which of the following returns the current date and time?
a) datetime.date.today() b) datetime.datetime.now()
c) datetime.time.now() d) datetime.now.time()

14) Which of these mathematical constants is available in the math module?
a) math.pi b) math.root
c) math.epsilon d) math.cube

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

2) What is called when a function is defined inside a class?
a) class b) function
c) method d) module

3) What is inheritance in Python?
a) Defining multiple methods with the same name
b) The ability to acquire properties and behaviors from another class
c) Creating multiple instances of a class
d) Converting functions into classes

4) Which of the following returns the current date and time?
a) datetime.date.today() b) datetime.datetime.now()
c) datetime.time.now() d) datetime.now.time()

5) Which of these mathematical constants is available in the math module?
a) math.pi b) math.root
c) math.epsilon d) math.cube

6) Which method is used to read data from a CSV file?
a) csv.read() b) csv.reader()
c) csv.input() d) csv.open()

7) Which Python module is commonly used for GUI programming?
a) tkinter b) gui
c) pywindow d) graphics

8) Which built-in Python module can be used to measure the execution time of small code snippets?

a) timeit
b) datetime
c) logging
d) os

9) Which module is used for writing unit tests in Python?

a) doctest
b) testcase
c) pytest
d) unittest

10) What is a Python interpreter?

a) A tool that converts Python code into machine code directly
b) A program that executes Python code line by line
c) A compiler that creates an executable file
d) A debugger for Python programs

11) Which command is used to run a Python program from the command line?

a) run python program.py
b) python program.py
c) exec program.py
d) start program

12) Which of the following is not a variation of the Python execution model?

a) CPython
b) Jython
c) PyRuby
d) PyPy

13) Which of the following is a mutable data type in Python?

a) tuple
b) string
c) int
d) list

14) Which of the following is used to define a function in Python?

a) def
b) define
c) func
d) function

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

SLR-QH-215

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) What is a Python interpreter?
a) A tool that converts Python code into machine code directly
b) A program that executes Python code line by line
c) A compiler that creates an executable file
d) A debugger for Python programs

2) Which command is used to run a Python program from the command line?
a) run python program.py b) python program.py
c) exec program.py d) start program

3) Which of the following is not a variation of the Python execution model?
a) CPython b) Jython
c) PyRuby d) PyPy

4) Which of the following is a mutable data type in Python?
a) tuple b) string
c) int d) list

5) Which of the following is used to define a function in Python?
a) def b) define
c) func d) function

6) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

7) What is called when a function is defined inside a class?
a) class b) function
c) method d) module

8) What is inheritance in Python?
   a) Defining multiple methods with the same name
   b) The ability to acquire properties and behaviors from another class
   c) Creating multiple instances of a class
   d) Converting functions into classes

9) Which of the following returns the current date and time?
   a) datetime.date.today()
   b) datetime.datetime.now()
   c) datetime.time.now()
   d) datetime.now.time()

10) Which of these mathematical constants is available in the math module?
   a) math.pi
   b) math.root
   c) math.epsilon
   d) math.cube

11) Which method is used to read data from a CSV file?
   a) csv.read()
   b) csv.reader()
   c) csv.input()
   d) csv.open()

12) Which Python module is commonly used for GUI programming?
   a) tkinter
   b) gui
   c) pywindow
   d) graphics

13) Which built-in Python module can be used to measure the execution time of small code snippets?
   a) timeit
   b) datetime
   c) logging
   d) os

14) Which module is used for writing unit tests in Python?
   a) doctest
   b) testcase
   c) pytest
   d) unittest

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is inheritance in Python?
a) Defining multiple methods with the same name
b) The ability to acquire properties and behaviors from another class
c) Creating multiple instances of a class
d) Converting functions into classes

2) Which of the following returns the current date and time?
a) datetime.date.today() b) datetime.datetime.now()
c) datetime.time.now() d) datetime.now.time()

3) Which of these mathematical constants is available in the math module?
a) math.pi b) math.root
c) math.epsilon d) math.cube

4) Which method is used to read data from a CSV file?
a) csv.read() b) csv.reader()
c) csv.input() d) csv.open()

5) Which Python module is commonly used for GUI programming?
a) tkinter b) gui
c) pywindow d) graphics

6) Which built-in Python module can be used to measure the execution time of small code snippets?
a) timeit b) datetime
c) logging d) os

7) Which module is used for writing unit tests in Python?
a) doctest b) testcase
c) pytest d) unittest

8) What is a Python interpreter?
   a) A tool that converts Python code into machine code directly
   b) A program that executes Python code line by line
   c) A compiler that creates an executable file
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9) Which command is used to run a Python program from the command line?
   a) run python program.py
   b) python program.py
   c) exec program.py
   d) start program

10) Which of the following is not a variation of the Python execution model?
   a) CPython
   b) Jython
   c) PyRuby
   d) PyPy

11) Which of the following is a mutable data type in Python?
   a) tuple
   b) string
   c) int
   d) list

12) Which of the following is used to define a function in Python?
   a) def
   b) define
   c) func
   d) function

13) Which keyword is used to handle exceptions in Python?
   a) throw
   b) try
   c) catch
   d) error

14) What is called when a function is defined inside a class?
   a) class
   b) function
   c) method
   d) module

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which method is used to read data from a CSV file?
a) csv.read() b) csv.reader()
c) csv.input() d) csv.open()

2) Which Python module is commonly used for GUI programming?
a) tkinter b) gui
c) pywindow d) graphics

3) Which built-in Python module can be used to measure the execution time of small code snippets?
a) timeit b) datetime
c) logging d) os

4) Which module is used for writing unit tests in Python?
a) doctest b) testcase
c) pytest d) unittest

5) What is a Python interpreter?
a) A tool that converts Python code into machine code directly
b) A program that executes Python code line by line
c) A compiler that creates an executable file
d) A debugger for Python programs

6) Which command is used to run a Python program from the command line?
a) run python program.py b) python program.py
c) exec program.py d) start program

7) Which of the following is not a variation of the Python execution model?
a) CPython b) Jython
c) PyRuby d) PyPy

8) Which of the following is a mutable data type in Python?
a) tuple b) string
c) int d) list

9) Which of the following is used to define a function in Python?
a) def b) define
c) func d) function

10) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

11) What is called when a function is defined inside a class?
a) class b) function
c) method d) module

12) What is inheritance in Python?
a) Defining multiple methods with the same name
b) The ability to acquire properties and behaviors from another class
c) Creating multiple instances of a class
d) Converting functions into classes

13) Which of the following returns the current date and time?
a) datetime.date.today() b) datetime.datetime.now()
c) datetime.time.now() d) datetime.now.time()

14) Which of these mathematical constants is available in the math module?
a) math.pi b) math.root
c) math.epsilon d) math.cube

Seat No.		Set	R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

Seat No.	

Set | S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicate full marks for that question.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which keyword is used to handle exceptions in Python?
a) throw b) try
c) catch d) error

2) What is called when a function is defined inside a class?
a) class b) function
c) method d) module

3) What is inheritance in Python?
a) Defining multiple methods with the same name
b) The ability to acquire properties and behaviors from another class
c) Creating multiple instances of a class
d) Converting functions into classes

4) Which of the following returns the current date and time?
a) datetime.date.today() b) datetime.datetime.now()
c) datetime.time.now() d) datetime.now.time()

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a) math.pi b) math.root
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b) datetime
c) logging
d) os

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d) unittest

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c) A compiler that creates an executable file
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11) Which command is used to run a Python program from the command line?

a) run python program.py
b) python program.py
c) exec program.py
d) start program

12) Which of the following is not a variation of the Python execution model?

a) CPython
b) Jython
c) PyRuby
d) PyPy

13) Which of the following is a mutable data type in Python?

a) tuple
b) string
c) int
d) list

14) Which of the following is used to define a function in Python?

a) def
b) define
c) func
d) function

SLR-QH-215

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Programming Basics Using Python (CSEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Assume suitable data if necessary.
3) Figures to the right indicate full marks for that question.

Section – I

Q.2 Write answer to any three questions. **12**

a) Write a program of palindrome using string.

b) List & Explain Execution Model Variations in Python in detail.

c) Differentiate between list and tuples in python.

d) Explain Class and Instance Objects in Python.

e) Explain in detail functions in Python.

Q.3 Write answer to any two questions. **16**

a) Explain python operators and expression with syntax and example.

b) What is a variable? What are the rules for Python variables? Explain Global and Local Python Variables.

c) Explain inheritance in python with their types.

Section – II

Q.4 Write answer to any three questions. **12**

a) Describe Calendar related functions with example.

b) Explain basic date and time types with syntax and example.

c) Explain Data Persistence in python.

d) Compare shallow copy vs deep copy.

e) Write a python program to create a 2D Numpy array and perform basic operations like addition, subtraction, division and multiplication.

Q.5 Write answer to any two questions. **16**

a) Explain mathematical functions and pseudo random functions with syntax and example.

b) What is CSV file? Explain the Read and Write operations perform on CSV file.

c) What is debugging in python? Explain Logging facility in python.

SLR-QH-216

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

2) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

3) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

4) Which model delivers working software in small increments?
a) Waterfall model b) Agile model
c) Big bang model d) V-model

5) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

6) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

7) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

8) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

9) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

10) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

11) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

12) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

13) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

14) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.

b) What is SRS? Explain need of SRS.

c) Explain ER diagram in detail.

d) Write a short note on Function Oriented Design.

e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.

b) Define software process. Explain characteristics of software process.

c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.

b) Explain Effort Estimation.

c) Explain CMM with diagram.

d) What are levels of testing? Explain Unit Testing in detail.

e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.

b) Explain Software Configuration Management Process.

c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

2) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

3) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

4) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

5) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

6) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

7) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

8) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

9) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

10) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

11) Which model delivers working software in small increments?
a) Waterfall model b) Agile model
c) Big bang model d) V-model

12) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

13) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

14) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.

b) What is SRS? Explain need of SRS.

c) Explain ER diagram in detail.

d) Write a short note on Function Oriented Design.

e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.

b) Define software process. Explain characteristics of software process.

c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.

b) Explain Effort Estimation.

c) Explain CMM with diagram.

d) What are levels of testing? Explain Unit Testing in detail.

e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.

b) Explain Software Configuration Management Process.

c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. 14

1) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

2) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

3) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

4) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

5) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

6) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

7) An Entity Relationship Diagram (ERD) shows _____.
   a) The flow of control
   b) The relationship between data entities
   c) Software modules
   d) Program logic

8) Which model delivers working software in small increments?
   a) Waterfall model
   b) Agile model
   c) Big bang model
   d) V-model

9) The Software Project Management Process includes _____.
   a) Planning, Monitoring, and Control
   b) Coding and Testing
   c) Installation only
   d) Debugging only

10) A good SRS should be _____.
   a) Ambiguous and incomplete
   b) Clear, complete, and verifiable
   c) Written only by users
   d) Focused only on design

11) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
   a) Component
   b) Connector
   c) Module
   d) None of above

12) Risk Management aims to _____ and then take action to minimize their effect on project.
   a) Identify cost and estimation
   b) Identify risks
   c) Identify plan
   d) All of above

13) The output of requirement process is _____.
   a) Validated SRS
   b) Validation
   c) Problem analysis
   d) Verification

14) White Box Testing is also called as _____.
   a) Functional testing
   b) Structural testing
   c) Stress testing
   d) Interface testing

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

2) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

3) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

4) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

5) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

6) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

7) _____ is a first level of testing.
a) Unit testing
b) Integration Testing
c) System Testing
d) None of above

8) The CMM has how many levels of maturity?
a) 3
b) 4
c) 5
d) 6

9) In a DFD, external entities are shown as _____.
a) Circles
b) Rectangles
c) Arrows
d) Ovals

10) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

11) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

12) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

13) Which model delivers working software in small increments?
a) Waterfall model
b) Agile model
c) Big bang model
d) V-model

14) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

SLR-QH-216

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS)
Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.

b) What is SRS? Explain need of SRS.

c) Explain ER diagram in detail.

d) Write a short note on Function Oriented Design.

e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.

b) Define software process. Explain characteristics of software process.

c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.

b) Explain Effort Estimation.

c) Explain CMM with diagram.

d) What are levels of testing? Explain Unit Testing in detail.

e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.

b) Explain Software Configuration Management Process.

c) What is Scrum? Explain in detail Scrum methodology.

SLR-QH-216

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

2) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

3) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

4) Which model delivers working software in small increments?
a) Waterfall model b) Agile model
c) Big bang model d) V-model

5) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

6) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

7) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

8) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

9) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

10) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

11) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

12) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

13) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

14) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

2) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

3) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

4) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

5) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

6) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

7) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

8) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

9) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

10) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

11) Which model delivers working software in small increments?
a) Waterfall model b) Agile model
c) Big bang model d) V-model

12) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

13) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

14) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

2) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

3) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

4) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

5) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

6) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

7) An Entity Relationship Diagram (ERD) shows _____.
   a) The flow of control
   b) The relationship between data entities
   c) Software modules
   d) Program logic

8) Which model delivers working software in small increments?
   a) Waterfall model
   b) Agile model
   c) Big bang model
   d) V-model

9) The Software Project Management Process includes _____.
   a) Planning, Monitoring, and Control
   b) Coding and Testing
   c) Installation only
   d) Debugging only

10) A good SRS should be _____.
   a) Ambiguous and incomplete
   b) Clear, complete, and verifiable
   c) Written only by users
   d) Focused only on design

11) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
   a) Component
   b) Connector
   c) Module
   d) None of above

12) Risk Management aims to _____ and then take action to minimize their effect on project.
   a) Identify cost and estimation
   b) Identify risks
   c) Identify plan
   d) All of above

13) The output of requirement process is _____.
   a) Validated SRS
   b) Validation
   c) Problem analysis
   d) Verification

14) White Box Testing is also called as _____.
   a) Functional testing
   b) Structural testing
   c) Stress testing
   d) Interface testing

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

2) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

3) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

4) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

5) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

6) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

7) _____ is a first level of testing.
a) Unit testing
b) Integration Testing
c) System Testing
d) None of above

8) The CMM has how many levels of maturity?
a) 3
b) 4
c) 5
d) 6

9) In a DFD, external entities are shown as _____.
a) Circles
b) Rectangles
c) Arrows
d) Ovals

10) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

11) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

12) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

13) Which model delivers working software in small increments?
a) Waterfall model
b) Agile model
c) Big bang model
d) V-model

14) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

SLR-QH-216

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

SLR-QH-216

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

2) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

3) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

4) Which model delivers working software in small increments?
a) Waterfall model b) Agile model
c) Big bang model d) V-model

5) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

6) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

7) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

8) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

9) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

10) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

11) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

12) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

13) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

14) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.

b) What is SRS? Explain need of SRS.

c) Explain ER diagram in detail.

d) Write a short note on Function Oriented Design.

e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.

b) Define software process. Explain characteristics of software process.

c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.

b) Explain Effort Estimation.

c) Explain CMM with diagram.

d) What are levels of testing? Explain Unit Testing in detail.

e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.

b) Explain Software Configuration Management Process.

c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

2) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

3) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

4) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

5) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

6) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

7) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

8) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

9) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

10) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

11) Which model delivers working software in small increments?
a) Waterfall model b) Agile model
c) Big bang model d) V-model

12) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

13) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

14) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

2) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

3) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

4) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

5) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

6) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

7) An Entity Relationship Diagram (ERD) shows _____.
   a) The flow of control
   b) The relationship between data entities
   c) Software modules
   d) Program logic

8) Which model delivers working software in small increments?
   a) Waterfall model
   b) Agile model
   c) Big bang model
   d) V-model

9) The Software Project Management Process includes _____.
   a) Planning, Monitoring, and Control
   b) Coding and Testing
   c) Installation only
   d) Debugging only

10) A good SRS should be _____.
   a) Ambiguous and incomplete
   b) Clear, complete, and verifiable
   c) Written only by users
   d) Focused only on design

11) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
   a) Component
   b) Connector
   c) Module
   d) None of above

12) Risk Management aims to _____ and then take action to minimize their effect on project.
   a) Identify cost and estimation
   b) Identify risks
   c) Identify plan
   d) All of above

13) The output of requirement process is _____.
   a) Validated SRS
   b) Validation
   c) Problem analysis
   d) Verification

14) White Box Testing is also called as _____.
   a) Functional testing
   b) Structural testing
   c) Stress testing
   d) Interface testing

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

2) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

3) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

4) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

5) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

6) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

7) _____ is a first level of testing.
a) Unit testing
b) Integration Testing
c) System Testing
d) None of above

8) The CMM has how many levels of maturity?
a) 3
b) 4
c) 5
d) 6

9) In a DFD, external entities are shown as _____.
a) Circles
b) Rectangles
c) Arrows
d) Ovals

10) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

11) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

12) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

13) Which model delivers working software in small increments?
a) Waterfall model
b) Agile model
c) Big bang model
d) V-model

14) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

SLR-QH-216

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

2) The major challenge in software engineering is _____.
a) Increasing hardware cost
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a) The flow of control
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d) Program logic

4) Which model delivers working software in small increments?
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c) Big bang model d) V-model

5) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

6) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

7) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

8) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

9) The output of requirement process is _____.
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10) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
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11) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

12) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

13) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

14) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

2) The output of requirement process is _____.
a) Validated SRS b) Validation
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11) Which model delivers working software in small increments?
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13) A good SRS should be _____.
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c) Written only by users
d) Focused only on design

14) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

2) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

3) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

4) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

5) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

6) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

7) An Entity Relationship Diagram (ERD) shows _____.
   a) The flow of control
   b) The relationship between data entities
   c) Software modules
   d) Program logic

8) Which model delivers working software in small increments?
   a) Waterfall model
   b) Agile model
   c) Big bang model
   d) V-model

9) The Software Project Management Process includes _____.
   a) Planning, Monitoring, and Control
   b) Coding and Testing
   c) Installation only
   d) Debugging only

10) A good SRS should be _____.
   a) Ambiguous and incomplete
   b) Clear, complete, and verifiable
   c) Written only by users
   d) Focused only on design

11) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
   a) Component
   b) Connector
   c) Module
   d) None of above

12) Risk Management aims to _____ and then take action to minimize their effect on project.
   a) Identify cost and estimation
   b) Identify risks
   c) Identify plan
   d) All of above

13) The output of requirement process is _____.
   a) Validated SRS
   b) Validation
   c) Problem analysis
   d) Verification

14) White Box Testing is also called as _____.
   a) Functional testing
   b) Structural testing
   c) Stress testing
   d) Interface testing

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.

b) What is SRS? Explain need of SRS.

c) Explain ER diagram in detail.

d) Write a short note on Function Oriented Design.

e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.

b) Define software process. Explain characteristics of software process.

c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.

b) Explain Effort Estimation.

c) Explain CMM with diagram.

d) What are levels of testing? Explain Unit Testing in detail.

e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.

b) Explain Software Configuration Management Process.

c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

2) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

3) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

4) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

5) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

6) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

7) _____ is a first level of testing.
a) Unit testing
b) Integration Testing
c) System Testing
d) None of above

8) The CMM has how many levels of maturity?
a) 3
b) 4
c) 5
d) 6

9) In a DFD, external entities are shown as _____.
a) Circles
b) Rectangles
c) Arrows
d) Ovals

10) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

11) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

12) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

13) Which model delivers working software in small increments?
a) Waterfall model
b) Agile model
c) Big bang model
d) V-model

14) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

SLR-QH-216

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

2) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

3) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

4) Which model delivers working software in small increments?
a) Waterfall model b) Agile model
c) Big bang model d) V-model

5) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

6) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

7) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

8) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

9) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

10) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

11) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

12) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

13) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

14) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

2) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

3) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

4) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

5) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

6) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

7) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

8) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

9) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

10) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

11) Which model delivers working software in small increments?
a) Waterfall model b) Agile model
c) Big bang model d) V-model

12) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

13) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

14) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

2) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

3) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

4) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

5) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

6) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

7) An Entity Relationship Diagram (ERD) shows _____.
   a) The flow of control
   b) The relationship between data entities
   c) Software modules
   d) Program logic

8) Which model delivers working software in small increments?
   a) Waterfall model
   b) Agile model
   c) Big bang model
   d) V-model

9) The Software Project Management Process includes _____.
   a) Planning, Monitoring, and Control
   b) Coding and Testing
   c) Installation only
   d) Debugging only

10) A good SRS should be _____.
   a) Ambiguous and incomplete
   b) Clear, complete, and verifiable
   c) Written only by users
   d) Focused only on design

11) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
   a) Component
   b) Connector
   c) Module
   d) None of above

12) Risk Management aims to _____ and then take action to minimize their effect on project.
   a) Identify cost and estimation
   b) Identify risks
   c) Identify plan
   d) All of above

13) The output of requirement process is _____.
   a) Validated SRS
   b) Validation
   c) Problem analysis
   d) Verification

14) White Box Testing is also called as _____.
   a) Functional testing
   b) Structural testing
   c) Stress testing
   d) Interface testing

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

2) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

3) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

4) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

5) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

6) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

7) _____ is a first level of testing.
a) Unit testing
b) Integration Testing
c) System Testing
d) None of above

8) The CMM has how many levels of maturity?
a) 3
b) 4
c) 5
d) 6

9) In a DFD, external entities are shown as _____.
a) Circles
b) Rectangles
c) Arrows
d) Ovals

10) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

11) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

12) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

13) Which model delivers working software in small increments?
a) Waterfall model
b) Agile model
c) Big bang model
d) V-model

14) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

SLR-QH-216

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

2) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

3) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

4) Which model delivers working software in small increments?
a) Waterfall model b) Agile model
c) Big bang model d) V-model

5) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

6) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

7) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

8) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

9) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

10) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

11) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

12) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

13) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

14) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

2) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

3) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

4) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

5) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

6) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

7) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

8) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

9) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

10) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

11) Which model delivers working software in small increments?
a) Waterfall model b) Agile model
c) Big bang model d) V-model

12) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

13) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

14) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

2) _____ is a first level of testing.
a) Unit testing b) Integration Testing
c) System Testing d) None of above

3) The CMM has how many levels of maturity?
a) 3 b) 4
c) 5 d) 6

4) In a DFD, external entities are shown as _____.
a) Circles b) Rectangles
c) Arrows d) Ovals

5) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

6) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

7) An Entity Relationship Diagram (ERD) shows _____.
   a) The flow of control
   b) The relationship between data entities
   c) Software modules
   d) Program logic

8) Which model delivers working software in small increments?
   a) Waterfall model
   b) Agile model
   c) Big bang model
   d) V-model

9) The Software Project Management Process includes _____.
   a) Planning, Monitoring, and Control
   b) Coding and Testing
   c) Installation only
   d) Debugging only

10) A good SRS should be _____.
   a) Ambiguous and incomplete
   b) Clear, complete, and verifiable
   c) Written only by users
   d) Focused only on design

11) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
   a) Component
   b) Connector
   c) Module
   d) None of above

12) Risk Management aims to _____ and then take action to minimize their effect on project.
   a) Identify cost and estimation
   b) Identify risks
   c) Identify plan
   d) All of above

13) The output of requirement process is _____.
   a) Validated SRS
   b) Validation
   c) Problem analysis
   d) Verification

14) White Box Testing is also called as _____.
   a) Functional testing
   b) Structural testing
   c) Stress testing
   d) Interface testing

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.
b) What is SRS? Explain need of SRS.
c) Explain ER diagram in detail.
d) Write a short note on Function Oriented Design.
e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.
b) Define software process. Explain characteristics of software process.
c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.
b) Explain Effort Estimation.
c) Explain CMM with diagram.
d) What are levels of testing? Explain Unit Testing in detail.
e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.
b) Explain Software Configuration Management Process.
c) What is Scrum? Explain in detail Scrum methodology.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary and state it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct answer. **14**

1) A good SRS should be _____.
a) Ambiguous and incomplete
b) Clear, complete, and verifiable
c) Written only by users
d) Focused only on design

2) A _____ is logically separable part of program. It is a program unit that is discrete and identifiable with respect to compiling and loading.
a) Component b) Connector
c) Module d) None of above

3) Risk Management aims to _____ and then take action to minimize their effect on project.
a) Identify cost and estimation b) Identify risks
c) Identify plan d) All of above

4) The output of requirement process is _____.
a) Validated SRS b) Validation
c) Problem analysis d) Verification

5) White Box Testing is also called as _____.
a) Functional testing b) Structural testing
c) Stress testing d) Interface testing

6) Agile Software Development depends on _____.
a) Incremental Development
b) Iterative Development
c) Linear Development
d) Both Incremental and Iterative Development

7) _____ is a first level of testing.
a) Unit testing
b) Integration Testing
c) System Testing
d) None of above

8) The CMM has how many levels of maturity?
a) 3
b) 4
c) 5
d) 6

9) In a DFD, external entities are shown as _____.
a) Circles
b) Rectangles
c) Arrows
d) Ovals

10) Software Engineering mainly deals with _____.
a) Hardware design
b) Software development and maintenance
c) Network installation
d) Circuit fabrication

11) The major challenge in software engineering is _____.
a) Increasing hardware cost
b) Managing changing requirements
c) Increasing electricity usage
d) Writing long code

12) An Entity Relationship Diagram (ERD) shows _____.
a) The flow of control
b) The relationship between data entities
c) Software modules
d) Program logic

13) Which model delivers working software in small increments?
a) Waterfall model
b) Agile model
c) Big bang model
d) V-model

14) The Software Project Management Process includes _____.
a) Planning, Monitoring, and Control
b) Coding and Testing
c) Installation only
d) Debugging only

Seat No.	

Set | S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April - 2026
Software Engineering (CSEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary and state it clearly.

Section – I

Q.2 Attempt any Four. **16**

a) Explain Agile model.

b) What is SRS? Explain need of SRS.

c) Explain ER diagram in detail.

d) Write a short note on Function Oriented Design.

e) Explain role of architecture design.

Q.3 Attempt any Two. **12**

a) Define DFD with all notations and levels. Draw Zero level DFD for Hospital Management System.

b) Define software process. Explain characteristics of software process.

c) Explain in detail architecture style for component & connector view.

Section – II

Q.4 Attempt any Four. **16**

a) Compare White and Black box testing.

b) Explain Effort Estimation.

c) Explain CMM with diagram.

d) What are levels of testing? Explain Unit Testing in detail.

e) Explain new management responsibilities.

Q.5 Attempt any Two. **12**

a) What is risk management? Explain in detail risk management activities.

b) Explain Software Configuration Management Process.

c) What is Scrum? Explain in detail Scrum methodology.

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Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

2) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

3) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

4) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

5) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

6) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

7) Rotating magnetic field is produced in a three-phase induction motor due to _____.
   a) Single phase supply
   b) DC excitation
   c) Three phase supply
   d) Commutator action

8) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
   a) No need for a field winding
   b) Higher efficiency at low speeds
   c) Reduced cost of construction
   d) All of the above

9) Which motor works on the principle of variable reluctance?
   a) Stepper motor
   b) Switched reluctance motor
   c) DC shunt motor
   d) Universal motor

10) Brushless DC motor does not have _____.
   a) Rotor
   b) Stator winding
   c) Mechanical commutator
   d) Permanent magnet

11) The main purpose of energy efficient machines is to _____.
   a) Increase losses
   b) Reduce efficiency
   c) Minimize losses
   d) Increase temperature rise

12) Which of the following does not change in a transformer?
   a) Current
   b) Voltage
   c) Frequency
   d) All of the above

13) Auto-transformer has _____.
   a) Two separate windings
   b) No winding
   c) Single continuous winding
   d) Rotor winding

14) Open circuit test on transformers is conducted to determine _____.
   a) hysteresis losses
   b) copper losses
   c) core losses
   d) eddy current losses

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
a) No need for a field winding
b) Higher efficiency at low speeds
c) Reduced cost of construction
d) All of the above

2) Which motor works on the principle of variable reluctance?
a) Stepper motor b) Switched reluctance motor
c) DC shunt motor d) Universal motor

3) Brushless DC motor does not have _____.
a) Rotor b) Stator winding
c) Mechanical commutator d) Permanent magnet

4) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

5) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

6) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

7) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

8) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

9) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

10) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

11) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

12) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

13) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

14) Rotating magnetic field is produced in a three-phase induction motor due to _____.
a) Single phase supply b) DC excitation
c) Three phase supply d) Commutator action

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

2) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

3) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

4) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

5) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

6) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

7) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

8) In the two-wattmeter method, total power is equal to _____.
   a) Difference of wattmeter readings
   b) Product of wattmeter readings
   c) Sum of wattmeter readings
   d) Average of wattmeter readings

9) The speed of a separately excited DC motor can be controlled by _____.
   a) Armature voltage control b) Field control
   c) Armature resistance control d) All of the above

10) The synchronous speed of a synchronous generator is dependent on _____.
   a) Rotor size
   b) Number of poles and frequency
   c) Magnetic field strength
   d) Load current

11) Rotating magnetic field is produced in a three-phase induction motor due to _____.
   a) Single phase supply b) DC excitation
   c) Three phase supply d) Commutator action

12) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
   a) No need for a field winding
   b) Higher efficiency at low speeds
   c) Reduced cost of construction
   d) All of the above

13) Which motor works on the principle of variable reluctance?
   a) Stepper motor b) Switched reluctance motor
   c) DC shunt motor d) Universal motor

14) Brushless DC motor does not have _____.
   a) Rotor b) Stator winding
   c) Mechanical commutator d) Permanent magnet

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

2) Rotating magnetic field is produced in a three-phase induction motor due to _____.
a) Single phase supply b) DC excitation
c) Three phase supply d) Commutator action

3) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
a) No need for a field winding
b) Higher efficiency at low speeds
c) Reduced cost of construction
d) All of the above

4) Which motor works on the principle of variable reluctance?
a) Stepper motor b) Switched reluctance motor
c) DC shunt motor d) Universal motor

5) Brushless DC motor does not have _____.
a) Rotor b) Stator winding
c) Mechanical commutator d) Permanent magnet

6) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

7) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

8) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

9) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

10) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

11) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

12) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

13) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

14) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

2) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

3) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

4) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

5) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

6) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

7) Rotating magnetic field is produced in a three-phase induction motor due to _____.
   a) Single phase supply
   b) DC excitation
   c) Three phase supply
   d) Commutator action

8) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
   a) No need for a field winding
   b) Higher efficiency at low speeds
   c) Reduced cost of construction
   d) All of the above

9) Which motor works on the principle of variable reluctance?
   a) Stepper motor
   b) Switched reluctance motor
   c) DC shunt motor
   d) Universal motor

10) Brushless DC motor does not have _____.
   a) Rotor
   b) Stator winding
   c) Mechanical commutator
   d) Permanent magnet

11) The main purpose of energy efficient machines is to _____.
   a) Increase losses
   b) Reduce efficiency
   c) Minimize losses
   d) Increase temperature rise

12) Which of the following does not change in a transformer?
   a) Current
   b) Voltage
   c) Frequency
   d) All of the above

13) Auto-transformer has _____.
   a) Two separate windings
   b) No winding
   c) Single continuous winding
   d) Rotor winding

14) Open circuit test on transformers is conducted to determine _____.
   a) hysteresis losses
   b) copper losses
   c) core losses
   d) eddy current losses

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
a) No need for a field winding
b) Higher efficiency at low speeds
c) Reduced cost of construction
d) All of the above

2) Which motor works on the principle of variable reluctance?
a) Stepper motor b) Switched reluctance motor
c) DC shunt motor d) Universal motor

3) Brushless DC motor does not have _____.
a) Rotor b) Stator winding
c) Mechanical commutator d) Permanent magnet

4) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

5) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

6) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

7) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

8) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

9) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

10) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

11) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

12) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

13) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

14) Rotating magnetic field is produced in a three-phase induction motor due to _____.
a) Single phase supply b) DC excitation
c) Three phase supply d) Commutator action

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

2) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

3) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

4) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

5) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

6) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

7) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

8) In the two-wattmeter method, total power is equal to _____.
   a) Difference of wattmeter readings
   b) Product of wattmeter readings
   c) Sum of wattmeter readings
   d) Average of wattmeter readings

9) The speed of a separately excited DC motor can be controlled by _____.
   a) Armature voltage control b) Field control
   c) Armature resistance control d) All of the above

10) The synchronous speed of a synchronous generator is dependent on _____.
   a) Rotor size
   b) Number of poles and frequency
   c) Magnetic field strength
   d) Load current

11) Rotating magnetic field is produced in a three-phase induction motor due to _____.
   a) Single phase supply b) DC excitation
   c) Three phase supply d) Commutator action

12) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
   a) No need for a field winding
   b) Higher efficiency at low speeds
   c) Reduced cost of construction
   d) All of the above

13) Which motor works on the principle of variable reluctance?
   a) Stepper motor b) Switched reluctance motor
   c) DC shunt motor d) Universal motor

14) Brushless DC motor does not have _____.
   a) Rotor b) Stator winding
   c) Mechanical commutator d) Permanent magnet

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

2) Rotating magnetic field is produced in a three-phase induction motor due to _____.
a) Single phase supply b) DC excitation
c) Three phase supply d) Commutator action

3) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
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b) Higher efficiency at low speeds
c) Reduced cost of construction
d) All of the above

4) Which motor works on the principle of variable reluctance?
a) Stepper motor b) Switched reluctance motor
c) DC shunt motor d) Universal motor

5) Brushless DC motor does not have _____.
a) Rotor b) Stator winding
c) Mechanical commutator d) Permanent magnet

6) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

7) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

8) Auto-transformer has _____.
a) Two separate windings b) No winding
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9) Open circuit test on transformers is conducted to determine _____.
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10) Which instrument is used for measuring electrical energy?
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12) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

13) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

14) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

SLR-QH-217

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

2) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

3) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

4) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

5) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

6) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

7) Rotating magnetic field is produced in a three-phase induction motor due to _____.
   a) Single phase supply
   b) DC excitation
   c) Three phase supply
   d) Commutator action

8) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
   a) No need for a field winding
   b) Higher efficiency at low speeds
   c) Reduced cost of construction
   d) All of the above

9) Which motor works on the principle of variable reluctance?
   a) Stepper motor
   b) Switched reluctance motor
   c) DC shunt motor
   d) Universal motor

10) Brushless DC motor does not have _____.
   a) Rotor
   b) Stator winding
   c) Mechanical commutator
   d) Permanent magnet

11) The main purpose of energy efficient machines is to _____.
   a) Increase losses
   b) Reduce efficiency
   c) Minimize losses
   d) Increase temperature rise

12) Which of the following does not change in a transformer?
   a) Current
   b) Voltage
   c) Frequency
   d) All of the above

13) Auto-transformer has _____.
   a) Two separate windings
   b) No winding
   c) Single continuous winding
   d) Rotor winding

14) Open circuit test on transformers is conducted to determine _____.
   a) hysteresis losses
   b) copper losses
   c) core losses
   d) eddy current losses

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
a) No need for a field winding
b) Higher efficiency at low speeds
c) Reduced cost of construction
d) All of the above

2) Which motor works on the principle of variable reluctance?
a) Stepper motor b) Switched reluctance motor
c) DC shunt motor d) Universal motor

3) Brushless DC motor does not have _____.
a) Rotor b) Stator winding
c) Mechanical commutator d) Permanent magnet

4) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

5) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

6) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

7) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

8) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

9) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

10) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

11) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

12) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

13) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

14) Rotating magnetic field is produced in a three-phase induction motor due to _____.
a) Single phase supply b) DC excitation
c) Three phase supply d) Commutator action

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

2) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

3) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

4) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

5) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

6) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

7) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

8) In the two-wattmeter method, total power is equal to _____.
   a) Difference of wattmeter readings
   b) Product of wattmeter readings
   c) Sum of wattmeter readings
   d) Average of wattmeter readings

9) The speed of a separately excited DC motor can be controlled by _____.
   a) Armature voltage control b) Field control
   c) Armature resistance control d) All of the above

10) The synchronous speed of a synchronous generator is dependent on _____.
   a) Rotor size
   b) Number of poles and frequency
   c) Magnetic field strength
   d) Load current

11) Rotating magnetic field is produced in a three-phase induction motor due to _____.
   a) Single phase supply b) DC excitation
   c) Three phase supply d) Commutator action

12) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
   a) No need for a field winding
   b) Higher efficiency at low speeds
   c) Reduced cost of construction
   d) All of the above

13) Which motor works on the principle of variable reluctance?
   a) Stepper motor b) Switched reluctance motor
   c) DC shunt motor d) Universal motor

14) Brushless DC motor does not have _____.
   a) Rotor b) Stator winding
   c) Mechanical commutator d) Permanent magnet

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

2) Rotating magnetic field is produced in a three-phase induction motor due to _____.
a) Single phase supply b) DC excitation
c) Three phase supply d) Commutator action

3) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
a) No need for a field winding
b) Higher efficiency at low speeds
c) Reduced cost of construction
d) All of the above

4) Which motor works on the principle of variable reluctance?
a) Stepper motor b) Switched reluctance motor
c) DC shunt motor d) Universal motor

5) Brushless DC motor does not have _____.
a) Rotor b) Stator winding
c) Mechanical commutator d) Permanent magnet

6) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

7) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

8) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

9) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

10) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

11) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

12) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

13) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

14) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

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Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

2) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

3) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

4) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

5) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

6) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

7) Rotating magnetic field is produced in a three-phase induction motor due to _____.
   a) Single phase supply
   b) DC excitation
   c) Three phase supply
   d) Commutator action

8) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
   a) No need for a field winding
   b) Higher efficiency at low speeds
   c) Reduced cost of construction
   d) All of the above

9) Which motor works on the principle of variable reluctance?
   a) Stepper motor
   b) Switched reluctance motor
   c) DC shunt motor
   d) Universal motor

10) Brushless DC motor does not have _____.
   a) Rotor
   b) Stator winding
   c) Mechanical commutator
   d) Permanent magnet

11) The main purpose of energy efficient machines is to _____.
   a) Increase losses
   b) Reduce efficiency
   c) Minimize losses
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12) Which of the following does not change in a transformer?
   a) Current
   b) Voltage
   c) Frequency
   d) All of the above

13) Auto-transformer has _____.
   a) Two separate windings
   b) No winding
   c) Single continuous winding
   d) Rotor winding

14) Open circuit test on transformers is conducted to determine _____.
   a) hysteresis losses
   b) copper losses
   c) core losses
   d) eddy current losses

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
a) No need for a field winding
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c) Reduced cost of construction
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2) Which motor works on the principle of variable reluctance?
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c) Mechanical commutator d) Permanent magnet

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d) Load current

14) Rotating magnetic field is produced in a three-phase induction motor due to _____.
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c) Three phase supply d) Commutator action

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

2) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

3) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

4) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

5) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

6) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

7) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

8) In the two-wattmeter method, total power is equal to _____.
   a) Difference of wattmeter readings
   b) Product of wattmeter readings
   c) Sum of wattmeter readings
   d) Average of wattmeter readings

9) The speed of a separately excited DC motor can be controlled by _____.
   a) Armature voltage control b) Field control
   c) Armature resistance control d) All of the above

10) The synchronous speed of a synchronous generator is dependent on _____.
   a) Rotor size
   b) Number of poles and frequency
   c) Magnetic field strength
   d) Load current

11) Rotating magnetic field is produced in a three-phase induction motor due to _____.
   a) Single phase supply b) DC excitation
   c) Three phase supply d) Commutator action

12) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
   a) No need for a field winding
   b) Higher efficiency at low speeds
   c) Reduced cost of construction
   d) All of the above

13) Which motor works on the principle of variable reluctance?
   a) Stepper motor b) Switched reluctance motor
   c) DC shunt motor d) Universal motor

14) Brushless DC motor does not have _____.
   a) Rotor b) Stator winding
   c) Mechanical commutator d) Permanent magnet

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

2) Rotating magnetic field is produced in a three-phase induction motor due to _____.
a) Single phase supply b) DC excitation
c) Three phase supply d) Commutator action

3) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
a) No need for a field winding
b) Higher efficiency at low speeds
c) Reduced cost of construction
d) All of the above

4) Which motor works on the principle of variable reluctance?
a) Stepper motor b) Switched reluctance motor
c) DC shunt motor d) Universal motor

5) Brushless DC motor does not have _____.
a) Rotor b) Stator winding
c) Mechanical commutator d) Permanent magnet

6) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

7) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

8) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

9) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

10) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

11) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

12) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

13) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

14) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

2) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

3) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

4) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

5) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

6) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

7) Rotating magnetic field is produced in a three-phase induction motor due to _____.
   a) Single phase supply
   b) DC excitation
   c) Three phase supply
   d) Commutator action

8) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
   a) No need for a field winding
   b) Higher efficiency at low speeds
   c) Reduced cost of construction
   d) All of the above

9) Which motor works on the principle of variable reluctance?
   a) Stepper motor
   b) Switched reluctance motor
   c) DC shunt motor
   d) Universal motor

10) Brushless DC motor does not have _____.
   a) Rotor
   b) Stator winding
   c) Mechanical commutator
   d) Permanent magnet

11) The main purpose of energy efficient machines is to _____.
   a) Increase losses
   b) Reduce efficiency
   c) Minimize losses
   d) Increase temperature rise

12) Which of the following does not change in a transformer?
   a) Current
   b) Voltage
   c) Frequency
   d) All of the above

13) Auto-transformer has _____.
   a) Two separate windings
   b) No winding
   c) Single continuous winding
   d) Rotor winding

14) Open circuit test on transformers is conducted to determine _____.
   a) hysteresis losses
   b) copper losses
   c) core losses
   d) eddy current losses

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
a) No need for a field winding
b) Higher efficiency at low speeds
c) Reduced cost of construction
d) All of the above

2) Which motor works on the principle of variable reluctance?
a) Stepper motor b) Switched reluctance motor
c) DC shunt motor d) Universal motor

3) Brushless DC motor does not have _____.
a) Rotor b) Stator winding
c) Mechanical commutator d) Permanent magnet

4) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

5) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

6) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

7) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

8) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

9) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

10) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

11) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

12) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

13) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

14) Rotating magnetic field is produced in a three-phase induction motor due to _____.
a) Single phase supply b) DC excitation
c) Three phase supply d) Commutator action

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

2) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

3) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

4) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

5) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

6) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

7) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

8) In the two-wattmeter method, total power is equal to _____.
   a) Difference of wattmeter readings
   b) Product of wattmeter readings
   c) Sum of wattmeter readings
   d) Average of wattmeter readings

9) The speed of a separately excited DC motor can be controlled by _____.
   a) Armature voltage control b) Field control
   c) Armature resistance control d) All of the above

10) The synchronous speed of a synchronous generator is dependent on _____.
   a) Rotor size
   b) Number of poles and frequency
   c) Magnetic field strength
   d) Load current

11) Rotating magnetic field is produced in a three-phase induction motor due to _____.
   a) Single phase supply b) DC excitation
   c) Three phase supply d) Commutator action

12) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
   a) No need for a field winding
   b) Higher efficiency at low speeds
   c) Reduced cost of construction
   d) All of the above

13) Which motor works on the principle of variable reluctance?
   a) Stepper motor b) Switched reluctance motor
   c) DC shunt motor d) Universal motor

14) Brushless DC motor does not have _____.
   a) Rotor b) Stator winding
   c) Mechanical commutator d) Permanent magnet

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

2) Rotating magnetic field is produced in a three-phase induction motor due to _____.
a) Single phase supply b) DC excitation
c) Three phase supply d) Commutator action

3) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
a) No need for a field winding
b) Higher efficiency at low speeds
c) Reduced cost of construction
d) All of the above

4) Which motor works on the principle of variable reluctance?
a) Stepper motor b) Switched reluctance motor
c) DC shunt motor d) Universal motor

5) Brushless DC motor does not have _____.
a) Rotor b) Stator winding
c) Mechanical commutator d) Permanent magnet

6) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

7) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

8) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

9) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

10) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

11) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

12) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

13) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

14) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

SLR-QH-217

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

2) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

3) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

4) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

5) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

6) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

7) Rotating magnetic field is produced in a three-phase induction motor due to _____.
   a) Single phase supply
   b) DC excitation
   c) Three phase supply
   d) Commutator action

8) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
   a) No need for a field winding
   b) Higher efficiency at low speeds
   c) Reduced cost of construction
   d) All of the above

9) Which motor works on the principle of variable reluctance?
   a) Stepper motor
   b) Switched reluctance motor
   c) DC shunt motor
   d) Universal motor

10) Brushless DC motor does not have _____.
   a) Rotor
   b) Stator winding
   c) Mechanical commutator
   d) Permanent magnet

11) The main purpose of energy efficient machines is to _____.
   a) Increase losses
   b) Reduce efficiency
   c) Minimize losses
   d) Increase temperature rise

12) Which of the following does not change in a transformer?
   a) Current
   b) Voltage
   c) Frequency
   d) All of the above

13) Auto-transformer has _____.
   a) Two separate windings
   b) No winding
   c) Single continuous winding
   d) Rotor winding

14) Open circuit test on transformers is conducted to determine _____.
   a) hysteresis losses
   b) copper losses
   c) core losses
   d) eddy current losses

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
a) No need for a field winding
b) Higher efficiency at low speeds
c) Reduced cost of construction
d) All of the above

2) Which motor works on the principle of variable reluctance?
a) Stepper motor b) Switched reluctance motor
c) DC shunt motor d) Universal motor

3) Brushless DC motor does not have _____.
a) Rotor b) Stator winding
c) Mechanical commutator d) Permanent magnet

4) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

5) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

6) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

7) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

8) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

9) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

10) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

11) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

12) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

13) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

14) Rotating magnetic field is produced in a three-phase induction motor due to _____.
a) Single phase supply b) DC excitation
c) Three phase supply d) Commutator action

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

2) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

3) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

4) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

5) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

6) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

7) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

8) In the two-wattmeter method, total power is equal to _____.
   a) Difference of wattmeter readings
   b) Product of wattmeter readings
   c) Sum of wattmeter readings
   d) Average of wattmeter readings

9) The speed of a separately excited DC motor can be controlled by _____.
   a) Armature voltage control b) Field control
   c) Armature resistance control d) All of the above

10) The synchronous speed of a synchronous generator is dependent on _____.
   a) Rotor size
   b) Number of poles and frequency
   c) Magnetic field strength
   d) Load current

11) Rotating magnetic field is produced in a three-phase induction motor due to _____.
   a) Single phase supply b) DC excitation
   c) Three phase supply d) Commutator action

12) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
   a) No need for a field winding
   b) Higher efficiency at low speeds
   c) Reduced cost of construction
   d) All of the above

13) Which motor works on the principle of variable reluctance?
   a) Stepper motor b) Switched reluctance motor
   c) DC shunt motor d) Universal motor

14) Brushless DC motor does not have _____.
   a) Rotor b) Stator winding
   c) Mechanical commutator d) Permanent magnet

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3∅ induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) The synchronous speed of a synchronous generator is dependent on _____.
a) Rotor size
b) Number of poles and frequency
c) Magnetic field strength
d) Load current

2) Rotating magnetic field is produced in a three-phase induction motor due to _____.
a) Single phase supply b) DC excitation
c) Three phase supply d) Commutator action

3) What is the main advantage of a permanent magnet DC motor over a conventional DC motor?
a) No need for a field winding
b) Higher efficiency at low speeds
c) Reduced cost of construction
d) All of the above

4) Which motor works on the principle of variable reluctance?
a) Stepper motor b) Switched reluctance motor
c) DC shunt motor d) Universal motor

5) Brushless DC motor does not have _____.
a) Rotor b) Stator winding
c) Mechanical commutator d) Permanent magnet

6) The main purpose of energy efficient machines is to _____.
a) Increase losses b) Reduce efficiency
c) Minimize losses d) Increase temperature rise

7) Which of the following does not change in a transformer?
a) Current b) Voltage
c) Frequency d) All of the above

8) Auto-transformer has _____.
a) Two separate windings b) No winding
c) Single continuous winding d) Rotor winding

9) Open circuit test on transformers is conducted to determine _____.
a) hysteresis losses b) copper losses
c) core losses d) eddy current losses

10) Which instrument is used for measuring electrical energy?
a) Ammeter b) Voltmeter
c) Energy meter d) Wattmeter

11) The operating principle of moving iron instruments is based on _____.
a) Electrostatic effect b) Heating effect
c) Magnetic effect of current d) Chemical effect

12) Which instrument can measure both AC and DC quantities?
a) PMMC instrument b) Moving iron instrument
c) Electrostatic instrument d) Rectifier type instrument

13) In the two-wattmeter method, total power is equal to _____.
a) Difference of wattmeter readings
b) Product of wattmeter readings
c) Sum of wattmeter readings
d) Average of wattmeter readings

14) The speed of a separately excited DC motor can be controlled by _____.
a) Armature voltage control b) Field control
c) Armature resistance control d) All of the above

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Electrical Technology (EEMDM-01A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) State advantages and disadvantages of moving iron instruments.

b) A 3-phase 500V motor load has a power factor of 0.4 two wattmeter connected to measure input. They show input to be 30 KW. Find the reading of each instrument.

c) Describe the construction of three phase induction motor.

d) Write short note on digital multi-meter.

e) Explain torque-slip characteristics of induction motor.

Q.3 Attempt the following. (Any Two) **12**

a) Explain the principle and working of a dynamometer-type wattmeter.

b) Explain construction and working principle of single-phase induction motor.

c) Explain the principle of operation of 3Ø induction motor. With the help of phasor diagram explain how rotating magnetic field is produced?

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Write short note on brushless DC motor.

b) Explain the principle of operation of linear induction motor.

c) Explain energy efficient AC machines.

d) A 230/2300V transformer takes a no-load current of 6.5 A and absorbs 187W. If the resistance of the primary is 0.6 Ω. Find.
i) the core loss
ii) no load power factor
iii) active component of current
iv) magnetizing current

e) Derive an EMF equation of transformer.

Q.5 Attempt the following. (Any Two) **12**

a) Explain construction and operation of Permanent Magnet Synchronous Motor (PMSM).

b) An energy-efficient AC motor has the following loss components:
Copper losses: 2 kW
Iron losses: 1.5 kW
Friction and windage losses: 0.5 kW
The input power is 25 kW. Calculate the efficiency of the motor.

c) Explain no-load and on-load operation of transformer with phasor diagram.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

2) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

3) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

4) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

5) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

6) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

7) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?

a) top-off charging
b) trickle charging
c) fast charging
d) opportunity charging

8) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?

a) higher charging speed
b) lower cost of equipment
c) greater efficiency
d) compatibility with all EVS

9) Which of the following is NOT a type of electric vehicle (EV)?

a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

10) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?

a) 50-100 miles
b) 200-300 miles
c) 500-600 miles
d) 1000-1200 miles

11) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?

a) Turbocharger
b) Inverter
c) Converter
d) Rectifier

12) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?

a) 50-60%
b) 70-80%
c) 90-95%
d) 100%

13) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.

a) Vehicle color
b) Location of the charging station
c) Tire type
d) Vehicle seating capacity

14) Selection of an EV charging station site is influenced primarily by _____.

a) Proximity to power grid
b) Vehicle brand
c) Driver age
d) Tire pressure

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

2) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

3) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

4) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

5) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

6) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

7) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid
b) Vehicle brand
c) Driver age
d) Tire pressure

8) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

9) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

10) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking
b) By charging stations
c) Both
d) No need to charge

11) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0
b) 0.25
c) 0.5
d) 0.75

12) The ampere-hour capacity of battery depends on _____.
a) thickness of plates
b) area of the plate
c) strength of electrolyte
d) distance between plates

13) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

14) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging
b) trickle charging
c) fast charging
d) opportunity charging

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

2) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

3) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

4) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid b) Vehicle brand
c) Driver age d) Tire pressure

5) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

6) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

7) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

8) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

9) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

10) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

11) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging b) trickle charging
c) fast charging d) opportunity charging

12) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

13) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

14) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

2) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging b) trickle charging
c) fast charging d) opportunity charging

3) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

4) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

5) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

6) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

7) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

8) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

9) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid b) Vehicle brand
c) Driver age d) Tire pressure

10) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

11) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

12) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

13) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

14) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

Seat No.	

Set | S

S.Y. (B.Tech.) (Civil Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

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Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

2) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

3) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

4) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

5) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

6) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

7) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?

a) top-off charging
b) trickle charging
c) fast charging
d) opportunity charging

8) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?

a) higher charging speed
b) lower cost of equipment
c) greater efficiency
d) compatibility with all EVS

9) Which of the following is NOT a type of electric vehicle (EV)?

a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

10) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?

a) 50-100 miles
b) 200-300 miles
c) 500-600 miles
d) 1000-1200 miles

11) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?

a) Turbocharger
b) Inverter
c) Converter
d) Rectifier

12) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?

a) 50-60%
b) 70-80%
c) 90-95%
d) 100%

13) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.

a) Vehicle color
b) Location of the charging station
c) Tire type
d) Vehicle seating capacity

14) Selection of an EV charging station site is influenced primarily by _____.

a) Proximity to power grid
b) Vehicle brand
c) Driver age
d) Tire pressure

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

2) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

3) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

4) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

5) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

6) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

7) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid
b) Vehicle brand
c) Driver age
d) Tire pressure

8) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

9) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

10) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking
b) By charging stations
c) Both
d) No need to charge

11) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0
b) 0.25
c) 0.5
d) 0.75

12) The ampere-hour capacity of battery depends on _____.
a) thickness of plates
b) area of the plate
c) strength of electrolyte
d) distance between plates

13) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

14) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging
b) trickle charging
c) fast charging
d) opportunity charging

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

2) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

3) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

4) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid b) Vehicle brand
c) Driver age d) Tire pressure

5) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

6) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

7) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

8) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

9) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

10) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

11) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging b) trickle charging
c) fast charging d) opportunity charging

12) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

13) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

14) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

2) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging b) trickle charging
c) fast charging d) opportunity charging

3) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

4) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

5) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

6) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

7) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

8) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

9) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid b) Vehicle brand
c) Driver age d) Tire pressure

10) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

11) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

12) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

13) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

14) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

Seat No.	

Set | S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

2) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

3) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

4) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

5) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

6) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

7) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?

a) top-off charging
b) trickle charging
c) fast charging
d) opportunity charging

8) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?

a) higher charging speed
b) lower cost of equipment
c) greater efficiency
d) compatibility with all EVS

9) Which of the following is NOT a type of electric vehicle (EV)?

a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

10) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?

a) 50-100 miles
b) 200-300 miles
c) 500-600 miles
d) 1000-1200 miles

11) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?

a) Turbocharger
b) Inverter
c) Converter
d) Rectifier

12) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?

a) 50-60%
b) 70-80%
c) 90-95%
d) 100%

13) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.

a) Vehicle color
b) Location of the charging station
c) Tire type
d) Vehicle seating capacity

14) Selection of an EV charging station site is influenced primarily by _____.

a) Proximity to power grid
b) Vehicle brand
c) Driver age
d) Tire pressure

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

2) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

3) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

4) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

5) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

6) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

7) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid
b) Vehicle brand
c) Driver age
d) Tire pressure

8) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

9) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

10) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking
b) By charging stations
c) Both
d) No need to charge

11) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0
b) 0.25
c) 0.5
d) 0.75

12) The ampere-hour capacity of battery depends on _____.
a) thickness of plates
b) area of the plate
c) strength of electrolyte
d) distance between plates

13) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

14) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging
b) trickle charging
c) fast charging
d) opportunity charging

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

2) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

3) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

4) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid b) Vehicle brand
c) Driver age d) Tire pressure

5) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

6) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

7) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

8) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

9) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

10) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

11) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging b) trickle charging
c) fast charging d) opportunity charging

12) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

13) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

14) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

2) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging b) trickle charging
c) fast charging d) opportunity charging

3) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

4) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

5) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

6) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

7) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

8) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

9) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid b) Vehicle brand
c) Driver age d) Tire pressure

10) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

11) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

12) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

13) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

14) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

Seat No.	

Set | S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

2) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

3) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

4) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

5) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

6) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

7) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?

a) top-off charging
b) trickle charging
c) fast charging
d) opportunity charging

8) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?

a) higher charging speed
b) lower cost of equipment
c) greater efficiency
d) compatibility with all EVS

9) Which of the following is NOT a type of electric vehicle (EV)?

a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

10) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?

a) 50-100 miles
b) 200-300 miles
c) 500-600 miles
d) 1000-1200 miles

11) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?

a) Turbocharger
b) Inverter
c) Converter
d) Rectifier

12) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?

a) 50-60%
b) 70-80%
c) 90-95%
d) 100%

13) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.

a) Vehicle color
b) Location of the charging station
c) Tire type
d) Vehicle seating capacity

14) Selection of an EV charging station site is influenced primarily by _____.

a) Proximity to power grid
b) Vehicle brand
c) Driver age
d) Tire pressure

Seat No.	

Set | P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

2) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

3) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

4) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

5) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

6) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

7) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid
b) Vehicle brand
c) Driver age
d) Tire pressure

8) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

9) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

10) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking
b) By charging stations
c) Both
d) No need to charge

11) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0
b) 0.25
c) 0.5
d) 0.75

12) The ampere-hour capacity of battery depends on _____.
a) thickness of plates
b) area of the plate
c) strength of electrolyte
d) distance between plates

13) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

14) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging
b) trickle charging
c) fast charging
d) opportunity charging

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

2) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

3) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

4) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid b) Vehicle brand
c) Driver age d) Tire pressure

5) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

6) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

7) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

8) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

9) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

10) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

11) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging b) trickle charging
c) fast charging d) opportunity charging

12) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

13) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

14) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

2) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging b) trickle charging
c) fast charging d) opportunity charging

3) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

4) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

5) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

6) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

7) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

8) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

9) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid b) Vehicle brand
c) Driver age d) Tire pressure

10) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

11) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

12) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

13) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

14) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

2) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

3) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

4) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

5) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

6) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

7) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?

a) top-off charging
b) trickle charging
c) fast charging
d) opportunity charging

8) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?

a) higher charging speed
b) lower cost of equipment
c) greater efficiency
d) compatibility with all EVS

9) Which of the following is NOT a type of electric vehicle (EV)?

a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

10) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?

a) 50-100 miles
b) 200-300 miles
c) 500-600 miles
d) 1000-1200 miles

11) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?

a) Turbocharger
b) Inverter
c) Converter
d) Rectifier

12) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?

a) 50-60%
b) 70-80%
c) 90-95%
d) 100%

13) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.

a) Vehicle color
b) Location of the charging station
c) Tire type
d) Vehicle seating capacity

14) Selection of an EV charging station site is influenced primarily by _____.

a) Proximity to power grid
b) Vehicle brand
c) Driver age
d) Tire pressure

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
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2) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
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c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

3) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

4) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

5) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

6) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

7) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid
b) Vehicle brand
c) Driver age
d) Tire pressure

8) The selection of an electric vehicle motor depends on _____.
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b) Vehicle color
c) Number of seats
d) Tire size

9) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
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c) Assistance from an electric motor for acceleration
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10) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking
b) By charging stations
c) Both
d) No need to charge

11) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0
b) 0.25
c) 0.5
d) 0.75

12) The ampere-hour capacity of battery depends on _____.
a) thickness of plates
b) area of the plate
c) strength of electrolyte
d) distance between plates

13) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

14) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging
b) trickle charging
c) fast charging
d) opportunity charging

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

2) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

3) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

4) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid b) Vehicle brand
c) Driver age d) Tire pressure

5) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

6) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

7) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

8) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

9) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

10) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

11) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging b) trickle charging
c) fast charging d) opportunity charging

12) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

13) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

14) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

2) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging b) trickle charging
c) fast charging d) opportunity charging

3) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

4) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

5) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

6) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

7) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

8) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

9) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid b) Vehicle brand
c) Driver age d) Tire pressure

10) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

11) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

12) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

13) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

14) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

Seat No.	

Set | S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

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Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

2) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

3) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

4) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

5) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

6) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

7) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?

a) top-off charging
b) trickle charging
c) fast charging
d) opportunity charging

8) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?

a) higher charging speed
b) lower cost of equipment
c) greater efficiency
d) compatibility with all EVS

9) Which of the following is NOT a type of electric vehicle (EV)?

a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

10) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?

a) 50-100 miles
b) 200-300 miles
c) 500-600 miles
d) 1000-1200 miles

11) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?

a) Turbocharger
b) Inverter
c) Converter
d) Rectifier

12) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?

a) 50-60%
b) 70-80%
c) 90-95%
d) 100%

13) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.

a) Vehicle color
b) Location of the charging station
c) Tire type
d) Vehicle seating capacity

14) Selection of an EV charging station site is influenced primarily by _____.

a) Proximity to power grid
b) Vehicle brand
c) Driver age
d) Tire pressure

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

2) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

3) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

4) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

5) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

6) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

7) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid
b) Vehicle brand
c) Driver age
d) Tire pressure

8) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

9) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

10) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking
b) By charging stations
c) Both
d) No need to charge

11) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0
b) 0.25
c) 0.5
d) 0.75

12) The ampere-hour capacity of battery depends on _____.
a) thickness of plates
b) area of the plate
c) strength of electrolyte
d) distance between plates

13) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

14) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging
b) trickle charging
c) fast charging
d) opportunity charging

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

2) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

3) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

4) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid b) Vehicle brand
c) Driver age d) Tire pressure

5) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

6) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

7) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

8) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

9) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

10) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

11) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging b) trickle charging
c) fast charging d) opportunity charging

12) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

13) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

14) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 10:00 AM To 01:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if required.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multi choice Question. **14**

1) Following will happen if battery charging rate is too high _____.
a) excessive gassing will occur
b) temperature rise will occur
c) bulging and buckling of plates we occur
d) All of the above

2) Which term describes the process of charging an electric vehicle (EV) battery to only a partial state of charge?
a) top-off charging b) trickle charging
c) fast charging d) opportunity charging

3) What is the primary advantage of ac charging over dc charging for electric vehicles (EVS)?
a) higher charging speed b) lower cost of equipment
c) greater efficiency d) compatibility with all EVS

4) Which of the following is NOT a type of electric vehicle (EV)?
a) Battery Electric Vehicle (BEV)
b) Plug-in Hybrid Electric Vehicle (PHEV)
c) Hydrogen Fuel Cell Electric Vehicle (FCEV)
d) Hybrid Internal Combustion Engine Vehicle (HICEV)

5) What is the typical range of a Battery Electric Vehicle (BEV) on a single charge?
a) 50-100 miles b) 200-300 miles
c) 500-600 miles d) 1000-1200 miles

6) Which device is used to convert alternating current (AC) from the grid to direct current (DC) for charging electric vehicles (EVs)?
a) Turbocharger b) Inverter
c) Converter d) Rectifier

7) What is the approximate efficiency of electric vehicles (EVs) compared to internal combustion engine vehicles (ICEVs)?
a) 50-60% b) 70-80%
c) 90-95% d) 100%

8) The main factor affecting the efficiency and cost-effectiveness of an EV charging station is _____.
a) Vehicle color b) Location of the charging station
c) Tire type d) Vehicle seating capacity

9) Selection of an EV charging station site is influenced primarily by _____.
a) Proximity to power grid b) Vehicle brand
c) Driver age d) Tire pressure

10) The selection of an electric vehicle motor depends on _____.
a) Required speed and torque
b) Vehicle color
c) Number of seats
d) Tire size

11) Hybrid electric vehicles are characterized by _____.
a) Use of both electric and conventional engines
b) Energy recovery during braking
c) Assistance from an electric motor for acceleration
d) All of the above

12) How the batteries of plug-in hybrid vehicles are charged?
a) By regenerative breaking b) By charging stations
c) Both d) No need to charge

13) When the vehicle is solely powered by a conventional gasoline engine in Parallel HEV, Hybridness is _____.
a) 0 b) 0.25
c) 0.5 d) 0.75

14) The ampere-hour capacity of battery depends on _____.
a) thickness of plates b) area of the plate
c) strength of electrolyte d) distance between plates

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - I) (New) (NEP CBCS) Examination: March/April – 2026
Basics of Electrical Vehicle (EEMDM-01B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 10:00 AM To 01:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

Section – I

Q.2 Attempt any four of the following. **16**

a) Discuss the structure and working of a BEV Battery Management System with a neat diagram.

b) Explain why a Battery Management System is essential for maintaining battery safety and efficiency in BEVs.

c) List and describe the main functions performed by a Battery Management System.

d) Describe economic and environmental impacts of using Electrical vehicles.

e) Explain the key advantages of electric vehicles over traditional gasoline-powered vehicles.

f) Explain the different types of Battery Electric Vehicle layouts and their characteristics.

Q.3 Attempt any two of the following. **12**

a) List types of electric vehicles & Explain Battery Electric vehicle.

b) Describe the drivetrain system used in Battery Electric Vehicles (BEVs) and its components.

c) Explain motor drive Technology for EV.

Section – II

Q.4 Attempt any four of the following. **16**

a) Discuss the similarities and differences between ICE vehicle drivetrains.

b) Explain the terms Battery Parameters, Battery Charging.

c) Compare the energy storage devices: fuel cells, supercapacitors, and flywheels.

d) Explain regenerative braking in hybrid electric vehicles as an environmental benefit does this provide.

e) Explain how battery-based energy storage works and its applications in electric vehicles.

f) Explain the impact of battery technologies on the performance and range of electric vehicles.

Q.5 Attempt any two of the following. **12**

a) Describe the construction, working, and advantages of a Hybrid Electric Vehicle (HEV) in detail.

b) Give differences between battery electric vehicles, plug-in hybrid electric vehicles, and hybrid electric vehicles.

c) Describe the key safety considerations that must be addressed in electric vehicles.

SLR-QH-219

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

2) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

3) The first step in the innovation process is _____.
a) Prototyping b) Identifying opportunities
c) Branding d) Sales strategy

4) A major challenge in entrepreneurship is _____.
a) Zero competition b) Unlimited funding
c) Uncertainty and risk d) Constant success

5) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

6) Functional organization structure is based on _____.
a) Geographic divisions b) Product lines
c) Specialization of functions d) Customer groups

7) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

8) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

9) Guerrilla marketing is known for _____.
a) High budget campaigns
b) Low-cost creative promotions
c) Only digital ads
d) Recruiting employees

10) Customer retention refers to _____.
a) Gaining new customers
b) Keeping existing customers
c) Reducing customer base
d) Avoiding customer feedback

11) Burn-rate means _____.
a) Money saved every month
b) Monthly cash outflow of a startup
c) Profits earned per month
d) Interest generated

12) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

13) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

14) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

SLR-QH-219

Seat No.		Set	Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

2) Guerrilla marketing is known for _____.
a) High budget campaigns b) Low-cost creative promotions
c) Only digital ads d) Recruiting employees

3) Customer retention refers to _____.
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c) Reducing customer base d) Avoiding customer feedback

4) Burn-rate means _____.
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c) Profits earned per month d) Interest generated

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b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

6) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

7) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

8) An entrepreneur is best defined as a person who _____.
a) Only manages employees
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d) Avoids risks

9) Innovation is mainly associated with _____.
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b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

10) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

11) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

12) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

13) Functional organization structure is based on _____.
a) Geographic divisions
b) Product lines
c) Specialization of functions
d) Customer groups

14) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

SLR-QH-219

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.	

Set | **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Burn-rate means _____.
a) Money saved every month
b) Monthly cash outflow of a startup
c) Profits earned per month
d) Interest generated

2) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

3) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

4) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

5) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

6) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

7) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

8) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

9) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

10) Functional organization structure is based on _____.
a) Geographic divisions
b) Product lines
c) Specialization of functions
d) Customer groups

11) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

12) Sources of funding for start-ups include _____.
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c) Only loans
d) Only donations

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a) High budget campaigns
b) Low-cost creative promotions
c) Only digital ads
d) Recruiting employees

14) Customer retention refers to _____.
a) Gaining new customers
b) Keeping existing customers
c) Reducing customer base
d) Avoiding customer feedback

SLR-QH-219

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
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SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

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c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

SLR-QH-219

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Functional organization structure is based on _____.
a) Geographic divisions b) Product lines
c) Specialization of functions d) Customer groups

2) Agile project management emphasizes _____.
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b) Iterative and flexible development
c) No customer involvement
d) High documentation

3) Sources of funding for start-ups include _____.
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6) Burn-rate means _____.
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c) Profits earned per month d) Interest generated

7) Sustainable entrepreneurship focuses on _____.
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b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

8) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

9) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

10) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

11) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

12) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

13) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

14) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

SLR-QH-219

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) An entrepreneur is best defined as a person who _____.
a) Only manages employees
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a) Prototyping b) Identifying opportunities
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4) A major challenge in entrepreneurship is _____.
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6) Functional organization structure is based on _____.
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a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

14) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
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SECTION – I

Q.2 Answer the following questions. **10**

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SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

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a) Explain major project management methodologies used in startups.

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c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

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10) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

11) A major challenge in entrepreneurship is _____.
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c) Uncertainty and risk
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12) Trait theory of leadership is based on _____.
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b) Personality characteristics
c) Organizational size
d) Market trends

13) Functional organization structure is based on _____.
a) Geographic divisions
b) Product lines
c) Specialization of functions
d) Customer groups

14) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

SLR-QH-219

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Burn-rate means _____.
a) Money saved every month
b) Monthly cash outflow of a startup
c) Profits earned per month
d) Interest generated

2) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

3) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

4) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

5) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

6) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

7) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

8) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

9) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

10) Functional organization structure is based on _____.
a) Geographic divisions
b) Product lines
c) Specialization of functions
d) Customer groups

11) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

12) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

13) Guerrilla marketing is known for _____.
a) High budget campaigns
b) Low-cost creative promotions
c) Only digital ads
d) Recruiting employees

14) Customer retention refers to _____.
a) Gaining new customers
b) Keeping existing customers
c) Reducing customer base
d) Avoiding customer feedback

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Functional organization structure is based on _____.
a) Geographic divisions b) Product lines
c) Specialization of functions d) Customer groups

2) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

3) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

4) Guerrilla marketing is known for _____.
a) High budget campaigns b) Low-cost creative promotions
c) Only digital ads d) Recruiting employees

5) Customer retention refers to _____.
a) Gaining new customers b) Keeping existing customers
c) Reducing customer base d) Avoiding customer feedback

6) Burn-rate means _____.
a) Money saved every month b) Monthly cash outflow of a startup
c) Profits earned per month d) Interest generated

7) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

8) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

9) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

10) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

11) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

12) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

13) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

14) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

SLR-QH-219

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

SLR-QH-219

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

2) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

3) The first step in the innovation process is _____.
a) Prototyping b) Identifying opportunities
c) Branding d) Sales strategy

4) A major challenge in entrepreneurship is _____.
a) Zero competition b) Unlimited funding
c) Uncertainty and risk d) Constant success

5) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

6) Functional organization structure is based on _____.
a) Geographic divisions b) Product lines
c) Specialization of functions d) Customer groups

7) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

8) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

9) Guerrilla marketing is known for _____.
a) High budget campaigns
b) Low-cost creative promotions
c) Only digital ads
d) Recruiting employees

10) Customer retention refers to _____.
a) Gaining new customers
b) Keeping existing customers
c) Reducing customer base
d) Avoiding customer feedback

11) Burn-rate means _____.
a) Money saved every month
b) Monthly cash outflow of a startup
c) Profits earned per month
d) Interest generated

12) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

13) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

14) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.		Set	Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

2) Guerrilla marketing is known for _____.
a) High budget campaigns b) Low-cost creative promotions
c) Only digital ads d) Recruiting employees

3) Customer retention refers to _____.
a) Gaining new customers b) Keeping existing customers
c) Reducing customer base d) Avoiding customer feedback

4) Burn-rate means _____.
a) Money saved every month b) Monthly cash outflow of a startup
c) Profits earned per month d) Interest generated

5) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

6) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

7) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

8) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

9) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

10) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

11) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

12) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

13) Functional organization structure is based on _____.
a) Geographic divisions
b) Product lines
c) Specialization of functions
d) Customer groups

14) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.		Set	R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Burn-rate means _____.
a) Money saved every month
b) Monthly cash outflow of a startup
c) Profits earned per month
d) Interest generated

2) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

3) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

4) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

5) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
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6) Innovation is mainly associated with _____.
a) Copying products
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7) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

8) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

9) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

10) Functional organization structure is based on _____.
a) Geographic divisions
b) Product lines
c) Specialization of functions
d) Customer groups

11) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

12) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

13) Guerrilla marketing is known for _____.
a) High budget campaigns
b) Low-cost creative promotions
c) Only digital ads
d) Recruiting employees

14) Customer retention refers to _____.
a) Gaining new customers
b) Keeping existing customers
c) Reducing customer base
d) Avoiding customer feedback

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Functional organization structure is based on _____.
a) Geographic divisions b) Product lines
c) Specialization of functions d) Customer groups

2) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
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3) Sources of funding for start-ups include _____.
a) Only government grants
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c) Only loans
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a) High budget campaigns b) Low-cost creative promotions
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8) Cash flow refers to _____.
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b) Movement of money in and out of business
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d) Production units

9) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

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b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

12) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

13) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

14) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

SLR-QH-219

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

SLR-QH-219

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

2) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

3) The first step in the innovation process is _____.
a) Prototyping b) Identifying opportunities
c) Branding d) Sales strategy

4) A major challenge in entrepreneurship is _____.
a) Zero competition b) Unlimited funding
c) Uncertainty and risk d) Constant success

5) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

6) Functional organization structure is based on _____.
a) Geographic divisions b) Product lines
c) Specialization of functions d) Customer groups

7) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

8) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

9) Guerrilla marketing is known for _____.
a) High budget campaigns
b) Low-cost creative promotions
c) Only digital ads
d) Recruiting employees

10) Customer retention refers to _____.
a) Gaining new customers
b) Keeping existing customers
c) Reducing customer base
d) Avoiding customer feedback

11) Burn-rate means _____.
a) Money saved every month
b) Monthly cash outflow of a startup
c) Profits earned per month
d) Interest generated

12) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

13) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

14) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

SLR-QH-219

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

2) Guerrilla marketing is known for _____.
a) High budget campaigns b) Low-cost creative promotions
c) Only digital ads d) Recruiting employees

3) Customer retention refers to _____.
a) Gaining new customers b) Keeping existing customers
c) Reducing customer base d) Avoiding customer feedback

4) Burn-rate means _____.
a) Money saved every month b) Monthly cash outflow of a startup
c) Profits earned per month d) Interest generated

5) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

6) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

7) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

8) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

9) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

10) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

11) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

12) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

13) Functional organization structure is based on _____.
a) Geographic divisions
b) Product lines
c) Specialization of functions
d) Customer groups

14) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

SLR-QH-219

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Burn-rate means _____.
a) Money saved every month
b) Monthly cash outflow of a startup
c) Profits earned per month
d) Interest generated

2) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

3) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

4) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

5) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

6) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

7) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

8) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

9) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

10) Functional organization structure is based on _____.
a) Geographic divisions
b) Product lines
c) Specialization of functions
d) Customer groups

11) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

12) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

13) Guerrilla marketing is known for _____.
a) High budget campaigns
b) Low-cost creative promotions
c) Only digital ads
d) Recruiting employees

14) Customer retention refers to _____.
a) Gaining new customers
b) Keeping existing customers
c) Reducing customer base
d) Avoiding customer feedback

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

SLR-QH-219

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Functional organization structure is based on _____.
a) Geographic divisions b) Product lines
c) Specialization of functions d) Customer groups

2) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

3) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

4) Guerrilla marketing is known for _____.
a) High budget campaigns b) Low-cost creative promotions
c) Only digital ads d) Recruiting employees

5) Customer retention refers to _____.
a) Gaining new customers b) Keeping existing customers
c) Reducing customer base d) Avoiding customer feedback

6) Burn-rate means _____.
a) Money saved every month b) Monthly cash outflow of a startup
c) Profits earned per month d) Interest generated

7) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

8) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

9) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

10) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

11) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

12) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

13) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

14) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

SLR-QH-219

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

SLR-QH-219

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

2) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

3) The first step in the innovation process is _____.
a) Prototyping b) Identifying opportunities
c) Branding d) Sales strategy

4) A major challenge in entrepreneurship is _____.
a) Zero competition b) Unlimited funding
c) Uncertainty and risk d) Constant success

5) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

6) Functional organization structure is based on _____.
a) Geographic divisions b) Product lines
c) Specialization of functions d) Customer groups

7) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

8) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

9) Guerrilla marketing is known for _____.
a) High budget campaigns
b) Low-cost creative promotions
c) Only digital ads
d) Recruiting employees

10) Customer retention refers to _____.
a) Gaining new customers
b) Keeping existing customers
c) Reducing customer base
d) Avoiding customer feedback

11) Burn-rate means _____.
a) Money saved every month
b) Monthly cash outflow of a startup
c) Profits earned per month
d) Interest generated

12) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

13) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

14) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

Seat No.	

Set | P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

2) Guerrilla marketing is known for _____.
a) High budget campaigns b) Low-cost creative promotions
c) Only digital ads d) Recruiting employees

3) Customer retention refers to _____.
a) Gaining new customers b) Keeping existing customers
c) Reducing customer base d) Avoiding customer feedback

4) Burn-rate means _____.
a) Money saved every month b) Monthly cash outflow of a startup
c) Profits earned per month d) Interest generated

5) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
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6) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

7) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

8) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

9) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

10) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

11) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

12) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

13) Functional organization structure is based on _____.
a) Geographic divisions
b) Product lines
c) Specialization of functions
d) Customer groups

14) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.	

Set | **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Burn-rate means _____.
a) Money saved every month
b) Monthly cash outflow of a startup
c) Profits earned per month
d) Interest generated

2) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

3) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

4) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

5) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

6) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

7) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

8) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

9) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

10) Functional organization structure is based on _____.
a) Geographic divisions
b) Product lines
c) Specialization of functions
d) Customer groups

11) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

12) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

13) Guerrilla marketing is known for _____.
a) High budget campaigns
b) Low-cost creative promotions
c) Only digital ads
d) Recruiting employees

14) Customer retention refers to _____.
a) Gaining new customers
b) Keeping existing customers
c) Reducing customer base
d) Avoiding customer feedback

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Functional organization structure is based on _____.
a) Geographic divisions b) Product lines
c) Specialization of functions d) Customer groups

2) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

3) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

4) Guerrilla marketing is known for _____.
a) High budget campaigns b) Low-cost creative promotions
c) Only digital ads d) Recruiting employees

5) Customer retention refers to _____.
a) Gaining new customers b) Keeping existing customers
c) Reducing customer base d) Avoiding customer feedback

6) Burn-rate means _____.
a) Money saved every month b) Monthly cash outflow of a startup
c) Profits earned per month d) Interest generated

7) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

8) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

9) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

10) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

11) Innovation is mainly associated with _____.
a) Copying products
b) Introducing new or improved solutions
c) Reducing creativity
d) Avoiding competition

12) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

13) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

14) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

SLR-QH-219

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
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4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) An entrepreneur is best defined as a person who _____.
a) Only manages employees
b) Creates and manages new ventures
c) Works under supervision
d) Avoids risks

2) Innovation is mainly associated with _____.
a) Copying products
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c) Reducing creativity
d) Avoiding competition

3) The first step in the innovation process is _____.
a) Prototyping b) Identifying opportunities
c) Branding d) Sales strategy

4) A major challenge in entrepreneurship is _____.
a) Zero competition b) Unlimited funding
c) Uncertainty and risk d) Constant success

5) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

6) Functional organization structure is based on _____.
a) Geographic divisions b) Product lines
c) Specialization of functions d) Customer groups

7) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

8) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

9) Guerrilla marketing is known for _____.
a) High budget campaigns
b) Low-cost creative promotions
c) Only digital ads
d) Recruiting employees

10) Customer retention refers to _____.
a) Gaining new customers
b) Keeping existing customers
c) Reducing customer base
d) Avoiding customer feedback

11) Burn-rate means _____.
a) Money saved every month
b) Monthly cash outflow of a startup
c) Profits earned per month
d) Interest generated

12) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

13) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

14) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

SLR-QH-219

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

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d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.		Set	Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Sources of funding for start-ups include _____.
a) Only government grants
b) Angel investors, VCs, bootstrapping
c) Only loans
d) Only donations

2) Guerrilla marketing is known for _____.
a) High budget campaigns b) Low-cost creative promotions
c) Only digital ads d) Recruiting employees

3) Customer retention refers to _____.
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c) Reducing customer base d) Avoiding customer feedback

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c) Profits earned per month d) Interest generated

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c) Long-term economic, social & environmental value
d) Avoiding innovation

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b) Movement of money in and out of business
c) Customer data
d) Production units

7) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

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10) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

11) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

12) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

13) Functional organization structure is based on _____.
a) Geographic divisions
b) Product lines
c) Specialization of functions
d) Customer groups

14) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

SLR-QH-219

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.		Set	R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Burn-rate means _____.
a) Money saved every month
b) Monthly cash outflow of a startup
c) Profits earned per month
d) Interest generated

2) Sustainable entrepreneurship focuses on _____.
a) Short-term gains
b) Only profit maximization
c) Long-term economic, social & environmental value
d) Avoiding innovation

3) Cash flow refers to _____.
a) Number of staff
b) Movement of money in and out of business
c) Customer data
d) Production units

4) Organizational structure impacts _____.
a) Only marketing
b) Only technology
c) Overall company performance
d) Only employees' punctuality

5) An entrepreneur is best defined as a person who _____.
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b) Creates and manages new ventures
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a) Copying products
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7) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

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a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

9) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

10) Functional organization structure is based on _____.
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b) Product lines
c) Specialization of functions
d) Customer groups

11) Agile project management emphasizes _____.
a) Rigid long-term planning
b) Iterative and flexible development
c) No customer involvement
d) High documentation

12) Sources of funding for start-ups include _____.
a) Only government grants
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c) Only loans
d) Only donations

13) Guerrilla marketing is known for _____.
a) High budget campaigns
b) Low-cost creative promotions
c) Only digital ads
d) Recruiting employees

14) Customer retention refers to _____.
a) Gaining new customers
b) Keeping existing customers
c) Reducing customer base
d) Avoiding customer feedback

SLR-QH-219

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top on page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.
5) Use of non-programmable calculators is allowed.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Multiple Choice Questions. **14**

1) Functional organization structure is based on _____.
a) Geographic divisions b) Product lines
c) Specialization of functions d) Customer groups

2) Agile project management emphasizes _____.
a) Rigid long-term planning
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c) No customer involvement
d) High documentation

3) Sources of funding for start-ups include _____.
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11) Innovation is mainly associated with _____.
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b) Introducing new or improved solutions
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12) The first step in the innovation process is _____.
a) Prototyping
b) Identifying opportunities
c) Branding
d) Sales strategy

13) A major challenge in entrepreneurship is _____.
a) Zero competition
b) Unlimited funding
c) Uncertainty and risk
d) Constant success

14) Trait theory of leadership is based on _____.
a) Readiness level of employees
b) Personality characteristics
c) Organizational size
d) Market trends

SLR-QH-219

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Entrepreneurship, Leadership and Management (CIVMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicates full marks.
3) Make suitable assumptions if necessary and state them clearly.
4) Use of non-programmable calculators is allowed.

SECTION – I

Q.2 Answer the following questions. **10**

a) Explain the importance of innovation and entrepreneurship in the economy.

b) Describe leadership styles and explain Trait, Behavioral, and Contingency theories.

Q.3 Answer any three of the following questions. **18**

a) Write the definitions of Enterprise, Entrepreneur, and Innovation with examples.

b) Explain the entrepreneurial journey and its steps.

c) Describe the challenges faced during innovation.

d) Explain types of businesses and types of entrepreneurships.

e) Discuss types of organizational structures and their impact on performance.

SECTION – II

Q.4 Answer the following questions. **10**

a) Explain budgeting and resource allocation in innovation projects.

b) Discuss customer acquisition, retention, and repetition with examples.

Q.5 Answer any three of the following questions. **18**

a) Explain major project management methodologies used in startups.

b) Describe sales techniques for start-ups with real-life examples.

c) Explain managing cash flow and burn-rate.

d) Discuss sustainable entrepreneurship practices with examples.

e) Explain scaling-up strategies for growing ventures.

SLR-QH-220

Seat No.		Set	P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is one of the challenges faced in urban planning?
a) Rapid population growth b) Decreasing urban population
c) Increased agricultural land d) Less need for infrastructure

2) What is one of the concrete technical aspects defining 'urban'?
a) Population size b) Cultural heritage
c) Historical significance d) Natural resources

3) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

4) What is the population density and settlement size in rural settlements?
a) High and large b) Low and small
c) Medium and average d) Variable and diverse

5) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities b) Tertiary activities
c) Primary activities d) Quaternary activities

6) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

7) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

8) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

9) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

10) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

11) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

12) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

13) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

14) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

Seat No.		Set	P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.
b) Illustrate the methods used in urban or town planning.
c) Describe the geological factors affecting urban development.
d) Explain the rural settlements.
e) Describe growth of cities & scale of cities.
f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.
b) Describe the socio-economic consequences.
c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.
b) Write down key aspects of an urban design.
c) Define an Urban form & state types of determinants.
d) Describe the natural determinants of an urban form.
e) Illustrate survey techniques for urban aesthetics.
f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.
b) Describe all the types of public spaces & explain any one in detail.
c) Describe steps to carry out visual survey and its recordings.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

2) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

3) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

4) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

5) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

6) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

7) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

8) What is one of the challenges faced in urban planning?
a) Rapid population growth
b) Decreasing urban population
c) Increased agricultural land
d) Less need for infrastructure

9) What is one of the concrete technical aspects defining 'urban'?
a) Population size
b) Cultural heritage
c) Historical significance
d) Natural resources

10) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

11) What is the population density and settlement size in rural settlements?
a) High and large
b) Low and small
c) Medium and average
d) Variable and diverse

12) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities
b) Tertiary activities
c) Primary activities
d) Quaternary activities

13) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

14) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.
b) Illustrate the methods used in urban or town planning.
c) Describe the geological factors affecting urban development.
d) Explain the rural settlements.
e) Describe growth of cities & scale of cities.
f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.
b) Describe the socio-economic consequences.
c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.
b) Write down key aspects of an urban design.
c) Define an Urban form & state types of determinants.
d) Describe the natural determinants of an urban form.
e) Illustrate survey techniques for urban aesthetics.
f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.
b) Describe all the types of public spaces & explain any one in detail.
c) Describe steps to carry out visual survey and its recordings.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

2) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

3) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

4) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

5) What is one of the challenges faced in urban planning?
a) Rapid population growth b) Decreasing urban population
c) Increased agricultural land d) Less need for infrastructure

6) What is one of the concrete technical aspects defining 'urban'?
a) Population size
b) Cultural heritage
c) Historical significance
d) Natural resources

7) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

8) What is the population density and settlement size in rural settlements?
a) High and large
b) Low and small
c) Medium and average
d) Variable and diverse

9) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities
b) Tertiary activities
c) Primary activities
d) Quaternary activities

10) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

11) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

12) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

13) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

14) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

SLR-QH-220

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.

b) Illustrate the methods used in urban or town planning.

c) Describe the geological factors affecting urban development.

d) Explain the rural settlements.

e) Describe growth of cities & scale of cities.

f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.

b) Describe the socio-economic consequences.

c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.

b) Write down key aspects of an urban design.

c) Define an Urban form & state types of determinants.

d) Describe the natural determinants of an urban form.

e) Illustrate survey techniques for urban aesthetics.

f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.

b) Describe all the types of public spaces & explain any one in detail.

c) Describe steps to carry out visual survey and its recordings.

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

2) What is one of the social infrastructures affected by urbanization?
a) Transportation b) Healthcare
c) Agriculture d) Mining

3) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

4) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

5) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

6) What is the role of edges in city districts?
   a) To connect different districts
   b) To augment the tendency of districts to fragment the city
   c) To enhance the beauty of the city
   d) To provide transportation routes

7) What is the purpose of tree grates?
   a) To provide shade for pedestrians
   b) To enable water to reach the roots of a tree
   c) To decorate the planting hole
   d) To support the tree collar

8) What does the National Survey help to collect information about?
   a) Natural resources and potentialities
   b) Urban aesthetics
   c) Traffic congestion
   d) Housing conditions

9) What is the purpose of conducting a Physical Survey in town planning?
   a) To collect information for updating base maps
   b) To assess social conditions
   c) To evaluate economic activities
   d) To analyze traffic problems

10) What is one of the challenges faced in urban planning?
   a) Rapid population growth
   b) Decreasing urban population
   c) Increased agricultural land
   d) Less need for infrastructure

11) What is one of the concrete technical aspects defining 'urban'?
   a) Population size
   b) Cultural heritage
   c) Historical significance
   d) Natural resources

12) What is a characteristic of towns compared to villages?
   a) Towns are smaller than villages
   b) Towns are generally larger than villages
   c) Towns have no local self-government
   d) Towns are only found in urban areas

13) What is the population density and settlement size in rural settlements?
   a) High and large
   b) Low and small
   c) Medium and average
   d) Variable and diverse

14) What type of activities are rural settlements chiefly concerned with?
   a) Secondary activities
   b) Tertiary activities
   c) Primary activities
   d) Quaternary activities

SLR-QH-220

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.
b) Illustrate the methods used in urban or town planning.
c) Describe the geological factors affecting urban development.
d) Explain the rural settlements.
e) Describe growth of cities & scale of cities.
f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.
b) Describe the socio-economic consequences.
c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.
b) Write down key aspects of an urban design.
c) Define an Urban form & state types of determinants.
d) Describe the natural determinants of an urban form.
e) Illustrate survey techniques for urban aesthetics.
f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.
b) Describe all the types of public spaces & explain any one in detail.
c) Describe steps to carry out visual survey and its recordings.

SLR-QH-220

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is one of the challenges faced in urban planning?
a) Rapid population growth b) Decreasing urban population
c) Increased agricultural land d) Less need for infrastructure

2) What is one of the concrete technical aspects defining 'urban'?
a) Population size b) Cultural heritage
c) Historical significance d) Natural resources

3) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

4) What is the population density and settlement size in rural settlements?
a) High and large b) Low and small
c) Medium and average d) Variable and diverse

5) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities b) Tertiary activities
c) Primary activities d) Quaternary activities

6) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

7) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

8) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

9) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

10) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

11) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

12) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

13) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

14) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.

b) Illustrate the methods used in urban or town planning.

c) Describe the geological factors affecting urban development.

d) Explain the rural settlements.

e) Describe growth of cities & scale of cities.

f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.

b) Describe the socio-economic consequences.

c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.

b) Write down key aspects of an urban design.

c) Define an Urban form & state types of determinants.

d) Describe the natural determinants of an urban form.

e) Illustrate survey techniques for urban aesthetics.

f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.

b) Describe all the types of public spaces & explain any one in detail.

c) Describe steps to carry out visual survey and its recordings.

SLR-QH-220

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

2) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

3) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

4) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

5) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

6) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

7) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

8) What is one of the challenges faced in urban planning?
a) Rapid population growth
b) Decreasing urban population
c) Increased agricultural land
d) Less need for infrastructure

9) What is one of the concrete technical aspects defining 'urban'?
a) Population size
b) Cultural heritage
c) Historical significance
d) Natural resources

10) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

11) What is the population density and settlement size in rural settlements?
a) High and large
b) Low and small
c) Medium and average
d) Variable and diverse

12) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities
b) Tertiary activities
c) Primary activities
d) Quaternary activities

13) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

14) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.

b) Illustrate the methods used in urban or town planning.

c) Describe the geological factors affecting urban development.

d) Explain the rural settlements.

e) Describe growth of cities & scale of cities.

f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.

b) Describe the socio-economic consequences.

c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.

b) Write down key aspects of an urban design.

c) Define an Urban form & state types of determinants.

d) Describe the natural determinants of an urban form.

e) Illustrate survey techniques for urban aesthetics.

f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.

b) Describe all the types of public spaces & explain any one in detail.

c) Describe steps to carry out visual survey and its recordings.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

2) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

3) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

4) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

5) What is one of the challenges faced in urban planning?
a) Rapid population growth b) Decreasing urban population
c) Increased agricultural land d) Less need for infrastructure

6) What is one of the concrete technical aspects defining 'urban'?
a) Population size
b) Cultural heritage
c) Historical significance
d) Natural resources

7) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

8) What is the population density and settlement size in rural settlements?
a) High and large
b) Low and small
c) Medium and average
d) Variable and diverse

9) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities
b) Tertiary activities
c) Primary activities
d) Quaternary activities

10) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

11) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

12) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

13) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

14) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.

b) Illustrate the methods used in urban or town planning.

c) Describe the geological factors affecting urban development.

d) Explain the rural settlements.

e) Describe growth of cities & scale of cities.

f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.

b) Describe the socio-economic consequences.

c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.

b) Write down key aspects of an urban design.

c) Define an Urban form & state types of determinants.

d) Describe the natural determinants of an urban form.

e) Illustrate survey techniques for urban aesthetics.

f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.

b) Describe all the types of public spaces & explain any one in detail.

c) Describe steps to carry out visual survey and its recordings.

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

2) What is one of the social infrastructures affected by urbanization?
a) Transportation b) Healthcare
c) Agriculture d) Mining

3) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

4) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

5) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

6) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

7) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

8) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

9) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

10) What is one of the challenges faced in urban planning?
a) Rapid population growth
b) Decreasing urban population
c) Increased agricultural land
d) Less need for infrastructure

11) What is one of the concrete technical aspects defining 'urban'?
a) Population size
b) Cultural heritage
c) Historical significance
d) Natural resources

12) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

13) What is the population density and settlement size in rural settlements?
a) High and large
b) Low and small
c) Medium and average
d) Variable and diverse

14) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities
b) Tertiary activities
c) Primary activities
d) Quaternary activities

SLR-QH-220

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.

b) Illustrate the methods used in urban or town planning.

c) Describe the geological factors affecting urban development.

d) Explain the rural settlements.

e) Describe growth of cities & scale of cities.

f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.

b) Describe the socio-economic consequences.

c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.

b) Write down key aspects of an urban design.

c) Define an Urban form & state types of determinants.

d) Describe the natural determinants of an urban form.

e) Illustrate survey techniques for urban aesthetics.

f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.

b) Describe all the types of public spaces & explain any one in detail.

c) Describe steps to carry out visual survey and its recordings.

SLR-QH-220

Seat No.		Set	P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is one of the challenges faced in urban planning?
a) Rapid population growth b) Decreasing urban population
c) Increased agricultural land d) Less need for infrastructure

2) What is one of the concrete technical aspects defining 'urban'?
a) Population size b) Cultural heritage
c) Historical significance d) Natural resources

3) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

4) What is the population density and settlement size in rural settlements?
a) High and large b) Low and small
c) Medium and average d) Variable and diverse

5) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities b) Tertiary activities
c) Primary activities d) Quaternary activities

6) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

7) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

8) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

9) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

10) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

11) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

12) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

13) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

14) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.
b) Illustrate the methods used in urban or town planning.
c) Describe the geological factors affecting urban development.
d) Explain the rural settlements.
e) Describe growth of cities & scale of cities.
f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.
b) Describe the socio-economic consequences.
c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.
b) Write down key aspects of an urban design.
c) Define an Urban form & state types of determinants.
d) Describe the natural determinants of an urban form.
e) Illustrate survey techniques for urban aesthetics.
f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.
b) Describe all the types of public spaces & explain any one in detail.
c) Describe steps to carry out visual survey and its recordings.

SLR-QH-220

Seat No.		Set	Q

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

2) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

3) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

4) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

5) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

6) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

7) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

8) What is one of the challenges faced in urban planning?
a) Rapid population growth
b) Decreasing urban population
c) Increased agricultural land
d) Less need for infrastructure

9) What is one of the concrete technical aspects defining 'urban'?
a) Population size
b) Cultural heritage
c) Historical significance
d) Natural resources

10) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

11) What is the population density and settlement size in rural settlements?
a) High and large
b) Low and small
c) Medium and average
d) Variable and diverse

12) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities
b) Tertiary activities
c) Primary activities
d) Quaternary activities

13) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

14) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.
b) Illustrate the methods used in urban or town planning.
c) Describe the geological factors affecting urban development.
d) Explain the rural settlements.
e) Describe growth of cities & scale of cities.
f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.
b) Describe the socio-economic consequences.
c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.
b) Write down key aspects of an urban design.
c) Define an Urban form & state types of determinants.
d) Describe the natural determinants of an urban form.
e) Illustrate survey techniques for urban aesthetics.
f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.
b) Describe all the types of public spaces & explain any one in detail.
c) Describe steps to carry out visual survey and its recordings.

SLR-QH-220

Seat No.		Set	R

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

2) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

3) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

4) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

5) What is one of the challenges faced in urban planning?
a) Rapid population growth b) Decreasing urban population
c) Increased agricultural land d) Less need for infrastructure

6) What is one of the concrete technical aspects defining 'urban'?
a) Population size
b) Cultural heritage
c) Historical significance
d) Natural resources

7) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

8) What is the population density and settlement size in rural settlements?
a) High and large
b) Low and small
c) Medium and average
d) Variable and diverse

9) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities
b) Tertiary activities
c) Primary activities
d) Quaternary activities

10) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

11) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

12) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

13) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

14) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.
b) Illustrate the methods used in urban or town planning.
c) Describe the geological factors affecting urban development.
d) Explain the rural settlements.
e) Describe growth of cities & scale of cities.
f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.
b) Describe the socio-economic consequences.
c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.
b) Write down key aspects of an urban design.
c) Define an Urban form & state types of determinants.
d) Describe the natural determinants of an urban form.
e) Illustrate survey techniques for urban aesthetics.
f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.
b) Describe all the types of public spaces & explain any one in detail.
c) Describe steps to carry out visual survey and its recordings.

SLR-QH-220

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

2) What is one of the social infrastructures affected by urbanization?
a) Transportation b) Healthcare
c) Agriculture d) Mining

3) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

4) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

5) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

6) What is the role of edges in city districts?
   a) To connect different districts
   b) To augment the tendency of districts to fragment the city
   c) To enhance the beauty of the city
   d) To provide transportation routes

7) What is the purpose of tree grates?
   a) To provide shade for pedestrians
   b) To enable water to reach the roots of a tree
   c) To decorate the planting hole
   d) To support the tree collar

8) What does the National Survey help to collect information about?
   a) Natural resources and potentialities
   b) Urban aesthetics
   c) Traffic congestion
   d) Housing conditions

9) What is the purpose of conducting a Physical Survey in town planning?
   a) To collect information for updating base maps
   b) To assess social conditions
   c) To evaluate economic activities
   d) To analyze traffic problems

10) What is one of the challenges faced in urban planning?
   a) Rapid population growth
   b) Decreasing urban population
   c) Increased agricultural land
   d) Less need for infrastructure

11) What is one of the concrete technical aspects defining 'urban'?
   a) Population size
   b) Cultural heritage
   c) Historical significance
   d) Natural resources

12) What is a characteristic of towns compared to villages?
   a) Towns are smaller than villages
   b) Towns are generally larger than villages
   c) Towns have no local self-government
   d) Towns are only found in urban areas

13) What is the population density and settlement size in rural settlements?
   a) High and large
   b) Low and small
   c) Medium and average
   d) Variable and diverse

14) What type of activities are rural settlements chiefly concerned with?
   a) Secondary activities
   b) Tertiary activities
   c) Primary activities
   d) Quaternary activities

SLR-QH-220

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.
b) Illustrate the methods used in urban or town planning.
c) Describe the geological factors affecting urban development.
d) Explain the rural settlements.
e) Describe growth of cities & scale of cities.
f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.
b) Describe the socio-economic consequences.
c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.
b) Write down key aspects of an urban design.
c) Define an Urban form & state types of determinants.
d) Describe the natural determinants of an urban form.
e) Illustrate survey techniques for urban aesthetics.
f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.
b) Describe all the types of public spaces & explain any one in detail.
c) Describe steps to carry out visual survey and its recordings.

SLR-QH-220

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is one of the challenges faced in urban planning?
a) Rapid population growth b) Decreasing urban population
c) Increased agricultural land d) Less need for infrastructure

2) What is one of the concrete technical aspects defining 'urban'?
a) Population size b) Cultural heritage
c) Historical significance d) Natural resources

3) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

4) What is the population density and settlement size in rural settlements?
a) High and large b) Low and small
c) Medium and average d) Variable and diverse

5) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities b) Tertiary activities
c) Primary activities d) Quaternary activities

6) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

7) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

8) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

9) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

10) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

11) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

12) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

13) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

14) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

Seat No.	

Set | P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.
b) Illustrate the methods used in urban or town planning.
c) Describe the geological factors affecting urban development.
d) Explain the rural settlements.
e) Describe growth of cities & scale of cities.
f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.
b) Describe the socio-economic consequences.
c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.
b) Write down key aspects of an urban design.
c) Define an Urban form & state types of determinants.
d) Describe the natural determinants of an urban form.
e) Illustrate survey techniques for urban aesthetics.
f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.
b) Describe all the types of public spaces & explain any one in detail.
c) Describe steps to carry out visual survey and its recordings.

Seat No.		Set	Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

2) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

3) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

4) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

5) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

6) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

7) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

8) What is one of the challenges faced in urban planning?
a) Rapid population growth
b) Decreasing urban population
c) Increased agricultural land
d) Less need for infrastructure

9) What is one of the concrete technical aspects defining 'urban'?
a) Population size
b) Cultural heritage
c) Historical significance
d) Natural resources

10) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

11) What is the population density and settlement size in rural settlements?
a) High and large
b) Low and small
c) Medium and average
d) Variable and diverse

12) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities
b) Tertiary activities
c) Primary activities
d) Quaternary activities

13) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

14) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.
b) Illustrate the methods used in urban or town planning.
c) Describe the geological factors affecting urban development.
d) Explain the rural settlements.
e) Describe growth of cities & scale of cities.
f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.
b) Describe the socio-economic consequences.
c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.
b) Write down key aspects of an urban design.
c) Define an Urban form & state types of determinants.
d) Describe the natural determinants of an urban form.
e) Illustrate survey techniques for urban aesthetics.
f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.
b) Describe all the types of public spaces & explain any one in detail.
c) Describe steps to carry out visual survey and its recordings.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

2) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

3) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

4) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

5) What is one of the challenges faced in urban planning?
a) Rapid population growth b) Decreasing urban population
c) Increased agricultural land d) Less need for infrastructure

6) What is one of the concrete technical aspects defining 'urban'?
a) Population size
b) Cultural heritage
c) Historical significance
d) Natural resources

7) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

8) What is the population density and settlement size in rural settlements?
a) High and large
b) Low and small
c) Medium and average
d) Variable and diverse

9) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities
b) Tertiary activities
c) Primary activities
d) Quaternary activities

10) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

11) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

12) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

13) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

14) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.
b) Illustrate the methods used in urban or town planning.
c) Describe the geological factors affecting urban development.
d) Explain the rural settlements.
e) Describe growth of cities & scale of cities.
f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.
b) Describe the socio-economic consequences.
c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.
b) Write down key aspects of an urban design.
c) Define an Urban form & state types of determinants.
d) Describe the natural determinants of an urban form.
e) Illustrate survey techniques for urban aesthetics.
f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.
b) Describe all the types of public spaces & explain any one in detail.
c) Describe steps to carry out visual survey and its recordings.

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

2) What is one of the social infrastructures affected by urbanization?
a) Transportation b) Healthcare
c) Agriculture d) Mining

3) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

4) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

5) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

6) What is the role of edges in city districts?
   a) To connect different districts
   b) To augment the tendency of districts to fragment the city
   c) To enhance the beauty of the city
   d) To provide transportation routes

7) What is the purpose of tree grates?
   a) To provide shade for pedestrians
   b) To enable water to reach the roots of a tree
   c) To decorate the planting hole
   d) To support the tree collar

8) What does the National Survey help to collect information about?
   a) Natural resources and potentialities
   b) Urban aesthetics
   c) Traffic congestion
   d) Housing conditions

9) What is the purpose of conducting a Physical Survey in town planning?
   a) To collect information for updating base maps
   b) To assess social conditions
   c) To evaluate economic activities
   d) To analyze traffic problems

10) What is one of the challenges faced in urban planning?
   a) Rapid population growth
   b) Decreasing urban population
   c) Increased agricultural land
   d) Less need for infrastructure

11) What is one of the concrete technical aspects defining 'urban'?
   a) Population size
   b) Cultural heritage
   c) Historical significance
   d) Natural resources

12) What is a characteristic of towns compared to villages?
   a) Towns are smaller than villages
   b) Towns are generally larger than villages
   c) Towns have no local self-government
   d) Towns are only found in urban areas

13) What is the population density and settlement size in rural settlements?
   a) High and large
   b) Low and small
   c) Medium and average
   d) Variable and diverse

14) What type of activities are rural settlements chiefly concerned with?
   a) Secondary activities
   b) Tertiary activities
   c) Primary activities
   d) Quaternary activities

SLR-QH-220

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.

b) Illustrate the methods used in urban or town planning.

c) Describe the geological factors affecting urban development.

d) Explain the rural settlements.

e) Describe growth of cities & scale of cities.

f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.

b) Describe the socio-economic consequences.

c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.

b) Write down key aspects of an urban design.

c) Define an Urban form & state types of determinants.

d) Describe the natural determinants of an urban form.

e) Illustrate survey techniques for urban aesthetics.

f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.

b) Describe all the types of public spaces & explain any one in detail.

c) Describe steps to carry out visual survey and its recordings.

SLR-QH-220

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is one of the challenges faced in urban planning?
a) Rapid population growth b) Decreasing urban population
c) Increased agricultural land d) Less need for infrastructure

2) What is one of the concrete technical aspects defining 'urban'?
a) Population size b) Cultural heritage
c) Historical significance d) Natural resources

3) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

4) What is the population density and settlement size in rural settlements?
a) High and large b) Low and small
c) Medium and average d) Variable and diverse

5) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities b) Tertiary activities
c) Primary activities d) Quaternary activities

6) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

7) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

8) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

9) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

10) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

11) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

12) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

13) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

14) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.

b) Illustrate the methods used in urban or town planning.

c) Describe the geological factors affecting urban development.

d) Explain the rural settlements.

e) Describe growth of cities & scale of cities.

f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.

b) Describe the socio-economic consequences.

c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.

b) Write down key aspects of an urban design.

c) Define an Urban form & state types of determinants.

d) Describe the natural determinants of an urban form.

e) Illustrate survey techniques for urban aesthetics.

f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.

b) Describe all the types of public spaces & explain any one in detail.

c) Describe steps to carry out visual survey and its recordings.

SLR-QH-220

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

2) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

3) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

4) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

5) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

6) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

7) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

8) What is one of the challenges faced in urban planning?
a) Rapid population growth
b) Decreasing urban population
c) Increased agricultural land
d) Less need for infrastructure

9) What is one of the concrete technical aspects defining 'urban'?
a) Population size
b) Cultural heritage
c) Historical significance
d) Natural resources

10) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
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11) What is the population density and settlement size in rural settlements?
a) High and large
b) Low and small
c) Medium and average
d) Variable and diverse

12) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities
b) Tertiary activities
c) Primary activities
d) Quaternary activities

13) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

14) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.

b) Illustrate the methods used in urban or town planning.

c) Describe the geological factors affecting urban development.

d) Explain the rural settlements.

e) Describe growth of cities & scale of cities.

f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.

b) Describe the socio-economic consequences.

c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.

b) Write down key aspects of an urban design.

c) Define an Urban form & state types of determinants.

d) Describe the natural determinants of an urban form.

e) Illustrate survey techniques for urban aesthetics.

f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.

b) Describe all the types of public spaces & explain any one in detail.

c) Describe steps to carry out visual survey and its recordings.

SLR-QH-220

Seat No.		Set	R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

2) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

3) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

4) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

5) What is one of the challenges faced in urban planning?
a) Rapid population growth b) Decreasing urban population
c) Increased agricultural land d) Less need for infrastructure

6) What is one of the concrete technical aspects defining 'urban'?
a) Population size
b) Cultural heritage
c) Historical significance
d) Natural resources

7) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

8) What is the population density and settlement size in rural settlements?
a) High and large
b) Low and small
c) Medium and average
d) Variable and diverse

9) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities
b) Tertiary activities
c) Primary activities
d) Quaternary activities

10) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

11) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

12) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

13) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

14) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.

b) Illustrate the methods used in urban or town planning.

c) Describe the geological factors affecting urban development.

d) Explain the rural settlements.

e) Describe growth of cities & scale of cities.

f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.

b) Describe the socio-economic consequences.

c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.

b) Write down key aspects of an urban design.

c) Define an Urban form & state types of determinants.

d) Describe the natural determinants of an urban form.

e) Illustrate survey techniques for urban aesthetics.

f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.

b) Describe all the types of public spaces & explain any one in detail.

c) Describe steps to carry out visual survey and its recordings.

SLR-QH-220

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

2) What is one of the social infrastructures affected by urbanization?
a) Transportation b) Healthcare
c) Agriculture d) Mining

3) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

4) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

5) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

6) What is the role of edges in city districts?
   a) To connect different districts
   b) To augment the tendency of districts to fragment the city
   c) To enhance the beauty of the city
   d) To provide transportation routes

7) What is the purpose of tree grates?
   a) To provide shade for pedestrians
   b) To enable water to reach the roots of a tree
   c) To decorate the planting hole
   d) To support the tree collar

8) What does the National Survey help to collect information about?
   a) Natural resources and potentialities
   b) Urban aesthetics
   c) Traffic congestion
   d) Housing conditions

9) What is the purpose of conducting a Physical Survey in town planning?
   a) To collect information for updating base maps
   b) To assess social conditions
   c) To evaluate economic activities
   d) To analyze traffic problems

10) What is one of the challenges faced in urban planning?
   a) Rapid population growth
   b) Decreasing urban population
   c) Increased agricultural land
   d) Less need for infrastructure

11) What is one of the concrete technical aspects defining 'urban'?
   a) Population size
   b) Cultural heritage
   c) Historical significance
   d) Natural resources

12) What is a characteristic of towns compared to villages?
   a) Towns are smaller than villages
   b) Towns are generally larger than villages
   c) Towns have no local self-government
   d) Towns are only found in urban areas

13) What is the population density and settlement size in rural settlements?
   a) High and large
   b) Low and small
   c) Medium and average
   d) Variable and diverse

14) What type of activities are rural settlements chiefly concerned with?
   a) Secondary activities
   b) Tertiary activities
   c) Primary activities
   d) Quaternary activities

SLR-QH-220

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.

b) Illustrate the methods used in urban or town planning.

c) Describe the geological factors affecting urban development.

d) Explain the rural settlements.

e) Describe growth of cities & scale of cities.

f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.

b) Describe the socio-economic consequences.

c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.

b) Write down key aspects of an urban design.

c) Define an Urban form & state types of determinants.

d) Describe the natural determinants of an urban form.

e) Illustrate survey techniques for urban aesthetics.

f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.

b) Describe all the types of public spaces & explain any one in detail.

c) Describe steps to carry out visual survey and its recordings.

SLR-QH-220

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is one of the challenges faced in urban planning?
a) Rapid population growth b) Decreasing urban population
c) Increased agricultural land d) Less need for infrastructure

2) What is one of the concrete technical aspects defining 'urban'?
a) Population size b) Cultural heritage
c) Historical significance d) Natural resources

3) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

4) What is the population density and settlement size in rural settlements?
a) High and large b) Low and small
c) Medium and average d) Variable and diverse

5) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities b) Tertiary activities
c) Primary activities d) Quaternary activities

6) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

7) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

8) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

9) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

10) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

11) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

12) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

13) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

14) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.
b) Illustrate the methods used in urban or town planning.
c) Describe the geological factors affecting urban development.
d) Explain the rural settlements.
e) Describe growth of cities & scale of cities.
f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.
b) Describe the socio-economic consequences.
c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.
b) Write down key aspects of an urban design.
c) Define an Urban form & state types of determinants.
d) Describe the natural determinants of an urban form.
e) Illustrate survey techniques for urban aesthetics.
f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.
b) Describe all the types of public spaces & explain any one in detail.
c) Describe steps to carry out visual survey and its recordings.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is a blighted area?
a) An area in good condition
b) Any area in deterioration regardless of its degree
c) A newly developed area
d) An area with high economic activity

2) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

3) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

4) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

5) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

6) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

7) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

8) What is one of the challenges faced in urban planning?
a) Rapid population growth
b) Decreasing urban population
c) Increased agricultural land
d) Less need for infrastructure

9) What is one of the concrete technical aspects defining 'urban'?
a) Population size
b) Cultural heritage
c) Historical significance
d) Natural resources

10) What is a characteristic of towns compared to villages?
a) Towns are smaller than villages
b) Towns are generally larger than villages
c) Towns have no local self-government
d) Towns are only found in urban areas

11) What is the population density and settlement size in rural settlements?
a) High and large
b) Low and small
c) Medium and average
d) Variable and diverse

12) What type of activities are rural settlements chiefly concerned with?
a) Secondary activities
b) Tertiary activities
c) Primary activities
d) Quaternary activities

13) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

14) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.
b) Illustrate the methods used in urban or town planning.
c) Describe the geological factors affecting urban development.
d) Explain the rural settlements.
e) Describe growth of cities & scale of cities.
f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.
b) Describe the socio-economic consequences.
c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.
b) Write down key aspects of an urban design.
c) Define an Urban form & state types of determinants.
d) Describe the natural determinants of an urban form.
e) Illustrate survey techniques for urban aesthetics.
f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.
b) Describe all the types of public spaces & explain any one in detail.
c) Describe steps to carry out visual survey and its recordings.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is the role of edges in city districts?
a) To connect different districts
b) To augment the tendency of districts to fragment the city
c) To enhance the beauty of the city
d) To provide transportation routes

2) What is the purpose of tree grates?
a) To provide shade for pedestrians
b) To enable water to reach the roots of a tree
c) To decorate the planting hole
d) To support the tree collar

3) What does the National Survey help to collect information about?
a) Natural resources and potentialities
b) Urban aesthetics
c) Traffic congestion
d) Housing conditions

4) What is the purpose of conducting a Physical Survey in town planning?
a) To collect information for updating base maps
b) To assess social conditions
c) To evaluate economic activities
d) To analyze traffic problems

5) What is one of the challenges faced in urban planning?
a) Rapid population growth b) Decreasing urban population
c) Increased agricultural land d) Less need for infrastructure

6) What is one of the concrete technical aspects defining 'urban'?
a) Population size
b) Cultural heritage
c) Historical significance
d) Natural resources

7) What is a characteristic of towns compared to villages?
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d) Towns are only found in urban areas

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b) Low and small
c) Medium and average
d) Variable and diverse

9) What type of activities are rural settlements chiefly concerned with?
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b) Tertiary activities
c) Primary activities
d) Quaternary activities

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c) Increased green spaces
d) Lower crime rates

11) What is one of the social infrastructures affected by urbanization?
a) Transportation
b) Healthcare
c) Agriculture
d) Mining

12) What is a blighted area?
a) An area in good condition
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d) An area with high economic activity

13) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

14) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.
b) Illustrate the methods used in urban or town planning.
c) Describe the geological factors affecting urban development.
d) Explain the rural settlements.
e) Describe growth of cities & scale of cities.
f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.
b) Describe the socio-economic consequences.
c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.
b) Write down key aspects of an urban design.
c) Define an Urban form & state types of determinants.
d) Describe the natural determinants of an urban form.
e) Illustrate survey techniques for urban aesthetics.
f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.
b) Describe all the types of public spaces & explain any one in detail.
c) Describe steps to carry out visual survey and its recordings.

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Make suitable assumptions if necessary and state them clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the given options. 14

1) What is a consequence of overcrowding in cities?
a) Improved living conditions
b) Added pressure on physical infrastructure
c) Increased green spaces
d) Lower crime rates

2) What is one of the social infrastructures affected by urbanization?
a) Transportation b) Healthcare
c) Agriculture d) Mining

3) What is a blighted area?
a) An area in good condition
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c) A newly developed area
d) An area with high economic activity

4) What is one of the administrative measures for urban renewal?
a) To demolish all buildings
b) To restore the area to its original functions
c) To build new skyscrapers
d) To increase traffic congestion

5) What is a landform?
a) a type of urban structure
b) a natural feature of the solid surface of the Earth
c) a man-made construction
d) a type of vegetation in a city

6) What is the role of edges in city districts?
   a) To connect different districts
   b) To augment the tendency of districts to fragment the city
   c) To enhance the beauty of the city
   d) To provide transportation routes

7) What is the purpose of tree grates?
   a) To provide shade for pedestrians
   b) To enable water to reach the roots of a tree
   c) To decorate the planting hole
   d) To support the tree collar

8) What does the National Survey help to collect information about?
   a) Natural resources and potentialities
   b) Urban aesthetics
   c) Traffic congestion
   d) Housing conditions

9) What is the purpose of conducting a Physical Survey in town planning?
   a) To collect information for updating base maps
   b) To assess social conditions
   c) To evaluate economic activities
   d) To analyze traffic problems

10) What is one of the challenges faced in urban planning?
   a) Rapid population growth
   b) Decreasing urban population
   c) Increased agricultural land
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11) What is one of the concrete technical aspects defining 'urban'?
   a) Population size
   b) Cultural heritage
   c) Historical significance
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   a) Towns are smaller than villages
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13) What is the population density and settlement size in rural settlements?
   a) High and large
   b) Low and small
   c) Medium and average
   d) Variable and diverse

14) What type of activities are rural settlements chiefly concerned with?
   a) Secondary activities
   b) Tertiary activities
   c) Primary activities
   d) Quaternary activities

SLR-QH-220

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Urban Planning and Design (CIVMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary.
4) Draw neat sketch wherever necessary.

Section – I

Q.2 Attempt any four from the following. **16**

a) Describe the purpose of urban or town planning.

b) Illustrate the methods used in urban or town planning.

c) Describe the geological factors affecting urban development.

d) Explain the rural settlements.

e) Describe growth of cities & scale of cities.

f) Compare between more developed countries (MDC) & less developed countries (LDC).

Q.3 Attempt any two from the following. **12**

a) Explain the parts of the town and their relationship.

b) Describe the socio-economic consequences.

c) Illustrate the negative impacts of city growth.

Section – II

Q.4 Attempt any four from the following. **16**

a) Describe in detail urban design.

b) Write down key aspects of an urban design.

c) Define an Urban form & state types of determinants.

d) Describe the natural determinants of an urban form.

e) Illustrate survey techniques for urban aesthetics.

f) Explain townscape analysis.

Q.5 Attempt any two from the following. **12**

a) Explain various principles of an urban design.

b) Describe all the types of public spaces & explain any one in detail.

c) Describe steps to carry out visual survey and its recordings.

SLR-QH-221

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) In fibre reinforced composite the primary function of the matrix is to _____.
a) Carries a load entirely
b) Protect fibres and transfer stress
c) Increase density
d) Act as lubricant

2) Carbon fibre is most commonly in _____.
a) Polymer Matri0078 b) Material Matric
c) Rubber Matric d) Wooden Matrix

3) The main disadvantage of composite is _____.
a) Difficult in repair b) Higher strength weight ratio
c) Higher heat resistance d) Lower thermal properties

4) The size range of Nano material is typically _____.
a) 1nm - 100nm b) 100nm - 1000nm
c) 1μm - 100μm d) 0.1nm - 10nm

5) The high surface to volume ratio in nano material result in _____.
a) Lower chemical reactivity b) High chemical reactivity
c) No effect on reactivity d) Decreased strength

6) Carbon nano tubes (CNT) complete are mainly composed of _____.
a) Graphite sheets rolled into cylinder
b) Diamond clusters
c) Fullerene spheres
d) Graphene Nano ribbons

7) Which material is commonly used as dielectric in capacitor?
a) Copper b) Mica
c) Silicon d) Iron

8) The Curie temperature is related to _____.
a) Ferroelectric material b) Ferromagnetic materials
c) Semiconductor d) Dielectric materials

9) The fuel commonly used in nuclear reactor is _____.
a) Thorium 232 b) Uranium 235
c) Platinum 239 d) Uranium 236

10) Superconductor exhibit which magnetic property below critical temperature _____.
a) Ferromagnetism b) Perfect diamagnetism
c) Paramagnetic d) None of these

11) Which of the following is a soft magnetic material?
a) Steel b) Silicon iron
c) Cobalt d) Alnico

12) CMOS technology is widely used in _____.
a) Power generation b) Microcontroller
c) Chemical reactions d) Increase conductivity

13) Saturation magnetization refers to _____.
a) Maximum magnetic field b) Minimum magnetic field
c) Zero magnetization d) High resistance

14) What is a nanofluid?
a) Solid fluid b) Fluid with nanoparticles
c) Gas like fluid d) Pure liquid

SLR-QH-221

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and proper diagram wherever necessary.

SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

b) Explained in brief synthesis of Non material top down and bottom of approaches. **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

a) Explain PIEZO electric material. Where are they used in electronic devices? **05**

b) Discuss the dielectric polarization mechanism in the insulating material. **05**

c) What are compound semiconductor? Explain GaAs and its application. **05**

Q.6 Attempt Any Two Questions.

a) Define the magnetic material. Classified them based on their magnetic properties. **05**

b) Explain the difference between diamagnetic, paramagnetic, ferromagnetic, anti-ferromagnetic, ferromagnetic materials with example. **05**

c) What is magnetism ability how does it very from different types of magnetic material? **05**

Q.7 Attempt Any Two Questions.

a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

SLR-QH-221

Seat No.		Set	Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) The Curie temperature is related to _____.
a) Ferroelectric material b) Ferromagnetic materials
c) Semiconductor d) Dielectric materials

2) The fuel commonly used in nuclear reactor is _____.
a) Thorium 232 b) Uranium 235
c) Platinum 239 d) Uranium 236

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4) Which of the following is a soft magnetic material?
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6) Saturation magnetization refers to _____.
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c) Zero magnetization d) High resistance

7) What is a nanofluid?
a) Solid fluid b) Fluid with nanoparticles
c) Gas like fluid d) Pure liquid

8) In fibre reinforced composite the primary function of the matrix is to _____.
   a) Carries a load entirely
   b) Protect fibres and transfer stress
   c) Increase density
   d) Act as lubricant

9) Carbon fibre is most commonly in _____.
   a) Polymer Matri0078
   b) Material Matric
   c) Rubber Matric
   d) Wooden Matrix

10) The main disadvantage of composite is _____.
   a) Difficult in repair
   b) Higher strength weight ratio
   c) Higher heat resistance
   d) Lower thermal properties

11) The size range of Nano material is typically _____.
   a) 1nm - 100nm
   b) 100nm - 1000nm
   c) 1μm - 100μm
   d) 0.1nm - 10nm

12) The high surface to volume ratio in nano material result in _____.
   a) Lower chemical reactivity
   b) High chemical reactivity
   c) No effect on reactivity
   d) Decreased strength

13) Carbon nano tubes (CNT) complete are mainly composed of _____.
   a) Graphite sheets rolled into cylinder
   b) Diamond clusters
   c) Fullerene spheres
   d) Graphene Nano ribbons

14) Which material is commonly used as dielectric in capacitor?
   a) Copper
   b) Mica
   c) Silicon
   d) Iron

SLR-QH-221

Seat No.		Set	Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

b) Explained in brief synthesis of Non material top down and bottom of approaches. **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

a) Explain PIEZO electric material. Where are they used in electronic devices? **05**

b) Discuss the dielectric polarization mechanism in the insulating material. **05**

c) What are compound semiconductor? Explain GaAs and its application. **05**

Q.6 Attempt Any Two Questions.

a) Define the magnetic material. Classified them based on their magnetic properties. **05**

b) Explain the difference between diamagnetic, paramagnetic, ferromagnetic, anti-ferromagnetic, ferromagnetic materials with example. **05**

c) What is magnetism ability how does it very from different types of magnetic material? **05**

Q.7 Attempt Any Two Questions.

a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) Which of the following is a soft magnetic material?
a) Steel b) Silicon iron
c) Cobalt d) Alnico

2) CMOS technology is widely used in _____.
a) Power generation b) Microcontroller
c) Chemical reactions d) Increase conductivity

3) Saturation magnetization refers to _____.
a) Maximum magnetic field b) Minimum magnetic field
c) Zero magnetization d) High resistance

4) What is a nanofluid?
a) Solid fluid b) Fluid with nanoparticles
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5) In fibre reinforced composite the primary function of the matrix is to _____.
a) Carries a load entirely
b) Protect fibres and transfer stress
c) Increase density
d) Act as lubricant

6) Carbon fibre is most commonly in _____.
a) Polymer Matri0078 b) Material Matric
c) Rubber Matric d) Wooden Matrix

7) The main disadvantage of composite is _____.
a) Difficult in repair
b) Higher strength weight ratio
c) Higher heat resistance
d) Lower thermal properties

8) The size range of Nano material is typically _____.
a) 1nm - 100nm
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c) 1μm - 100μm
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c) Silicon
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12) The Curie temperature is related to _____.
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b) Ferromagnetic materials
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d) Dielectric materials

13) The fuel commonly used in nuclear reactor is _____.
a) Thorium 232
b) Uranium 235
c) Platinum 239
d) Uranium 236

14) Superconductor exhibit which magnetic property below critical temperature _____.
a) Ferromagnetism
b) Perfect diamagnetism
c) Paramagnetic
d) None of these

SLR-QH-221

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

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c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

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c) What are compound semiconductor? Explain GaAs and its application. **05**

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c) What is magnetism ability how does it very from different types of magnetic material? **05**

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a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

SLR-QH-221

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) Carbon nano tubes (CNT) complete are mainly composed of _____.
a) Graphite sheets rolled into cylinder
b) Diamond clusters
c) Fullerene spheres
d) Graphene Nano ribbons

2) Which material is commonly used as dielectric in capacitor?
a) Copper b) Mica
c) Silicon d) Iron

3) The Curie temperature is related to _____.
a) Ferroelectric material b) Ferromagnetic materials
c) Semiconductor d) Dielectric materials

4) The fuel commonly used in nuclear reactor is _____.
a) Thorium 232 b) Uranium 235
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5) Superconductor exhibit which magnetic property below critical temperature _____.
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6) Which of the following is a soft magnetic material?
a) Steel b) Silicon iron
c) Cobalt d) Alnico

7) CMOS technology is widely used in _____.
a) Power generation
b) Microcontroller
c) Chemical reactions
d) Increase conductivity

8) Saturation magnetization refers to _____.
a) Maximum magnetic field
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d) Pure liquid

10) In fibre reinforced composite the primary function of the matrix is to _____.
a) Carries a load entirely
b) Protect fibres and transfer stress
c) Increase density
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11) Carbon fibre is most commonly in _____.
a) Polymer Matri0078
b) Material Matric
c) Rubber Matric
d) Wooden Matrix

12) The main disadvantage of composite is _____.
a) Difficult in repair
b) Higher strength weight ratio
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d) Lower thermal properties

13) The size range of Nano material is typically _____.
a) 1nm - 100nm
b) 100nm - 1000nm
c) 1μm - 100μm
d) 0.1nm - 10nm

14) The high surface to volume ratio in nano material result in _____.
a) Lower chemical reactivity
b) High chemical reactivity
c) No effect on reactivity
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SLR-QH-221

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

b) Explained in brief synthesis of Non material top down and bottom of approaches **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

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SECTION – II

Q.5 Attempt Any Two Questions.

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a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

SLR-QH-221

Seat No.		Set	P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) In fibre reinforced composite the primary function of the matrix is to _____.
a) Carries a load entirely
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c) Increase density
d) Act as lubricant

2) Carbon fibre is most commonly in _____.
a) Polymer Matri0078 b) Material Matric
c) Rubber Matric d) Wooden Matrix

3) The main disadvantage of composite is _____.
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4) The size range of Nano material is typically _____.
a) 1nm - 100nm b) 100nm - 1000nm
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SLR-QH-221

Seat No.		Set	P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

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a) Application of Nanomaterial in various field **04**

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SECTION – II

Q.5 Attempt Any Two Questions.

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b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) The Curie temperature is related to _____.
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2) The fuel commonly used in nuclear reactor is _____.
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   c) Silicon
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SLR-QH-221

Seat No.		Set	Q

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

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a) Application of Nanomaterial in various field **04**

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c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

a) Explain PIEZO electric material. Where are they used in electronic devices? **05**

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b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

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Seat No.	

Set | **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) Which of the following is a soft magnetic material?
a) Steel b) Silicon iron
c) Cobalt d) Alnico

2) CMOS technology is widely used in _____.
a) Power generation b) Microcontroller
c) Chemical reactions d) Increase conductivity

3) Saturation magnetization refers to _____.
a) Maximum magnetic field b) Minimum magnetic field
c) Zero magnetization d) High resistance

4) What is a nanofluid?
a) Solid fluid b) Fluid with nanoparticles
c) Gas like fluid d) Pure liquid

5) In fibre reinforced composite the primary function of the matrix is to _____.
a) Carries a load entirely
b) Protect fibres and transfer stress
c) Increase density
d) Act as lubricant

6) Carbon fibre is most commonly in _____.
a) Polymer Matri0078 b) Material Matric
c) Rubber Matric d) Wooden Matrix

7) The main disadvantage of composite is _____.
a) Difficult in repair
b) Higher strength weight ratio
c) Higher heat resistance
d) Lower thermal properties

8) The size range of Nano material is typically _____.
a) 1nm - 100nm
b) 100nm - 1000nm
c) 1μm - 100μm
d) 0.1nm - 10nm

9) The high surface to volume ratio in nano material result in _____.
a) Lower chemical reactivity
b) High chemical reactivity
c) No effect on reactivity
d) Decreased strength

10) Carbon nano tubes (CNT) complete are mainly composed of _____.
a) Graphite sheets rolled into cylinder
b) Diamond clusters
c) Fullerene spheres
d) Graphene Nano ribbons

11) Which material is commonly used as dielectric in capacitor?
a) Copper
b) Mica
c) Silicon
d) Iron

12) The Curie temperature is related to _____.
a) Ferroelectric material
b) Ferromagnetic materials
c) Semiconductor
d) Dielectric materials

13) The fuel commonly used in nuclear reactor is _____.
a) Thorium 232
b) Uranium 235
c) Platinum 239
d) Uranium 236

14) Superconductor exhibit which magnetic property below critical temperature _____.
a) Ferromagnetism
b) Perfect diamagnetism
c) Paramagnetic
d) None of these

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

b) Explained in brief synthesis of Non material top down and bottom of approaches. **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

a) Explain PIEZO electric material. Where are they used in electronic devices? **05**

b) Discuss the dielectric polarization mechanism in the insulating material. **05**

c) What are compound semiconductor? Explain GaAs and its application. **05**

Q.6 Attempt Any Two Questions.

a) Define the magnetic material. Classified them based on their magnetic properties. **05**

b) Explain the difference between diamagnetic, paramagnetic, ferromagnetic, anti-ferromagnetic, ferromagnetic materials with example. **05**

c) What is magnetism ability how does it very from different types of magnetic material? **05**

Q.7 Attempt Any Two Questions.

a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. 14

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c) Fullerene spheres
d) Graphene Nano ribbons

2) Which material is commonly used as dielectric in capacitor?
a) Copper b) Mica
c) Silicon d) Iron

3) The Curie temperature is related to _____.
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a) Thorium 232 b) Uranium 235
c) Platinum 239 d) Uranium 236

5) Superconductor exhibit which magnetic property below critical temperature _____.
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a) Solid fluid
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10) In fibre reinforced composite the primary function of the matrix is to _____.
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11) Carbon fibre is most commonly in _____.
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d) Wooden Matrix

12) The main disadvantage of composite is _____.
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13) The size range of Nano material is typically _____.
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c) 1μm - 100μm
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c) No effect on reactivity
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SLR-QH-221

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

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c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

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b) Explained in brief synthesis of Non material top down and bottom of approaches. **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

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c) What are compound semiconductor? Explain GaAs and its application. **05**

Q.6 Attempt Any Two Questions.

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c) What is magnetism ability how does it very from different types of magnetic material? **05**

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b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

SLR-QH-221

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

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8) The Curie temperature is related to _____.
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SLR-QH-221

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-QH-221

Seat No.		Set	Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

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c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

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a) Application of Nanomaterial in various field **04**

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SECTION – II

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c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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SLR-QH-221

Seat No.		Set	R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

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SECTION – I

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SECTION – II

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Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

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Duration: 30 Minutes Marks:14

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SLR-QH-221

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
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SECTION – I

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a) Application of Nanomaterial in various field **04**

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c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

a) Explain PIEZO electric material. Where are they used in electronic devices? **05**

b) Discuss the dielectric polarization mechanism in the insulating material. **05**

c) What are compound semiconductor? Explain GaAs and its application. **05**

Q.6 Attempt Any Two Questions.

a) Define the magnetic material. Classified them based on their magnetic properties. **05**

b) Explain the difference between diamagnetic, paramagnetic, ferromagnetic, anti-ferromagnetic, ferromagnetic materials with example. **05**

c) What is magnetism ability how does it very from different types of magnetic material? **05**

Q.7 Attempt Any Two Questions.

a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

SLR-QH-221

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) In fibre reinforced composite the primary function of the matrix is to _____.
a) Carries a load entirely
b) Protect fibres and transfer stress
c) Increase density
d) Act as lubricant

2) Carbon fibre is most commonly in _____.
a) Polymer Matri0078 b) Material Matric
c) Rubber Matric d) Wooden Matrix

3) The main disadvantage of composite is _____.
a) Difficult in repair b) Higher strength weight ratio
c) Higher heat resistance d) Lower thermal properties

4) The size range of Nano material is typically _____.
a) 1nm - 100nm b) 100nm - 1000nm
c) 1μm - 100μm d) 0.1nm - 10nm

5) The high surface to volume ratio in nano material result in _____.
a) Lower chemical reactivity b) High chemical reactivity
c) No effect on reactivity d) Decreased strength

6) Carbon nano tubes (CNT) complete are mainly composed of _____.
a) Graphite sheets rolled into cylinder
b) Diamond clusters
c) Fullerene spheres
d) Graphene Nano ribbons

7) Which material is commonly used as dielectric in capacitor?
a) Copper b) Mica
c) Silicon d) Iron

8) The Curie temperature is related to _____.
a) Ferroelectric material b) Ferromagnetic materials
c) Semiconductor d) Dielectric materials

9) The fuel commonly used in nuclear reactor is _____.
a) Thorium 232 b) Uranium 235
c) Platinum 239 d) Uranium 236

10) Superconductor exhibit which magnetic property below critical temperature _____.
a) Ferromagnetism b) Perfect diamagnetism
c) Paramagnetic d) None of these

11) Which of the following is a soft magnetic material?
a) Steel b) Silicon iron
c) Cobalt d) Alnico

12) CMOS technology is widely used in _____.
a) Power generation b) Microcontroller
c) Chemical reactions d) Increase conductivity

13) Saturation magnetization refers to _____.
a) Maximum magnetic field b) Minimum magnetic field
c) Zero magnetization d) High resistance

14) What is a nanofluid?
a) Solid fluid b) Fluid with nanoparticles
c) Gas like fluid d) Pure liquid

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

b) Explained in brief synthesis of Non material top down and bottom of approaches. **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

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SECTION – II

Q.5 Attempt Any Two Questions.

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b) Explain the difference between diamagnetic, paramagnetic, ferromagnetic, anti-ferromagnetic, ferromagnetic materials with example. **05**

c) What is magnetism ability how does it very from different types of magnetic material? **05**

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a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

SLR-QH-221

Seat No.		Set	Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) The Curie temperature is related to _____.
a) Ferroelectric material b) Ferromagnetic materials
c) Semiconductor d) Dielectric materials

2) The fuel commonly used in nuclear reactor is _____.
a) Thorium 232 b) Uranium 235
c) Platinum 239 d) Uranium 236

3) Superconductor exhibit which magnetic property below critical temperature _____.
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6) Saturation magnetization refers to _____.
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   a) Carries a load entirely
   b) Protect fibres and transfer stress
   c) Increase density
   d) Act as lubricant

9) Carbon fibre is most commonly in _____.
   a) Polymer Matri0078
   b) Material Matric
   c) Rubber Matric
   d) Wooden Matrix

10) The main disadvantage of composite is _____.
   a) Difficult in repair
   b) Higher strength weight ratio
   c) Higher heat resistance
   d) Lower thermal properties

11) The size range of Nano material is typically _____.
   a) 1nm - 100nm
   b) 100nm - 1000nm
   c) 1μm - 100μm
   d) 0.1nm - 10nm

12) The high surface to volume ratio in nano material result in _____.
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   b) High chemical reactivity
   c) No effect on reactivity
   d) Decreased strength

13) Carbon nano tubes (CNT) complete are mainly composed of _____.
   a) Graphite sheets rolled into cylinder
   b) Diamond clusters
   c) Fullerene spheres
   d) Graphene Nano ribbons

14) Which material is commonly used as dielectric in capacitor?
   a) Copper
   b) Mica
   c) Silicon
   d) Iron

SLR-QH-221

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

b) Explained in brief synthesis of Non material top down and bottom of approaches. **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

a) Explain PIEZO electric material. Where are they used in electronic devices? **05**

b) Discuss the dielectric polarization mechanism in the insulating material. **05**

c) What are compound semiconductor? Explain GaAs and its application. **05**

Q.6 Attempt Any Two Questions.

a) Define the magnetic material. Classified them based on their magnetic properties. **05**

b) Explain the difference between diamagnetic, paramagnetic, ferromagnetic, anti-ferromagnetic, ferromagnetic materials with example. **05**

c) What is magnetism ability how does it very from different types of magnetic material? **05**

Q.7 Attempt Any Two Questions.

a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) Which of the following is a soft magnetic material?
a) Steel b) Silicon iron
c) Cobalt d) Alnico

2) CMOS technology is widely used in _____.
a) Power generation b) Microcontroller
c) Chemical reactions d) Increase conductivity

3) Saturation magnetization refers to _____.
a) Maximum magnetic field b) Minimum magnetic field
c) Zero magnetization d) High resistance

4) What is a nanofluid?
a) Solid fluid b) Fluid with nanoparticles
c) Gas like fluid d) Pure liquid

5) In fibre reinforced composite the primary function of the matrix is to _____.
a) Carries a load entirely
b) Protect fibres and transfer stress
c) Increase density
d) Act as lubricant

6) Carbon fibre is most commonly in _____.
a) Polymer Matri0078 b) Material Matric
c) Rubber Matric d) Wooden Matrix

7) The main disadvantage of composite is _____.
a) Difficult in repair
b) Higher strength weight ratio
c) Higher heat resistance
d) Lower thermal properties

8) The size range of Nano material is typically _____.
a) 1nm - 100nm
b) 100nm - 1000nm
c) 1μm - 100μm
d) 0.1nm - 10nm

9) The high surface to volume ratio in nano material result in _____.
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10) Carbon nano tubes (CNT) complete are mainly composed of _____.
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c) Fullerene spheres
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11) Which material is commonly used as dielectric in capacitor?
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b) Mica
c) Silicon
d) Iron

12) The Curie temperature is related to _____.
a) Ferroelectric material
b) Ferromagnetic materials
c) Semiconductor
d) Dielectric materials

13) The fuel commonly used in nuclear reactor is _____.
a) Thorium 232
b) Uranium 235
c) Platinum 239
d) Uranium 236

14) Superconductor exhibit which magnetic property below critical temperature _____.
a) Ferromagnetism
b) Perfect diamagnetism
c) Paramagnetic
d) None of these

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and proper diagram wherever necessary.

SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

b) Explained in brief synthesis of Non material top down and bottom of approaches. **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

a) Explain PIEZO electric material. Where are they used in electronic devices? **05**

b) Discuss the dielectric polarization mechanism in the insulating material. **05**

c) What are compound semiconductor? Explain GaAs and its application. **05**

Q.6 Attempt Any Two Questions.

a) Define the magnetic material. Classified them based on their magnetic properties. **05**

b) Explain the difference between diamagnetic, paramagnetic, ferromagnetic, anti-ferromagnetic, ferromagnetic materials with example. **05**

c) What is magnetism ability how does it very from different types of magnetic material? **05**

Q.7 Attempt Any Two Questions.

a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) Carbon nano tubes (CNT) complete are mainly composed of _____.
a) Graphite sheets rolled into cylinder
b) Diamond clusters
c) Fullerene spheres
d) Graphene Nano ribbons

2) Which material is commonly used as dielectric in capacitor?
a) Copper b) Mica
c) Silicon d) Iron

3) The Curie temperature is related to _____.
a) Ferroelectric material b) Ferromagnetic materials
c) Semiconductor d) Dielectric materials

4) The fuel commonly used in nuclear reactor is _____.
a) Thorium 232 b) Uranium 235
c) Platinum 239 d) Uranium 236

5) Superconductor exhibit which magnetic property below critical temperature _____.
a) Ferromagnetism b) Perfect diamagnetism
c) Paramagnetic d) None of these

6) Which of the following is a soft magnetic material?
a) Steel b) Silicon iron
c) Cobalt d) Alnico

7) CMOS technology is widely used in _____.
a) Power generation
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c) Chemical reactions
d) Increase conductivity

8) Saturation magnetization refers to _____.
a) Maximum magnetic field
b) Minimum magnetic field
c) Zero magnetization
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9) What is a nanofluid?
a) Solid fluid
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c) Gas like fluid
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10) In fibre reinforced composite the primary function of the matrix is to _____.
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b) Protect fibres and transfer stress
c) Increase density
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11) Carbon fibre is most commonly in _____.
a) Polymer Matri0078
b) Material Matric
c) Rubber Matric
d) Wooden Matrix

12) The main disadvantage of composite is _____.
a) Difficult in repair
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c) Higher heat resistance
d) Lower thermal properties

13) The size range of Nano material is typically _____.
a) 1nm - 100nm
b) 100nm - 1000nm
c) 1μm - 100μm
d) 0.1nm - 10nm

14) The high surface to volume ratio in nano material result in _____.
a) Lower chemical reactivity
b) High chemical reactivity
c) No effect on reactivity
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SLR-QH-221

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

b) Explained in brief synthesis of Non material top down and bottom of approaches. **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

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SECTION – II

Q.5 Attempt Any Two Questions.

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b) Discuss the dielectric polarization mechanism in the insulating material. **05**

c) What are compound semiconductor? Explain GaAs and its application. **05**

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SLR-QH-221

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

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4) The size range of Nano material is typically _____.
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Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

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SECTION – II

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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

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2) The fuel commonly used in nuclear reactor is _____.
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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and proper diagram wherever necessary.

SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

b) Explained in brief synthesis of Non material top down and bottom of approaches. **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

a) Explain PIEZO electric material. Where are they used in electronic devices? **05**

b) Discuss the dielectric polarization mechanism in the insulating material. **05**

c) What are compound semiconductor? Explain GaAs and its application. **05**

Q.6 Attempt Any Two Questions.

a) Define the magnetic material. Classified them based on their magnetic properties. **05**

b) Explain the difference between diamagnetic, paramagnetic, ferromagnetic, anti-ferromagnetic, ferromagnetic materials with example. **05**

c) What is magnetism ability how does it very from different types of magnetic material? **05**

Q.7 Attempt Any Two Questions.

a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) Which of the following is a soft magnetic material?
a) Steel b) Silicon iron
c) Cobalt d) Alnico

2) CMOS technology is widely used in _____.
a) Power generation b) Microcontroller
c) Chemical reactions d) Increase conductivity

3) Saturation magnetization refers to _____.
a) Maximum magnetic field b) Minimum magnetic field
c) Zero magnetization d) High resistance

4) What is a nanofluid?
a) Solid fluid b) Fluid with nanoparticles
c) Gas like fluid d) Pure liquid

5) In fibre reinforced composite the primary function of the matrix is to _____.
a) Carries a load entirely
b) Protect fibres and transfer stress
c) Increase density
d) Act as lubricant

6) Carbon fibre is most commonly in _____.
a) Polymer Matri0078 b) Material Matric
c) Rubber Matric d) Wooden Matrix

7) The main disadvantage of composite is _____.
a) Difficult in repair
b) Higher strength weight ratio
c) Higher heat resistance
d) Lower thermal properties

8) The size range of Nano material is typically _____.
a) 1nm - 100nm
b) 100nm - 1000nm
c) 1μm - 100μm
d) 0.1nm - 10nm

9) The high surface to volume ratio in nano material result in _____.
a) Lower chemical reactivity
b) High chemical reactivity
c) No effect on reactivity
d) Decreased strength

10) Carbon nano tubes (CNT) complete are mainly composed of _____.
a) Graphite sheets rolled into cylinder
b) Diamond clusters
c) Fullerene spheres
d) Graphene Nano ribbons

11) Which material is commonly used as dielectric in capacitor?
a) Copper
b) Mica
c) Silicon
d) Iron

12) The Curie temperature is related to _____.
a) Ferroelectric material
b) Ferromagnetic materials
c) Semiconductor
d) Dielectric materials

13) The fuel commonly used in nuclear reactor is _____.
a) Thorium 232
b) Uranium 235
c) Platinum 239
d) Uranium 236

14) Superconductor exhibit which magnetic property below critical temperature _____.
a) Ferromagnetism
b) Perfect diamagnetism
c) Paramagnetic
d) None of these

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

b) Explained in brief synthesis of Non material top down and bottom of approaches. **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

a) Explain PIEZO electric material. Where are they used in electronic devices? **05**

b) Discuss the dielectric polarization mechanism in the insulating material. **05**

c) What are compound semiconductor? Explain GaAs and its application. **05**

Q.6 Attempt Any Two Questions.

a) Define the magnetic material. Classified them based on their magnetic properties. **05**

b) Explain the difference between diamagnetic, paramagnetic, ferromagnetic, anti-ferromagnetic, ferromagnetic materials with example. **05**

c) What is magnetism ability how does it very from different types of magnetic material? **05**

Q.7 Attempt Any Two Questions.

a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

SLR-QH-221

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) Carbon nano tubes (CNT) complete are mainly composed of _____.
a) Graphite sheets rolled into cylinder
b) Diamond clusters
c) Fullerene spheres
d) Graphene Nano ribbons

2) Which material is commonly used as dielectric in capacitor?
a) Copper b) Mica
c) Silicon d) Iron

3) The Curie temperature is related to _____.
a) Ferroelectric material b) Ferromagnetic materials
c) Semiconductor d) Dielectric materials

4) The fuel commonly used in nuclear reactor is _____.
a) Thorium 232 b) Uranium 235
c) Platinum 239 d) Uranium 236

5) Superconductor exhibit which magnetic property below critical temperature _____.
a) Ferromagnetism b) Perfect diamagnetism
c) Paramagnetic d) None of these

6) Which of the following is a soft magnetic material?
a) Steel b) Silicon iron
c) Cobalt d) Alnico

7) CMOS technology is widely used in _____.
a) Power generation
b) Microcontroller
c) Chemical reactions
d) Increase conductivity

8) Saturation magnetization refers to _____.
a) Maximum magnetic field
b) Minimum magnetic field
c) Zero magnetization
d) High resistance

9) What is a nanofluid?
a) Solid fluid
b) Fluid with nanoparticles
c) Gas like fluid
d) Pure liquid

10) In fibre reinforced composite the primary function of the matrix is to _____.
a) Carries a load entirely
b) Protect fibres and transfer stress
c) Increase density
d) Act as lubricant

11) Carbon fibre is most commonly in _____.
a) Polymer Matri0078
b) Material Matric
c) Rubber Matric
d) Wooden Matrix

12) The main disadvantage of composite is _____.
a) Difficult in repair
b) Higher strength weight ratio
c) Higher heat resistance
d) Lower thermal properties

13) The size range of Nano material is typically _____.
a) 1nm - 100nm
b) 100nm - 1000nm
c) 1μm - 100μm
d) 0.1nm - 10nm

14) The high surface to volume ratio in nano material result in _____.
a) Lower chemical reactivity
b) High chemical reactivity
c) No effect on reactivity
d) Decreased strength

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

b) Explained in brief synthesis of Non material top down and bottom of approaches. **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

a) Explain PIEZO electric material. Where are they used in electronic devices? **05**

b) Discuss the dielectric polarization mechanism in the insulating material. **05**

c) What are compound semiconductor? Explain GaAs and its application. **05**

Q.6 Attempt Any Two Questions.

a) Define the magnetic material. Classified them based on their magnetic properties. **05**

b) Explain the difference between diamagnetic, paramagnetic, ferromagnetic, anti-ferromagnetic, ferromagnetic materials with example. **05**

c) What is magnetism ability how does it very from different types of magnetic material? **05**

Q.7 Attempt Any Two Questions.

a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

SLR-QH-221

Seat No.		Set	P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Draw neat and proper diagram wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) In fibre reinforced composite the primary function of the matrix is to _____.
a) Carries a load entirely
b) Protect fibres and transfer stress
c) Increase density
d) Act as lubricant

2) Carbon fibre is most commonly in _____.
a) Polymer Matri0078 b) Material Matric
c) Rubber Matric d) Wooden Matrix

3) The main disadvantage of composite is _____.
a) Difficult in repair b) Higher strength weight ratio
c) Higher heat resistance d) Lower thermal properties

4) The size range of Nano material is typically _____.
a) 1nm - 100nm b) 100nm - 1000nm
c) 1μm - 100μm d) 0.1nm - 10nm

5) The high surface to volume ratio in nano material result in _____.
a) Lower chemical reactivity b) High chemical reactivity
c) No effect on reactivity d) Decreased strength

6) Carbon nano tubes (CNT) complete are mainly composed of _____.
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7) Which material is commonly used as dielectric in capacitor?
a) Copper b) Mica
c) Silicon d) Iron

8) The Curie temperature is related to _____.
a) Ferroelectric material b) Ferromagnetic materials
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10) Superconductor exhibit which magnetic property below critical temperature _____.
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13) Saturation magnetization refers to _____.
a) Maximum magnetic field b) Minimum magnetic field
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14) What is a nanofluid?
a) Solid fluid b) Fluid with nanoparticles
c) Gas like fluid d) Pure liquid

Seat No.	

Set | P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

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b) Testing of composite materials **04**

c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

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b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

SLR-QH-221

Seat No.		Set	Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) The Curie temperature is related to _____.
a) Ferroelectric material b) Ferromagnetic materials
c) Semiconductor d) Dielectric materials

2) The fuel commonly used in nuclear reactor is _____.
a) Thorium 232 b) Uranium 235
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4) Which of the following is a soft magnetic material?
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7) What is a nanofluid?
a) Solid fluid b) Fluid with nanoparticles
c) Gas like fluid d) Pure liquid

8) In fibre reinforced composite the primary function of the matrix is to _____.
   a) Carries a load entirely
   b) Protect fibres and transfer stress
   c) Increase density
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9) Carbon fibre is most commonly in _____.
   a) Polymer Matri0078
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   c) Rubber Matric
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10) The main disadvantage of composite is _____.
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   b) Higher strength weight ratio
   c) Higher heat resistance
   d) Lower thermal properties

11) The size range of Nano material is typically _____.
   a) 1nm - 100nm
   b) 100nm - 1000nm
   c) 1μm - 100μm
   d) 0.1nm - 10nm

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   a) Lower chemical reactivity
   b) High chemical reactivity
   c) No effect on reactivity
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13) Carbon nano tubes (CNT) complete are mainly composed of _____.
   a) Graphite sheets rolled into cylinder
   b) Diamond clusters
   c) Fullerene spheres
   d) Graphene Nano ribbons

14) Which material is commonly used as dielectric in capacitor?
   a) Copper
   b) Mica
   c) Silicon
   d) Iron

SLR-QH-221

Seat No.		Set	Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

b) Explained in brief synthesis of Non material top down and bottom of approaches. **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

a) Explain PIEZO electric material. Where are they used in electronic devices? **05**

b) Discuss the dielectric polarization mechanism in the insulating material. **05**

c) What are compound semiconductor? Explain GaAs and its application. **05**

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Q.7 Attempt Any Two Questions.

a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

1) Which of the following is a soft magnetic material?
a) Steel b) Silicon iron
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7) The main disadvantage of composite is _____.
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Seat No.		Set	R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Two Questions.

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a) Application of Nanomaterial in various field **04**

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SECTION – II

Q.5 Attempt Any Two Questions.

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Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Alternatives. **14**

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c) Gas like fluid
d) Pure liquid

10) In fibre reinforced composite the primary function of the matrix is to _____.
a) Carries a load entirely
b) Protect fibres and transfer stress
c) Increase density
d) Act as lubricant

11) Carbon fibre is most commonly in _____.
a) Polymer Matri0078
b) Material Matric
c) Rubber Matric
d) Wooden Matrix

12) The main disadvantage of composite is _____.
a) Difficult in repair
b) Higher strength weight ratio
c) Higher heat resistance
d) Lower thermal properties

13) The size range of Nano material is typically _____.
a) 1nm - 100nm
b) 100nm - 1000nm
c) 1μm - 100μm
d) 0.1nm - 10nm

14) The high surface to volume ratio in nano material result in _____.
a) Lower chemical reactivity
b) High chemical reactivity
c) No effect on reactivity
d) Decreased strength

SLR-QH-221

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Materials for Technology Development (MECHMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat and proper diagram wherever necessary.

SECTION – I

Q.2 Attempt Any Two Questions.

a) What is the need for composite materials in engineering application? discuss their advantages and limitation. **05**

b) Explain in brief MMC, CMC, and PMC. **05**

c) Explain in brief anyone method of manufacturing composite materials. **05**

Q.3 Attempt Any Two Questions.

a) Explain in brief history and development of Nanotechnology and unique properties of Nanomaterial. **05**

b) Explained in brief synthesis of Non material top down and bottom of approaches. **05**

c) What are non-materials? Give their different types based on particle size, Nano wires, Nano tubes and thin film. **05**

Q.4 Write short notes on. (Any Two)

a) Application of Nanomaterial in various field **04**

b) Testing of composite materials **04**

c) Lithography and chemical vapour depositions **04**

SECTION – II

Q.5 Attempt Any Two Questions.

a) Explain PIEZO electric material. Where are they used in electronic devices? **05**

b) Discuss the dielectric polarization mechanism in the insulating material. **05**

c) What are compound semiconductor? Explain GaAs and its application. **05**

Q.6 Attempt Any Two Questions.

a) Define the magnetic material. Classified them based on their magnetic properties. **05**

b) Explain the difference between diamagnetic, paramagnetic, ferromagnetic, anti-ferromagnetic, ferromagnetic materials with example. **05**

c) What is magnetism ability how does it very from different types of magnetic material? **05**

Q.7 Attempt Any Two Questions.

a) Explain the essential property that a material must possesses to be used in a nuclear reactor. **04**

b) Discuss the classification of material into fuel materials moderate materials control material with example. **04**

c) Describe the concept of neutron economy and explain how nuclear material influence it. **04**

SLR-QH-222

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

2) Which of the following is NOT an objective of Production Management?
a) Cost reduction b) Quality improvement
c) Profit maximization directly d) Efficient resource utilization

3) Forecasting is mainly used to _____.
a) Reduce labor cost b) Predict future demand
c) Improve product design d) Control inventory manually

4) Moving average method is classified under _____.
a) Qualitative forecasting b) Judgmental method
c) Quantitative forecasting d) Simulation method

5) The main objective of PPC is _____.
a) Increase marketing share b) Ensure smooth production flow
c) Reduce employee turnover d) Increase sales revenue

6) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

7) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

8) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

9) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

10) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

11) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

12) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

13) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

14) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

2) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

3) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

4) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

5) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

6) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

7) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

8) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

9) Which of the following is NOT an objective of Production Management?
a) Cost reduction
b) Quality improvement
c) Profit maximization directly
d) Efficient resource utilization

10) Forecasting is mainly used to _____.
a) Reduce labor cost
b) Predict future demand
c) Improve product design
d) Control inventory manually

11) Moving average method is classified under _____.
a) Qualitative forecasting
b) Judgmental method
c) Quantitative forecasting
d) Simulation method

12) The main objective of PPC is _____.
a) Increase marketing share
b) Ensure smooth production flow
c) Reduce employee turnover
d) Increase sales revenue

13) Routing in PPC refers to _____.
a) Scheduling work
b) Path followed by materials
c) Assigning jobs to machines
d) Dispatching orders

14) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

2) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

3) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

4) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

5) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

6) Which of the following is NOT an objective of Production Management?
a) Cost reduction b) Quality improvement
c) Profit maximization directly d) Efficient resource utilization

7) Forecasting is mainly used to _____.
a) Reduce labor cost b) Predict future demand
c) Improve product design d) Control inventory manually

8) Moving average method is classified under _____.
a) Qualitative forecasting b) Judgmental method
c) Quantitative forecasting d) Simulation method

9) The main objective of PPC is _____.
a) Increase marketing share b) Ensure smooth production flow
c) Reduce employee turnover d) Increase sales revenue

10) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

11) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

12) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

13) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

14) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

2) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

3) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

4) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

5) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

6) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

7) Value Engineering aims to _____.
a) Increase cost
b) Improve value by reducing cost
c) Reduce quality
d) Increase labor

8) JIT (Just-In-Time) system focuses on _____.
a) Large inventory
b) Zero inventory
c) Producing only when needed
d) Increasing waste

9) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

10) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

11) Which of the following is NOT an objective of Production Management?
a) Cost reduction
b) Quality improvement
c) Profit maximization directly
d) Efficient resource utilization

12) Forecasting is mainly used to _____.
a) Reduce labor cost
b) Predict future demand
c) Improve product design
d) Control inventory manually

13) Moving average method is classified under _____.
a) Qualitative forecasting
b) Judgmental method
c) Quantitative forecasting
d) Simulation method

14) The main objective of PPC is _____.
a) Increase marketing share
b) Ensure smooth production flow
c) Reduce employee turnover
d) Increase sales revenue

SLR-QH-222

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

SLR-QH-222

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

2) Which of the following is NOT an objective of Production Management?
a) Cost reduction b) Quality improvement
c) Profit maximization directly d) Efficient resource utilization

3) Forecasting is mainly used to _____.
a) Reduce labor cost b) Predict future demand
c) Improve product design d) Control inventory manually

4) Moving average method is classified under _____.
a) Qualitative forecasting b) Judgmental method
c) Quantitative forecasting d) Simulation method

5) The main objective of PPC is _____.
a) Increase marketing share b) Ensure smooth production flow
c) Reduce employee turnover d) Increase sales revenue

6) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

7) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

8) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

9) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

10) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

11) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

12) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

13) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

14) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

2) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

3) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

4) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

5) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

6) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

7) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

8) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

9) Which of the following is NOT an objective of Production Management?
a) Cost reduction
b) Quality improvement
c) Profit maximization directly
d) Efficient resource utilization

10) Forecasting is mainly used to _____.
a) Reduce labor cost
b) Predict future demand
c) Improve product design
d) Control inventory manually

11) Moving average method is classified under _____.
a) Qualitative forecasting
b) Judgmental method
c) Quantitative forecasting
d) Simulation method

12) The main objective of PPC is _____.
a) Increase marketing share
b) Ensure smooth production flow
c) Reduce employee turnover
d) Increase sales revenue

13) Routing in PPC refers to _____.
a) Scheduling work
b) Path followed by materials
c) Assigning jobs to machines
d) Dispatching orders

14) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

2) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

3) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

4) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

5) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

6) Which of the following is NOT an objective of Production Management?
a) Cost reduction b) Quality improvement
c) Profit maximization directly d) Efficient resource utilization

7) Forecasting is mainly used to _____.
a) Reduce labor cost b) Predict future demand
c) Improve product design d) Control inventory manually

8) Moving average method is classified under _____.
a) Qualitative forecasting b) Judgmental method
c) Quantitative forecasting d) Simulation method

9) The main objective of PPC is _____.
a) Increase marketing share b) Ensure smooth production flow
c) Reduce employee turnover d) Increase sales revenue

10) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

11) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

12) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

13) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

14) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

2) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

3) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

4) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

5) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

6) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

7) Value Engineering aims to _____.
a) Increase cost
b) Improve value by reducing cost
c) Reduce quality
d) Increase labor

8) JIT (Just-In-Time) system focuses on _____.
a) Large inventory
b) Zero inventory
c) Producing only when needed
d) Increasing waste

9) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

10) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

11) Which of the following is NOT an objective of Production Management?
a) Cost reduction
b) Quality improvement
c) Profit maximization directly
d) Efficient resource utilization

12) Forecasting is mainly used to _____.
a) Reduce labor cost
b) Predict future demand
c) Improve product design
d) Control inventory manually

13) Moving average method is classified under _____.
a) Qualitative forecasting
b) Judgmental method
c) Quantitative forecasting
d) Simulation method

14) The main objective of PPC is _____.
a) Increase marketing share
b) Ensure smooth production flow
c) Reduce employee turnover
d) Increase sales revenue

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

SLR-QH-222

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

2) Which of the following is NOT an objective of Production Management?
a) Cost reduction b) Quality improvement
c) Profit maximization directly d) Efficient resource utilization

3) Forecasting is mainly used to _____.
a) Reduce labor cost b) Predict future demand
c) Improve product design d) Control inventory manually

4) Moving average method is classified under _____.
a) Qualitative forecasting b) Judgmental method
c) Quantitative forecasting d) Simulation method

5) The main objective of PPC is _____.
a) Increase marketing share b) Ensure smooth production flow
c) Reduce employee turnover d) Increase sales revenue

6) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

7) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

8) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

9) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

10) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

11) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

12) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

13) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

14) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

2) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

3) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

4) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

5) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

6) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

7) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

8) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

9) Which of the following is NOT an objective of Production Management?
a) Cost reduction
b) Quality improvement
c) Profit maximization directly
d) Efficient resource utilization

10) Forecasting is mainly used to _____.
a) Reduce labor cost
b) Predict future demand
c) Improve product design
d) Control inventory manually

11) Moving average method is classified under _____.
a) Qualitative forecasting
b) Judgmental method
c) Quantitative forecasting
d) Simulation method

12) The main objective of PPC is _____.
a) Increase marketing share
b) Ensure smooth production flow
c) Reduce employee turnover
d) Increase sales revenue

13) Routing in PPC refers to _____.
a) Scheduling work
b) Path followed by materials
c) Assigning jobs to machines
d) Dispatching orders

14) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

SLR-QH-222

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

2) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

3) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

4) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

5) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

6) Which of the following is NOT an objective of Production Management?
a) Cost reduction b) Quality improvement
c) Profit maximization directly d) Efficient resource utilization

7) Forecasting is mainly used to _____.
a) Reduce labor cost b) Predict future demand
c) Improve product design d) Control inventory manually

8) Moving average method is classified under _____.
a) Qualitative forecasting b) Judgmental method
c) Quantitative forecasting d) Simulation method

9) The main objective of PPC is _____.
a) Increase marketing share b) Ensure smooth production flow
c) Reduce employee turnover d) Increase sales revenue

10) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

11) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

12) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

13) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

14) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set | S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

2) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

3) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

4) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

5) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

6) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

7) Value Engineering aims to _____.
a) Increase cost
b) Improve value by reducing cost
c) Reduce quality
d) Increase labor

8) JIT (Just-In-Time) system focuses on _____.
a) Large inventory
b) Zero inventory
c) Producing only when needed
d) Increasing waste

9) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

10) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

11) Which of the following is NOT an objective of Production Management?
a) Cost reduction
b) Quality improvement
c) Profit maximization directly
d) Efficient resource utilization

12) Forecasting is mainly used to _____.
a) Reduce labor cost
b) Predict future demand
c) Improve product design
d) Control inventory manually

13) Moving average method is classified under _____.
a) Qualitative forecasting
b) Judgmental method
c) Quantitative forecasting
d) Simulation method

14) The main objective of PPC is _____.
a) Increase marketing share
b) Ensure smooth production flow
c) Reduce employee turnover
d) Increase sales revenue

SLR-QH-222

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

2) Which of the following is NOT an objective of Production Management?
a) Cost reduction b) Quality improvement
c) Profit maximization directly d) Efficient resource utilization

3) Forecasting is mainly used to _____.
a) Reduce labor cost b) Predict future demand
c) Improve product design d) Control inventory manually

4) Moving average method is classified under _____.
a) Qualitative forecasting b) Judgmental method
c) Quantitative forecasting d) Simulation method

5) The main objective of PPC is _____.
a) Increase marketing share b) Ensure smooth production flow
c) Reduce employee turnover d) Increase sales revenue

6) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

7) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

8) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

9) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

10) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

11) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

12) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

13) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

14) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

SLR-QH-222

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

2) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

3) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

4) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

5) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

6) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

7) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

8) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

9) Which of the following is NOT an objective of Production Management?
a) Cost reduction
b) Quality improvement
c) Profit maximization directly
d) Efficient resource utilization

10) Forecasting is mainly used to _____.
a) Reduce labor cost
b) Predict future demand
c) Improve product design
d) Control inventory manually

11) Moving average method is classified under _____.
a) Qualitative forecasting
b) Judgmental method
c) Quantitative forecasting
d) Simulation method

12) The main objective of PPC is _____.
a) Increase marketing share
b) Ensure smooth production flow
c) Reduce employee turnover
d) Increase sales revenue

13) Routing in PPC refers to _____.
a) Scheduling work
b) Path followed by materials
c) Assigning jobs to machines
d) Dispatching orders

14) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

SLR-QH-222

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

2) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

3) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

4) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

5) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

6) Which of the following is NOT an objective of Production Management?
a) Cost reduction b) Quality improvement
c) Profit maximization directly d) Efficient resource utilization

7) Forecasting is mainly used to _____.
a) Reduce labor cost b) Predict future demand
c) Improve product design d) Control inventory manually

8) Moving average method is classified under _____.
a) Qualitative forecasting b) Judgmental method
c) Quantitative forecasting d) Simulation method

9) The main objective of PPC is _____.
a) Increase marketing share b) Ensure smooth production flow
c) Reduce employee turnover d) Increase sales revenue

10) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

11) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

12) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

13) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

14) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

2) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

3) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

4) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

5) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

6) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

7) Value Engineering aims to _____.
a) Increase cost
b) Improve value by reducing cost
c) Reduce quality
d) Increase labor

8) JIT (Just-In-Time) system focuses on _____.
a) Large inventory
b) Zero inventory
c) Producing only when needed
d) Increasing waste

9) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

10) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

11) Which of the following is NOT an objective of Production Management?
a) Cost reduction
b) Quality improvement
c) Profit maximization directly
d) Efficient resource utilization

12) Forecasting is mainly used to _____.
a) Reduce labor cost
b) Predict future demand
c) Improve product design
d) Control inventory manually

13) Moving average method is classified under _____.
a) Qualitative forecasting
b) Judgmental method
c) Quantitative forecasting
d) Simulation method

14) The main objective of PPC is _____.
a) Increase marketing share
b) Ensure smooth production flow
c) Reduce employee turnover
d) Increase sales revenue

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

SLR-QH-222

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

2) Which of the following is NOT an objective of Production Management?
a) Cost reduction b) Quality improvement
c) Profit maximization directly d) Efficient resource utilization

3) Forecasting is mainly used to _____.
a) Reduce labor cost b) Predict future demand
c) Improve product design d) Control inventory manually

4) Moving average method is classified under _____.
a) Qualitative forecasting b) Judgmental method
c) Quantitative forecasting d) Simulation method

5) The main objective of PPC is _____.
a) Increase marketing share b) Ensure smooth production flow
c) Reduce employee turnover d) Increase sales revenue

6) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

7) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

8) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

9) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

10) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

11) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

12) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

13) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

14) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

2) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

3) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

4) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

5) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

6) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

7) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

8) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

9) Which of the following is NOT an objective of Production Management?
a) Cost reduction
b) Quality improvement
c) Profit maximization directly
d) Efficient resource utilization

10) Forecasting is mainly used to _____.
a) Reduce labor cost
b) Predict future demand
c) Improve product design
d) Control inventory manually

11) Moving average method is classified under _____.
a) Qualitative forecasting
b) Judgmental method
c) Quantitative forecasting
d) Simulation method

12) The main objective of PPC is _____.
a) Increase marketing share
b) Ensure smooth production flow
c) Reduce employee turnover
d) Increase sales revenue

13) Routing in PPC refers to _____.
a) Scheduling work
b) Path followed by materials
c) Assigning jobs to machines
d) Dispatching orders

14) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

2) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

3) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

4) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

5) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

6) Which of the following is NOT an objective of Production Management?
a) Cost reduction b) Quality improvement
c) Profit maximization directly d) Efficient resource utilization

7) Forecasting is mainly used to _____.
a) Reduce labor cost b) Predict future demand
c) Improve product design d) Control inventory manually

8) Moving average method is classified under _____.
a) Qualitative forecasting b) Judgmental method
c) Quantitative forecasting d) Simulation method

9) The main objective of PPC is _____.
a) Increase marketing share b) Ensure smooth production flow
c) Reduce employee turnover d) Increase sales revenue

10) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

11) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

12) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

13) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

14) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

2) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

3) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

4) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

5) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

6) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

7) Value Engineering aims to _____.
a) Increase cost
b) Improve value by reducing cost
c) Reduce quality
d) Increase labor

8) JIT (Just-In-Time) system focuses on _____.
a) Large inventory
b) Zero inventory
c) Producing only when needed
d) Increasing waste

9) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

10) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

11) Which of the following is NOT an objective of Production Management?
a) Cost reduction
b) Quality improvement
c) Profit maximization directly
d) Efficient resource utilization

12) Forecasting is mainly used to _____.
a) Reduce labor cost
b) Predict future demand
c) Improve product design
d) Control inventory manually

13) Moving average method is classified under _____.
a) Qualitative forecasting
b) Judgmental method
c) Quantitative forecasting
d) Simulation method

14) The main objective of PPC is _____.
a) Increase marketing share
b) Ensure smooth production flow
c) Reduce employee turnover
d) Increase sales revenue

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

2) Which of the following is NOT an objective of Production Management?
a) Cost reduction b) Quality improvement
c) Profit maximization directly d) Efficient resource utilization

3) Forecasting is mainly used to _____.
a) Reduce labor cost b) Predict future demand
c) Improve product design d) Control inventory manually

4) Moving average method is classified under _____.
a) Qualitative forecasting b) Judgmental method
c) Quantitative forecasting d) Simulation method

5) The main objective of PPC is _____.
a) Increase marketing share b) Ensure smooth production flow
c) Reduce employee turnover d) Increase sales revenue

6) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

7) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

8) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

9) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

10) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

11) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

12) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

13) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

14) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

SLR-QH-222

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
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Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
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Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

2) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

3) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

4) Preventive maintenance is carried out _____.
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c) During breakdown d) Never planned

5) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
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6) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
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7) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

8) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

9) Which of the following is NOT an objective of Production Management?
a) Cost reduction
b) Quality improvement
c) Profit maximization directly
d) Efficient resource utilization

10) Forecasting is mainly used to _____.
a) Reduce labor cost
b) Predict future demand
c) Improve product design
d) Control inventory manually

11) Moving average method is classified under _____.
a) Qualitative forecasting
b) Judgmental method
c) Quantitative forecasting
d) Simulation method

12) The main objective of PPC is _____.
a) Increase marketing share
b) Ensure smooth production flow
c) Reduce employee turnover
d) Increase sales revenue

13) Routing in PPC refers to _____.
a) Scheduling work
b) Path followed by materials
c) Assigning jobs to machines
d) Dispatching orders

14) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

SLR-QH-222

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

2) Value Engineering aims to _____.
a) Increase cost b) Improve value by reducing cost
c) Reduce quality d) Increase labor

3) JIT (Just-In-Time) system focuses on _____.
a) Large inventory b) Zero inventory
c) Producing only when needed d) Increasing waste

4) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

5) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

6) Which of the following is NOT an objective of Production Management?
a) Cost reduction b) Quality improvement
c) Profit maximization directly d) Efficient resource utilization

7) Forecasting is mainly used to _____.
a) Reduce labor cost b) Predict future demand
c) Improve product design d) Control inventory manually

8) Moving average method is classified under _____.
a) Qualitative forecasting b) Judgmental method
c) Quantitative forecasting d) Simulation method

9) The main objective of PPC is _____.
a) Increase marketing share b) Ensure smooth production flow
c) Reduce employee turnover d) Increase sales revenue

10) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

11) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

12) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

13) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

14) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

SLR-QH-222

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Routing in PPC refers to _____.
a) Scheduling work b) Path followed by materials
c) Assigning jobs to machines d) Dispatching orders

2) Line balancing is used to _____.
a) Reduce cost of materials
b) Balance workload among workstations
c) Improve forecasting accuracy
d) Control inventory

3) Inventory refers to _____.
a) Finished goods only
b) Raw materials only
c) Stock of items used in production and sales
d) Machines in factory

4) The primary objective of inventory management is to _____.
a) Maximize stock levels
b) Minimize cost and ensure availability
c) Eliminate storage
d) Increase labor efficiency

5) Maintenance is defined as _____.
a) Production of goods
b) Repair and upkeep of equipment
c) Marketing activity
d) Financial control

6) Preventive maintenance is carried out _____.
a) After breakdown b) Before breakdown
c) During breakdown d) Never planned

7) Value Engineering aims to _____.
a) Increase cost
b) Improve value by reducing cost
c) Reduce quality
d) Increase labor

8) JIT (Just-In-Time) system focuses on _____.
a) Large inventory
b) Zero inventory
c) Producing only when needed
d) Increasing waste

9) Six Sigma is a technique used for _____.
a) Increasing defects
b) Quality improvement and defect reduction
c) Inventory control
d) Marketing strategy

10) Production Management is primarily concerned with _____.
a) Marketing activities
b) Financial planning
c) Conversion of inputs into outputs
d) Human resource training

11) Which of the following is NOT an objective of Production Management?
a) Cost reduction
b) Quality improvement
c) Profit maximization directly
d) Efficient resource utilization

12) Forecasting is mainly used to _____.
a) Reduce labor cost
b) Predict future demand
c) Improve product design
d) Control inventory manually

13) Moving average method is classified under _____.
a) Qualitative forecasting
b) Judgmental method
c) Quantitative forecasting
d) Simulation method

14) The main objective of PPC is _____.
a) Increase marketing share
b) Ensure smooth production flow
c) Reduce employee turnover
d) Increase sales revenue

SLR-QH-222

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Production and Operation Management (MECHMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Attempt any two questions from each section.
2) Figures to the right indicate full marks.
3) Assume suitable data if necessary and mention it clearly.

Section – I

Q.2	**a)**	Define Production Management and explain its objectives in detail.	**07**
	b)	Compare job production and mass production with suitable examples.	**07**
Q.3	**a)**	Define forecasting and explain its need in production planning.	**07**
	b)	Describe exponential smoothing method and its applications.	**07**
Q.4	**a)**	Define Production Planning and Control (PPC) and state its objectives.	**07**
	b)	Discuss loading and sequencing with examples.	**07**

Section – II

Q.5	**a)**	Define inventory and explain its objectives in production systems.	**07**
	b)	Derive the Economic Order Quantity (EOQ) model.	**07**
Q.6	**a)**	Define plant maintenance and explain its need and importance.	**07**
	b)	Differentiate between preventive and breakdown maintenance.	**07**
Q.7	**a)**	Define Value Engineering and Value Analysis.	**07**
	b)	Describe Just-In-Time (JIT) and Kanban system.	**07**

SLR-QH-223

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

2) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

3) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

4) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

5) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

6) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

7) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

8) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

9) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

10) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

11) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

12) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

13) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

14) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

SLR-QH-223

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) An alternate function of port pin P3.1 in the 8051 is _____.
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2) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
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4) In 8051 which interrupt has highest priority?
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c) IE0 d) TF1

5) The total external data memory that can be interfaced to the 8051 is _____.
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c) 128K d) 256K

6) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

7) Which pin of the LCD is used for adjusting its contrast?
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c) Pin no 3 d) Pin no 4

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a) 2 b) 3
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MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

11) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

12) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

13) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

14) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

SLR-QH-223

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

2) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

3) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

4) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

5) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

6) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

7) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

8) Which architecture provides separate buses for program and data memory?

a) Harvard architecture
b) Von Neumann architecture
c) None of the mentioned
d) All of the mentioned

9) What is the function of the TMOD register?

a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

10) The 8051 has _____ 16-bit counter/timers.

a) 1
b) 2
c) 3
d) 4

11) The 8051 can handle _____ interrupt sources.

a) 3
b) 4
c) 5
d) 6

12) An alternate function of port pin P3.1 in the 8051 is _____.

a) serial port input
b) serial port output
c) memories write strobe
d) memory read strobe

13) The I/O ports that are used as address and data for external memory are _____.

a) Ports 1 and 2
b) Ports 1 and 3
c) Ports 0 and 2
d) Ports 0 and 3

14) Which register is used to make the interrupt level or an edge triggered pulse?

a) TCON
b) IE
c) IPR
d) SCON

SLR-QH-223

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

SLR-QH-223

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

2) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

3) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

4) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

5) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

6) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

7) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

8) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

9) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

10) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

11) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

12) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

13) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

14) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

SLR-QH-223

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

2) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

3) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

4) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

5) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

6) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

7) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

8) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

9) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

10) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

11) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

12) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

13) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

14) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

2) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

3) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

4) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

5) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

6) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

7) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

8) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

9) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

10) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

11) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

12) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

13) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

14) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

SLR-QH-223

Seat No.	

Set Q

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. **14**

1) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

2) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

3) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

4) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

5) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

6) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

7) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

8) Which architecture provides separate buses for program and data memory?

a) Harvard architecture
b) Von Neumann architecture
c) None of the mentioned
d) All of the mentioned

9) What is the function of the TMOD register?

a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

10) The 8051 has _____ 16-bit counter/timers.

a) 1
b) 2
c) 3
d) 4

11) The 8051 can handle _____ interrupt sources.

a) 3
b) 4
c) 5
d) 6

12) An alternate function of port pin P3.1 in the 8051 is _____.

a) serial port input
b) serial port output
c) memories write strobe
d) memory read strobe

13) The I/O ports that are used as address and data for external memory are _____.

a) Ports 1 and 2
b) Ports 1 and 3
c) Ports 0 and 2
d) Ports 0 and 3

14) Which register is used to make the interrupt level or an edge triggered pulse?

a) TCON
b) IE
c) IPR
d) SCON

SLR-QH-223

Seat No.	

Set R

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

2) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

3) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

4) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

5) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

6) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

7) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

8) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

9) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

10) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

11) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

12) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

13) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

14) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

SLR-QH-223

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

SLR-QH-223

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

2) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

3) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

4) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

5) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

6) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

7) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

8) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

9) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

10) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

11) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

12) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

13) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

14) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

2) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

3) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

4) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

5) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

6) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

7) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

8) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

9) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

10) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

11) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

12) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

13) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

14) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

SLR-QH-223

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

2) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

3) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

4) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

5) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

6) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

7) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

8) Which architecture provides separate buses for program and data memory?

a) Harvard architecture
b) Von Neumann architecture
c) None of the mentioned
d) All of the mentioned

9) What is the function of the TMOD register?

a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

10) The 8051 has _____ 16-bit counter/timers.

a) 1
b) 2
c) 3
d) 4

11) The 8051 can handle _____ interrupt sources.

a) 3
b) 4
c) 5
d) 6

12) An alternate function of port pin P3.1 in the 8051 is _____.

a) serial port input
b) serial port output
c) memories write strobe
d) memory read strobe

13) The I/O ports that are used as address and data for external memory are _____.

a) Ports 1 and 2
b) Ports 1 and 3
c) Ports 0 and 2
d) Ports 0 and 3

14) Which register is used to make the interrupt level or an edge triggered pulse?

a) TCON
b) IE
c) IPR
d) SCON

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

2) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

3) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

4) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

5) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

6) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

7) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

8) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

9) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

10) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

11) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

12) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

13) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

14) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

SLR-QH-223

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

SLR-QH-223

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

2) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

3) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

4) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

5) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

6) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

7) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

8) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

9) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

10) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

11) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

12) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

13) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

14) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

SLR-QH-223

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

2) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

3) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

4) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

5) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

6) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

7) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

8) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

9) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

10) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

11) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

12) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

13) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

14) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

SLR-QH-223

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

2) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

3) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

4) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

5) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

6) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

7) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

8) Which architecture provides separate buses for program and data memory?

a) Harvard architecture
b) Von Neumann architecture
c) None of the mentioned
d) All of the mentioned

9) What is the function of the TMOD register?

a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

10) The 8051 has _____ 16-bit counter/timers.

a) 1
b) 2
c) 3
d) 4

11) The 8051 can handle _____ interrupt sources.

a) 3
b) 4
c) 5
d) 6

12) An alternate function of port pin P3.1 in the 8051 is _____.

a) serial port input
b) serial port output
c) memories write strobe
d) memory read strobe

13) The I/O ports that are used as address and data for external memory are _____.

a) Ports 1 and 2
b) Ports 1 and 3
c) Ports 0 and 2
d) Ports 0 and 3

14) Which register is used to make the interrupt level or an edge triggered pulse?

a) TCON
b) IE
c) IPR
d) SCON

SLR-QH-223

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

2) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

3) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

4) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

5) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

6) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

7) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

8) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

9) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

10) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

11) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

12) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

13) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

14) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

SLR-QH-223

Seat No.	

Set S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

SLR-QH-223

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026 Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

2) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

3) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

4) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

5) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

6) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

7) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

8) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

9) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

10) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

11) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

12) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

13) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

14) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026 Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

2) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

3) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

4) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

5) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

6) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

7) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

8) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

9) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

10) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

11) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

12) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

13) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

14) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

SLR-QH-223

Seat No.	

Set Q

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026 Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

2) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

3) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

4) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

5) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

6) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

7) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

8) Which architecture provides separate buses for program and data memory?

a) Harvard architecture
b) Von Neumann architecture
c) None of the mentioned
d) All of the mentioned

9) What is the function of the TMOD register?

a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

10) The 8051 has _____ 16-bit counter/timers.

a) 1
b) 2
c) 3
d) 4

11) The 8051 can handle _____ interrupt sources.

a) 3
b) 4
c) 5
d) 6

12) An alternate function of port pin P3.1 in the 8051 is _____.

a) serial port input
b) serial port output
c) memories write strobe
d) memory read strobe

13) The I/O ports that are used as address and data for external memory are _____.

a) Ports 1 and 2
b) Ports 1 and 3
c) Ports 0 and 2
d) Ports 0 and 3

14) Which register is used to make the interrupt level or an edge triggered pulse?

a) TCON
b) IE
c) IPR
d) SCON

SLR-QH-223

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026 Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

2) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

3) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

4) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

5) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

6) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

7) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

8) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

9) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

10) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

11) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

12) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

13) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

14) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

SLR-QH-223

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

2) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

3) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

4) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

5) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

6) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

7) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

8) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

9) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

10) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

11) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

12) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

13) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

14) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

SLR-QH-223

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

2) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

3) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

4) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

5) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

6) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

7) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

8) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

9) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

10) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

11) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

12) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

13) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

14) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

SLR-QH-223

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

2) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

3) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

4) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

5) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

6) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

7) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

8) Which architecture provides separate buses for program and data memory?

a) Harvard architecture
b) Von Neumann architecture
c) None of the mentioned
d) All of the mentioned

9) What is the function of the TMOD register?

a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

10) The 8051 has _____ 16-bit counter/timers.

a) 1
b) 2
c) 3
d) 4

11) The 8051 can handle _____ interrupt sources.

a) 3
b) 4
c) 5
d) 6

12) An alternate function of port pin P3.1 in the 8051 is _____.

a) serial port input
b) serial port output
c) memories write strobe
d) memory read strobe

13) The I/O ports that are used as address and data for external memory are _____.

a) Ports 1 and 2
b) Ports 1 and 3
c) Ports 0 and 2
d) Ports 0 and 3

14) Which register is used to make the interrupt level or an edge triggered pulse?

a) TCON
b) IE
c) IPR
d) SCON

SLR-QH-223

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Answer the following Objective Type Questions. 14

1) The 8051 has _____ 16-bit counter/timers.
a) 1 b) 2
c) 3 d) 4

2) The 8051 can handle _____ interrupt sources.
a) 3 b) 4
c) 5 d) 6

3) An alternate function of port pin P3.1 in the 8051 is _____.
a) serial port input b) serial port output
c) memories write strobe d) memory read strobe

4) The I/O ports that are used as address and data for external memory are _____.
a) Ports 1 and 2 b) Ports 1 and 3
c) Ports 0 and 2 d) Ports 0 and 3

5) Which register is used to make the interrupt level or an edge triggered pulse?
a) TCON b) IE
c) IPR d) SCON

6) In 8051 which interrupt has highest priority?
a) IE1 b) TF0
c) IE0 d) TF1

7) The total external data memory that can be interfaced to the 8051 is _____.
a) 32K b) 64K
c) 128K d) 256K

8) What is the address range of SFR Register bank?
a) 00H-77H b) 40H-80H
c) 80H-7FH d) 80H-FFH

9) Which pin of the LCD is used for adjusting its contrast?
a) Pin no 1 b) Pin no 2
c) Pin no 3 d) Pin no 4

10) 8051 has RAM of _____.
a) 128 bytes b) 256 bytes
c) 64 bytes d) 512 bytes

11) 8051 Microcontroller has how many 16 bit registers?
a) 2 b) 3
c) 1 d) 0

12) How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A, #9C
ADD A, #64H
a) CY=0, AC=0, P=0 b) CY=1, AC=1, P=0
c) CY=0, AC=1, P=0 d) CY=1, AC=1, P=1

13) Which architecture provides separate buses for program and data memory?
a) Harvard architecture b) Von Neumann architecture
c) None of the mentioned d) All of the mentioned

14) What is the function of the TMOD register?
a) TMOD register is used to set various operation modes of timer/counter
b) TMOD register is used to load the count of the tinier
c) Is the destination or the final register where the result is obtained after the operation of the timer
d) Is used to interrupt the timer

SLR-QH-223

Seat No.	

Set S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Microcontroller (ENTMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve Any Four. **16**

a) Explain difference between Microprocessor and Microcontroller in detail.

b) Compare CISC & RISC Microcontroller in detail.

c) Write a short note on different development platforms and tools for programming for Microcontroller.

d) Write difference between Harvard and von Neumann architecture.

e) Explain the following Instructions
MOVX @ DPTR, A
MUL AB
RETI
ADDC A, @R0

Q.3 Solve Any Two. **12**

a) Explain in detail Rotate and Swap operations of MCS-51.

b) Explain with suitable example any three addressing modes of 8051.

c) Draw 8051 Architecture and explain following blocks in
i) ALU & Accumulator
ii) Stack pointer and program counter
iii) registers in 8051

SECTION – II

Q.4 Solve Any Four. **16**

a) Explain port structure of 8051 in detail with neat diagram.

b) Define interrupt. Explain the types of interrupts. Explain IE and IP related to interrupts.

c) Draw & explain interfacing of Buzzer to MCS 51.

d) Explain program memory organization and data memory organization of 8051 microcontroller.

e) Indicate which mode and which Timer are selected for each of the following
   i) MOV TMOD, #10H
   ii) MOV TMOD, #12H
   iii) MOV TMOD, #20H
   iv) MOV TMOD, #01H

Q.5 Solve Any Two. **12**

a) Draw the functional pin Diagram of 8051 and explain the functions of following pins.
i.e. ALE, RST, XTAL1 and XTAL2, EA, TXD, RXD.

b) Draw & Explain Interfacing of LCD display with MCS 51.

c) Explain Timers/Counters of 8051 in detail. Also explain different modes of Timers. Explain TCON, TMOD SFRS in detail.

SLR-QH-224

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

2) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

3) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
c) To amplify signals
d) To filter noise

4) Primary modes of radiation of helical antenna are _____.
a) Normal mode only b) Axial mode only
c) Both normal and axial mode d) None

5) If the HPBW is 60° then FNBW is _____.
a) 2 b) 3
c) 5 d) 7

6) The DHT sensor is used to measure _____.
a) Distance and speed b) Temperature and humidity
c) Light intensity and pressure d) Vibration and motion

7) Which of the following is NOT a key feature of IoT?
a) Interconnectivity
b) Autonomy
c) High human intervention
d) Data exchange

8) How many layers does the basic IoT architecture typically have?
a) 7
b) 2
c) 5
d) 3

9) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor
b) Gateway
c) Cloud/Server
d) Actuator

10) In which unit is angular velocity measured?
a) Meters per second (m/s)
b) Degrees per second (°/s)
c) Newtons (N)
d) Joules (J)

11) What does a gyro sensor measure?
a) Acceleration
b) Angular velocity
c) Temperature
d) Humidity

12) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection
b) Sound wave reflection
c) Magnetic field variation
d) Capacitive sensing

13) Solenoid is commonly used for _____.
a) Rotational movement
b) Linear actuation
c) Generating electricity
d) Measuring temperature

14) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

SLR-QH-224

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) How many layers does the basic IoT architecture typically have?
a) 7 b) 2
c) 5 d) 3

2) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor b) Gateway
c) Cloud/Server d) Actuator

3) In which unit is angular velocity measured?
a) Meters per second (m/s) b) Degrees per second (°/s)
c) Newtons (N) d) Joules (J)

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7) What is the main advantage of a stepper motor over a DC motor?
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b) Precise position control
c) Lower power consumption
d) No need for a power supply

8) What is the correct sequence of layers in the IoT architecture?
   a) Perception → Network → Application
   b) Network → Perception → Application
   c) Application → Network → Perception
   d) Perception → Application → Network

9) How many layers does the basic IoT architecture typically have?
   a) Below HF
   b) In HF
   c) Above HF
   d) None

10) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
   a) To store data in memory
   b) To convert analog signals to digital format
   c) To amplify signals
   d) To filter noise

11) Primary modes of radiation of helical antenna are _____.
   a) Normal mode only
   b) Axial mode only
   c) Both normal and axial mode
   d) None

12) If the HPBW is 60° then FNBW is _____.
   a) 2
   b) 3
   c) 5
   d) 7

13) The DHT sensor is used to measure _____.
   a) Distance and speed
   b) Temperature and humidity
   c) Light intensity and pressure
   d) Vibration and motion

14) Which of the following is NOT a key feature of IoT?
   a) Interconnectivity
   b) Autonomy
   c) High human intervention
   d) Data exchange

Seat No.		Set	Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.		Set	R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

2) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

3) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

4) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

5) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

6) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

7) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
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8) Primary modes of radiation of helical antenna are _____.
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c) 5
d) 7

10) The DHT sensor is used to measure _____.
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b) Temperature and humidity
c) Light intensity and pressure
d) Vibration and motion

11) Which of the following is NOT a key feature of IoT?
a) Interconnectivity
b) Autonomy
c) High human intervention
d) Data exchange

12) How many layers does the basic IoT architecture typically have?
a) 7
b) 2
c) 5
d) 3

13) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor
b) Gateway
c) Cloud/Server
d) Actuator

14) In which unit is angular velocity measured?
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c) Newtons (N)
d) Joules (J)

SLR-QH-224

Seat No.		Set	R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

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e) Compare Ring topology and Star topology.

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a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

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c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

SLR-QH-224

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) The DHT sensor is used to measure _____.
a) Distance and speed b) Temperature and humidity
c) Light intensity and pressure d) Vibration and motion

2) Which of the following is NOT a key feature of IoT?
a) Interconnectivity b) Autonomy
c) High human intervention d) Data exchange

3) How many layers does the basic IoT architecture typically have?
a) 7 b) 2
c) 5 d) 3

4) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor b) Gateway
c) Cloud/Server d) Actuator

5) In which unit is angular velocity measured?
a) Meters per second (m/s) b) Degrees per second (°/s)
c) Newtons (N) d) Joules (J)

6) What does a gyro sensor measure?
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c) To amplify signals
d) To filter noise

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14) If the HPBW is 60° then FNBW is _____.
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c) 5 d) 7

SLR-QH-224

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

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d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

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c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

SLR-QH-224

Seat No.		Set	P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) What is the correct sequence of layers in the IoT architecture?
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b) Network → Perception → Application
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SLR-QH-224

Seat No.		Set	P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
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SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

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Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

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Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) How many layers does the basic IoT architecture typically have?
a) 7 b) 2
c) 5 d) 3

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c) Cloud/Server d) Actuator

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   c) Application → Network → Perception
   d) Perception → Application → Network

9) How many layers does the basic IoT architecture typically have?
   a) Below HF
   b) In HF
   c) Above HF
   d) None

10) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
   a) To store data in memory
   b) To convert analog signals to digital format
   c) To amplify signals
   d) To filter noise

11) Primary modes of radiation of helical antenna are _____.
   a) Normal mode only
   b) Axial mode only
   c) Both normal and axial mode
   d) None

12) If the HPBW is 60° then FNBW is _____.
   a) 2
   b) 3
   c) 5
   d) 7

13) The DHT sensor is used to measure _____.
   a) Distance and speed
   b) Temperature and humidity
   c) Light intensity and pressure
   d) Vibration and motion

14) Which of the following is NOT a key feature of IoT?
   a) Interconnectivity
   b) Autonomy
   c) High human intervention
   d) Data exchange

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

2) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

3) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

4) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

5) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

6) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

7) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
c) To amplify signals
d) To filter noise

8) Primary modes of radiation of helical antenna are _____.
a) Normal mode only
b) Axial mode only
c) Both normal and axial mode
d) None

9) If the HPBW is 60° then FNBW is _____.
a) 2
b) 3
c) 5
d) 7

10) The DHT sensor is used to measure _____.
a) Distance and speed
b) Temperature and humidity
c) Light intensity and pressure
d) Vibration and motion

11) Which of the following is NOT a key feature of IoT?
a) Interconnectivity
b) Autonomy
c) High human intervention
d) Data exchange

12) How many layers does the basic IoT architecture typically have?
a) 7
b) 2
c) 5
d) 3

13) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor
b) Gateway
c) Cloud/Server
d) Actuator

14) In which unit is angular velocity measured?
a) Meters per second (m/s)
b) Degrees per second (°/s)
c) Newtons (N)
d) Joules (J)

SLR-QH-224

Seat No.		Set	R

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) The DHT sensor is used to measure _____.
a) Distance and speed b) Temperature and humidity
c) Light intensity and pressure d) Vibration and motion

2) Which of the following is NOT a key feature of IoT?
a) Interconnectivity b) Autonomy
c) High human intervention d) Data exchange

3) How many layers does the basic IoT architecture typically have?
a) 7 b) 2
c) 5 d) 3

4) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor b) Gateway
c) Cloud/Server d) Actuator

5) In which unit is angular velocity measured?
a) Meters per second (m/s) b) Degrees per second (°/s)
c) Newtons (N) d) Joules (J)

6) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

7) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

8) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

9) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

10) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

11) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

12) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
c) To amplify signals
d) To filter noise

13) Primary modes of radiation of helical antenna are _____.
a) Normal mode only b) Axial mode only
c) Both normal and axial mode d) None

14) If the HPBW is 60° then FNBW is _____.
a) 2 b) 3
c) 5 d) 7

SLR-QH-224

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

SLR-QH-224

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

2) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

3) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
c) To amplify signals
d) To filter noise

4) Primary modes of radiation of helical antenna are _____.
a) Normal mode only b) Axial mode only
c) Both normal and axial mode d) None

5) If the HPBW is 60° then FNBW is _____.
a) 2 b) 3
c) 5 d) 7

6) The DHT sensor is used to measure _____.
a) Distance and speed b) Temperature and humidity
c) Light intensity and pressure d) Vibration and motion

7) Which of the following is NOT a key feature of IoT?
a) Interconnectivity
b) Autonomy
c) High human intervention
d) Data exchange

8) How many layers does the basic IoT architecture typically have?
a) 7
b) 2
c) 5
d) 3

9) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor
b) Gateway
c) Cloud/Server
d) Actuator

10) In which unit is angular velocity measured?
a) Meters per second (m/s)
b) Degrees per second (°/s)
c) Newtons (N)
d) Joules (J)

11) What does a gyro sensor measure?
a) Acceleration
b) Angular velocity
c) Temperature
d) Humidity

12) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection
b) Sound wave reflection
c) Magnetic field variation
d) Capacitive sensing

13) Solenoid is commonly used for _____.
a) Rotational movement
b) Linear actuation
c) Generating electricity
d) Measuring temperature

14) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

SLR-QH-224

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) How many layers does the basic IoT architecture typically have?
a) 7 b) 2
c) 5 d) 3

2) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor b) Gateway
c) Cloud/Server d) Actuator

3) In which unit is angular velocity measured?
a) Meters per second (m/s) b) Degrees per second (°/s)
c) Newtons (N) d) Joules (J)

4) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

5) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

6) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

7) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

8) What is the correct sequence of layers in the IoT architecture?
   a) Perception → Network → Application
   b) Network → Perception → Application
   c) Application → Network → Perception
   d) Perception → Application → Network

9) How many layers does the basic IoT architecture typically have?
   a) Below HF
   b) In HF
   c) Above HF
   d) None

10) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
   a) To store data in memory
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   d) To filter noise

11) Primary modes of radiation of helical antenna are _____.
   a) Normal mode only
   b) Axial mode only
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12) If the HPBW is 60° then FNBW is _____.
   a) 2
   b) 3
   c) 5
   d) 7

13) The DHT sensor is used to measure _____.
   a) Distance and speed
   b) Temperature and humidity
   c) Light intensity and pressure
   d) Vibration and motion

14) Which of the following is NOT a key feature of IoT?
   a) Interconnectivity
   b) Autonomy
   c) High human intervention
   d) Data exchange

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

2) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

3) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

4) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

5) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

6) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

7) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
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8) Primary modes of radiation of helical antenna are _____.
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9) If the HPBW is 60° then FNBW is _____.
a) 2
b) 3
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10) The DHT sensor is used to measure _____.
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11) Which of the following is NOT a key feature of IoT?
a) Interconnectivity
b) Autonomy
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12) How many layers does the basic IoT architecture typically have?
a) 7
b) 2
c) 5
d) 3

13) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor
b) Gateway
c) Cloud/Server
d) Actuator

14) In which unit is angular velocity measured?
a) Meters per second (m/s)
b) Degrees per second (°/s)
c) Newtons (N)
d) Joules (J)

SLR-QH-224

Seat No.		Set	R

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) The DHT sensor is used to measure _____.
a) Distance and speed b) Temperature and humidity
c) Light intensity and pressure d) Vibration and motion

2) Which of the following is NOT a key feature of IoT?
a) Interconnectivity b) Autonomy
c) High human intervention d) Data exchange

3) How many layers does the basic IoT architecture typically have?
a) 7 b) 2
c) 5 d) 3

4) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor b) Gateway
c) Cloud/Server d) Actuator

5) In which unit is angular velocity measured?
a) Meters per second (m/s) b) Degrees per second (°/s)
c) Newtons (N) d) Joules (J)

6) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

7) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

8) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

9) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

10) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

11) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

12) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
c) To amplify signals
d) To filter noise

13) Primary modes of radiation of helical antenna are _____.
a) Normal mode only b) Axial mode only
c) Both normal and axial mode d) None

14) If the HPBW is 60° then FNBW is _____.
a) 2 b) 3
c) 5 d) 7

SLR-QH-224

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

SLR-QH-224

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

2) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

3) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
c) To amplify signals
d) To filter noise

4) Primary modes of radiation of helical antenna are _____.
a) Normal mode only b) Axial mode only
c) Both normal and axial mode d) None

5) If the HPBW is 60° then FNBW is _____.
a) 2 b) 3
c) 5 d) 7

6) The DHT sensor is used to measure _____.
a) Distance and speed b) Temperature and humidity
c) Light intensity and pressure d) Vibration and motion

7) Which of the following is NOT a key feature of IoT?
a) Interconnectivity
b) Autonomy
c) High human intervention
d) Data exchange

8) How many layers does the basic IoT architecture typically have?
a) 7
b) 2
c) 5
d) 3

9) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor
b) Gateway
c) Cloud/Server
d) Actuator

10) In which unit is angular velocity measured?
a) Meters per second (m/s)
b) Degrees per second (°/s)
c) Newtons (N)
d) Joules (J)

11) What does a gyro sensor measure?
a) Acceleration
b) Angular velocity
c) Temperature
d) Humidity

12) What is the main working principle of an ultrasonic distance sensor?
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b) Sound wave reflection
c) Magnetic field variation
d) Capacitive sensing

13) Solenoid is commonly used for _____.
a) Rotational movement
b) Linear actuation
c) Generating electricity
d) Measuring temperature

14) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.	

Set Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) How many layers does the basic IoT architecture typically have?
a) 7 b) 2
c) 5 d) 3

2) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor b) Gateway
c) Cloud/Server d) Actuator

3) In which unit is angular velocity measured?
a) Meters per second (m/s) b) Degrees per second (°/s)
c) Newtons (N) d) Joules (J)

4) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

5) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

6) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

7) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

8) What is the correct sequence of layers in the IoT architecture?
   a) Perception → Network → Application
   b) Network → Perception → Application
   c) Application → Network → Perception
   d) Perception → Application → Network

9) How many layers does the basic IoT architecture typically have?
   a) Below HF
   b) In HF
   c) Above HF
   d) None

10) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
   a) To store data in memory
   b) To convert analog signals to digital format
   c) To amplify signals
   d) To filter noise

11) Primary modes of radiation of helical antenna are _____.
   a) Normal mode only
   b) Axial mode only
   c) Both normal and axial mode
   d) None

12) If the HPBW is 60° then FNBW is _____.
   a) 2
   b) 3
   c) 5
   d) 7

13) The DHT sensor is used to measure _____.
   a) Distance and speed
   b) Temperature and humidity
   c) Light intensity and pressure
   d) Vibration and motion

14) Which of the following is NOT a key feature of IoT?
   a) Interconnectivity
   b) Autonomy
   c) High human intervention
   d) Data exchange

SLR-QH-224

Seat No.		Set	Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

2) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

3) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

4) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

5) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

6) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

7) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
c) To amplify signals
d) To filter noise

8) Primary modes of radiation of helical antenna are _____.
a) Normal mode only
b) Axial mode only
c) Both normal and axial mode
d) None

9) If the HPBW is 60° then FNBW is _____.
a) 2
b) 3
c) 5
d) 7

10) The DHT sensor is used to measure _____.
a) Distance and speed
b) Temperature and humidity
c) Light intensity and pressure
d) Vibration and motion

11) Which of the following is NOT a key feature of IoT?
a) Interconnectivity
b) Autonomy
c) High human intervention
d) Data exchange

12) How many layers does the basic IoT architecture typically have?
a) 7
b) 2
c) 5
d) 3

13) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor
b) Gateway
c) Cloud/Server
d) Actuator

14) In which unit is angular velocity measured?
a) Meters per second (m/s)
b) Degrees per second (°/s)
c) Newtons (N)
d) Joules (J)

SLR-QH-224

Seat No.		Set	R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) The DHT sensor is used to measure _____.
a) Distance and speed b) Temperature and humidity
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2) Which of the following is NOT a key feature of IoT?
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3) How many layers does the basic IoT architecture typically have?
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SLR-QH-224

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

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c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

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Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

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SLR-QH-224

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

2) How many layers does the basic IoT architecture typically have?
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b) Linear actuation
c) Generating electricity
d) Measuring temperature

14) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

SLR-QH-224

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) How many layers does the basic IoT architecture typically have?
a) 7 b) 2
c) 5 d) 3

2) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor b) Gateway
c) Cloud/Server d) Actuator

3) In which unit is angular velocity measured?
a) Meters per second (m/s) b) Degrees per second (°/s)
c) Newtons (N) d) Joules (J)

4) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

5) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

6) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

7) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

8) What is the correct sequence of layers in the IoT architecture?
   a) Perception → Network → Application
   b) Network → Perception → Application
   c) Application → Network → Perception
   d) Perception → Application → Network

9) How many layers does the basic IoT architecture typically have?
   a) Below HF
   b) In HF
   c) Above HF
   d) None

10) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
   a) To store data in memory
   b) To convert analog signals to digital format
   c) To amplify signals
   d) To filter noise

11) Primary modes of radiation of helical antenna are _____.
   a) Normal mode only
   b) Axial mode only
   c) Both normal and axial mode
   d) None

12) If the HPBW is 60° then FNBW is _____.
   a) 2
   b) 3
   c) 5
   d) 7

13) The DHT sensor is used to measure _____.
   a) Distance and speed
   b) Temperature and humidity
   c) Light intensity and pressure
   d) Vibration and motion

14) Which of the following is NOT a key feature of IoT?
   a) Interconnectivity
   b) Autonomy
   c) High human intervention
   d) Data exchange

SLR-QH-224

Seat No.		Set	Q

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

SLR-QH-224

Seat No.	

Set R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

2) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

3) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

4) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

5) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

6) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

7) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
c) To amplify signals
d) To filter noise

8) Primary modes of radiation of helical antenna are _____.
a) Normal mode only
b) Axial mode only
c) Both normal and axial mode
d) None

9) If the HPBW is 60° then FNBW is _____.
a) 2
b) 3
c) 5
d) 7

10) The DHT sensor is used to measure _____.
a) Distance and speed
b) Temperature and humidity
c) Light intensity and pressure
d) Vibration and motion

11) Which of the following is NOT a key feature of IoT?
a) Interconnectivity
b) Autonomy
c) High human intervention
d) Data exchange

12) How many layers does the basic IoT architecture typically have?
a) 7
b) 2
c) 5
d) 3

13) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor
b) Gateway
c) Cloud/Server
d) Actuator

14) In which unit is angular velocity measured?
a) Meters per second (m/s)
b) Degrees per second (°/s)
c) Newtons (N)
d) Joules (J)

Seat No.		Set	R

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) The DHT sensor is used to measure _____.
a) Distance and speed b) Temperature and humidity
c) Light intensity and pressure d) Vibration and motion

2) Which of the following is NOT a key feature of IoT?
a) Interconnectivity b) Autonomy
c) High human intervention d) Data exchange

3) How many layers does the basic IoT architecture typically have?
a) 7 b) 2
c) 5 d) 3

4) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor b) Gateway
c) Cloud/Server d) Actuator

5) In which unit is angular velocity measured?
a) Meters per second (m/s) b) Degrees per second (°/s)
c) Newtons (N) d) Joules (J)

6) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

7) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

8) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

9) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

10) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

11) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

12) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
c) To amplify signals
d) To filter noise

13) Primary modes of radiation of helical antenna are _____.
a) Normal mode only b) Axial mode only
c) Both normal and axial mode d) None

14) If the HPBW is 60° then FNBW is _____.
a) 2 b) 3
c) 5 d) 7

SLR-QH-224

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

SLR-QH-224

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

2) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

3) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
c) To amplify signals
d) To filter noise

4) Primary modes of radiation of helical antenna are _____.
a) Normal mode only b) Axial mode only
c) Both normal and axial mode d) None

5) If the HPBW is 60° then FNBW is _____.
a) 2 b) 3
c) 5 d) 7

6) The DHT sensor is used to measure _____.
a) Distance and speed b) Temperature and humidity
c) Light intensity and pressure d) Vibration and motion

7) Which of the following is NOT a key feature of IoT?
a) Interconnectivity
b) Autonomy
c) High human intervention
d) Data exchange

8) How many layers does the basic IoT architecture typically have?
a) 7
b) 2
c) 5
d) 3

9) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor
b) Gateway
c) Cloud/Server
d) Actuator

10) In which unit is angular velocity measured?
a) Meters per second (m/s)
b) Degrees per second (°/s)
c) Newtons (N)
d) Joules (J)

11) What does a gyro sensor measure?
a) Acceleration
b) Angular velocity
c) Temperature
d) Humidity

12) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection
b) Sound wave reflection
c) Magnetic field variation
d) Capacitive sensing

13) Solenoid is commonly used for _____.
a) Rotational movement
b) Linear actuation
c) Generating electricity
d) Measuring temperature

14) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) How many layers does the basic IoT architecture typically have?
a) 7 b) 2
c) 5 d) 3

2) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor b) Gateway
c) Cloud/Server d) Actuator

3) In which unit is angular velocity measured?
a) Meters per second (m/s) b) Degrees per second (°/s)
c) Newtons (N) d) Joules (J)

4) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

5) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

6) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

7) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

8) What is the correct sequence of layers in the IoT architecture?
   a) Perception → Network → Application
   b) Network → Perception → Application
   c) Application → Network → Perception
   d) Perception → Application → Network

9) How many layers does the basic IoT architecture typically have?
   a) Below HF
   b) In HF
   c) Above HF
   d) None

10) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
   a) To store data in memory
   b) To convert analog signals to digital format
   c) To amplify signals
   d) To filter noise

11) Primary modes of radiation of helical antenna are _____.
   a) Normal mode only
   b) Axial mode only
   c) Both normal and axial mode
   d) None

12) If the HPBW is 60° then FNBW is _____.
   a) 2
   b) 3
   c) 5
   d) 7

13) The DHT sensor is used to measure _____.
   a) Distance and speed
   b) Temperature and humidity
   c) Light intensity and pressure
   d) Vibration and motion

14) Which of the following is NOT a key feature of IoT?
   a) Interconnectivity
   b) Autonomy
   c) High human intervention
   d) Data exchange

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

2) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

3) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

4) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

5) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

6) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

7) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
c) To amplify signals
d) To filter noise

8) Primary modes of radiation of helical antenna are _____.
a) Normal mode only
b) Axial mode only
c) Both normal and axial mode
d) None

9) If the HPBW is 60° then FNBW is _____.
a) 2
b) 3
c) 5
d) 7

10) The DHT sensor is used to measure _____.
a) Distance and speed
b) Temperature and humidity
c) Light intensity and pressure
d) Vibration and motion

11) Which of the following is NOT a key feature of IoT?
a) Interconnectivity
b) Autonomy
c) High human intervention
d) Data exchange

12) How many layers does the basic IoT architecture typically have?
a) 7
b) 2
c) 5
d) 3

13) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor
b) Gateway
c) Cloud/Server
d) Actuator

14) In which unit is angular velocity measured?
a) Meters per second (m/s)
b) Degrees per second (°/s)
c) Newtons (N)
d) Joules (J)

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 choose the correct alternatives from the options. 14

1) The DHT sensor is used to measure _____.
a) Distance and speed b) Temperature and humidity
c) Light intensity and pressure d) Vibration and motion

2) Which of the following is NOT a key feature of IoT?
a) Interconnectivity b) Autonomy
c) High human intervention d) Data exchange

3) How many layers does the basic IoT architecture typically have?
a) 7 b) 2
c) 5 d) 3

4) In IoT architecture, which component is responsible for data processing and analytics?
a) Sensor b) Gateway
c) Cloud/Server d) Actuator

5) In which unit is angular velocity measured?
a) Meters per second (m/s) b) Degrees per second (°/s)
c) Newtons (N) d) Joules (J)

6) What does a gyro sensor measure?
a) Acceleration b) Angular velocity
c) Temperature d) Humidity

7) What is the main working principle of an ultrasonic distance sensor?
a) Light reflection b) Sound wave reflection
c) Magnetic field variation d) Capacitive sensing

8) Solenoid is commonly used for _____.
a) Rotational movement b) Linear actuation
c) Generating electricity d) Measuring temperature

9) What is the main advantage of a stepper motor over a DC motor?
a) Higher speed
b) Precise position control
c) Lower power consumption
d) No need for a power supply

10) What is the correct sequence of layers in the IoT architecture?
a) Perception → Network → Application
b) Network → Perception → Application
c) Application → Network → Perception
d) Perception → Application → Network

11) How many layers does the basic IoT architecture typically have?
a) Below HF b) In HF
c) Above HF d) None

12) Why is an ADC (Analog-to-Digital Converter) required for analog sensors?
a) To store data in memory
b) To convert analog signals to digital format
c) To amplify signals
d) To filter noise

13) Primary modes of radiation of helical antenna are _____.
a) Normal mode only b) Axial mode only
c) Both normal and axial mode d) None

14) If the HPBW is 60° then FNBW is _____.
a) 2 b) 3
c) 5 d) 7

SLR-QH-224

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Fundamentals of IOT (ENTMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Attempt Any Four. **16**

a) Explain the major components of IoT in detail.

b) Define the Internet of Things (IoT) and explain its significance in modern technology.

c) Describe the working principle of a PIR (Passive Infrared) Motion Sensor. What are its applications, and what voltage range does it typically operate within?

d) Explain LDR (Light Dependent Resistor) Sensor. How does it respond to different light intensities, and why is voltage division necessary in LDR circuits?

e) Distinguish between different types of actuators: Servo Motor, Solenoid, and Stepper Motor.

Q.3 Attempt Any Two. **12**

a) Explain different layers of IoT architecture in detail.

b) Discuss the DHT (Digital Humidity and Temperature) Sensor. How does it measure temperature and humidity, and what are its voltage and power requirements?

c) Describe why relay is needed when using an actuator in a control circuit.

SECTION – II

Q.4 Attempt Any Four. **16**

a) Explain the working of MQTT (Message Queuing Telemetry Transport) protocol in IoT communication. What are its advantages and limitations?

b) Discuss the differences between MQTT, CoAP, and XMPP in terms of reliability, scalability, and energy efficiency.

c) Explain the concept of Li-Fi (Light Fidelity) and compare it with traditional Wi-Fi in terms of speed, security, and applications.

d) Explain the advantages and disadvantages of Mesh topology in sensor networks. Why is it commonly used in IoT?

e) Compare Ring topology and Star topology.

Q.5 Attempt Any Two. **12**

a) Describe the working of an IoT-based home automation system. Discuss the key components, communication protocols, and security challenges associated with smart homes.

b) Describe the architecture and working of a smart parking system using IoT. How do sensors, cloud computing, and mobile applications contribute to efficient parking management?

c) Discuss the role of IoT sensors, automation, and data analytics in precision farming, irrigation control, and crop monitoring.

SLR-QH-225

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables b) variable, attributes
c) variable, features d) All of the above

2) _____ is not a measure of central tendency.
a) Mode b) Mean
c) Range d) Median

3) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

4) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

5) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

6) To calculate the median, all the items of a series have to be arranged in a/an _____.
   a) Descending order
   b) Ascending order
   c) Ascending or descending order
   d) None of the above

7) Which method can be used to convert text data to numerical values?
   a) One-hot encoding
   b) Normalization
   c) Binning
   d) Grouping

8) What is the output of data frame, head() method _____.
   a) return only the first row
   b) return only headers or column name of the Data Frame
   c) return the first five rows of the Data Frame
   d) throw an exception as it expects

9) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
   b) can reduce the accuracy of model
   c) a & b
   d) None of these

10) After installing Pandas, which command is used to import it in a Python script?
   a) import pandas as pd
   b) import pandas
   c) from pandas import *
   d) import pandas as pd as np

11) Which Pandas method is used to remove rows with missing data from a DataFrame?
   a) df.dropna()
   b) df.fillna()
   c) df.isna()
   d) df.replace()

12) What is the default type of join used when using pd.merge()?
   a) Left join
   b) Inner join
   c) Right join
   d) Outer join

13) Which of the following correctly plots a histogram using Matplotlib?
   a) plt.hist(data, bins=10)
   b) plt.histogram(data, bins=10)
   c) sns.histplot(data=data, bins=10)
   d) pit.hist(data, 10)

14) Which of the following data types in Python is used to represent real numbers?
   a) int
   b) string
   c) float
   d) Boolean

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) What is the output of data frame, head() method _____.
a) return only the first row
b) return only headers or column name of the Data Frame
c) return the first five rows of the Data Frame
d) throw an exception as it expects

2) Which of the following is true about outliers?
a) Data points that deviate a lot from normal
b) can reduce the accuracy of model
c) a & b
d) None of these

3) After installing Pandas, which command is used to import it in a Python script?
a) import pandas as pd
b) import pandas
c) from pandas import *
d) import pandas as pd as np

4) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna()
b) df.fillna()
c) df.isna()
d) df.replace()

5) What is the default type of join used when using pd.merge()?
a) Left join
b) Inner join
c) Right join
d) Outer join

6) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

7) Which of the following data types in Python is used to represent real numbers?
a) int
b) string
c) float
d) Boolean

8) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables
b) variable, attributes
c) variable, features
d) All of the above

9) _____ is not a measure of central tendency.
a) Mode
b) Mean
c) Range
d) Median

10) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

11) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

12) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

13) To calculate the median, all the items of a series have to be arranged in a/an _____.
a) Descending order
b) Ascending order
c) Ascending or descending order
d) None of the above

14) Which method can be used to convert text data to numerical values?
a) One-hot encoding
b) Normalization
c) Binning
d) Grouping

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna() b) df.fillna()
c) df.isna() d) df.replace()

2) What is the default type of join used when using pd.merge()?
a) Left join b) Inner join
c) Right join d) Outer join

3) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

4) Which of the following data types in Python is used to represent real numbers?
a) int b) string
c) float d) Boolean

5) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables b) variable, attributes
c) variable, features d) All of the above

6) _____ is not a measure of central tendency.
a) Mode b) Mean
c) Range d) Median

7) Which of the following is an example of a nominal variable?
   a) Blood pressure
   b) Eye color
   c) Height of individuals
   d) Time taken to complete a task

8) Which of the following is NOT a step in preparing data tables for analysis?
   a) Data cleaning
   b) Data visualization
   c) Removing irrelevant observations
   d) Converting data into a suitable format for analysis

9) The process of cleaning the data primarily involves _____.
   a) Creating visualizations
   b) Removing missing or invalid data and correcting errors
   c) Aggregating data into groups
   d) Generating hypotheses from data

10) To calculate the median, all the items of a series have to be arranged in a/an _____.
   a) Descending order
   b) Ascending order
   c) Ascending or descending order
   d) None of the above

11) Which method can be used to convert text data to numerical values?
   a) One-hot encoding
   b) Normalization
   c) Binning
   d) Grouping

12) What is the output of data frame, head() method _____.
   a) return only the first row
   b) return only headers or column name of the Data Frame
   c) return the first five rows of the Data Frame
   d) throw an exception as it expects

13) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
   b) can reduce the accuracy of model
   c) a & b
   d) None of these

14) After installing Pandas, which command is used to import it in a Python script?
   a) import pandas as pd
   b) import pandas
   c) from pandas import *
   d) import pandas as pd as np

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
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A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) To calculate the median, all the items of a series have to be arranged in a/an _____.
a) Descending order
b) Ascending order
c) Ascending or descending order
d) None of the above

2) Which method can be used to convert text data to numerical values?
a) One-hot encoding b) Normalization
c) Binning d) Grouping

3) What is the output of data frame, head() method _____.
a) return only the first row
b) return only headers or column name of the Data Frame
c) return the first five rows of the Data Frame
d) throw an exception as it expects

4) Which of the following is true about outliers?
a) Data points that deviate a lot from normal
b) can reduce the accuracy of model
c) a & b
d) None of these

5) After installing Pandas, which command is used to import it in a Python script?
a) import pandas as pd b) import pandas
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6) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna()
b) df.fillna()
c) df.isna()
d) df.replace()

7) What is the default type of join used when using pd.merge()?
a) Left join
b) Inner join
c) Right join
d) Outer join

8) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

9) Which of the following data types in Python is used to represent real numbers?
a) int
b) string
c) float
d) Boolean

10) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables
b) variable, attributes
c) variable, features
d) All of the above

11) _____ is not a measure of central tendency.
a) Mode
b) Mean
c) Range
d) Median

12) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

13) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

14) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

SLR-QH-225

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables b) variable, attributes
c) variable, features d) All of the above

2) _____ is not a measure of central tendency.
a) Mode b) Mean
c) Range d) Median

3) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

4) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

5) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

6) To calculate the median, all the items of a series have to be arranged in a/an _____.
   a) Descending order
   b) Ascending order
   c) Ascending or descending order
   d) None of the above

7) Which method can be used to convert text data to numerical values?
   a) One-hot encoding
   b) Normalization
   c) Binning
   d) Grouping

8) What is the output of data frame, head() method _____.
   a) return only the first row
   b) return only headers or column name of the Data Frame
   c) return the first five rows of the Data Frame
   d) throw an exception as it expects

9) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
   b) can reduce the accuracy of model
   c) a & b
   d) None of these

10) After installing Pandas, which command is used to import it in a Python script?
   a) import pandas as pd
   b) import pandas
   c) from pandas import *
   d) import pandas as pd as np

11) Which Pandas method is used to remove rows with missing data from a DataFrame?
   a) df.dropna()
   b) df.fillna()
   c) df.isna()
   d) df.replace()

12) What is the default type of join used when using pd.merge()?
   a) Left join
   b) Inner join
   c) Right join
   d) Outer join

13) Which of the following correctly plots a histogram using Matplotlib?
   a) plt.hist(data, bins=10)
   b) plt.histogram(data, bins=10)
   c) sns.histplot(data=data, bins=10)
   d) pit.hist(data, 10)

14) Which of the following data types in Python is used to represent real numbers?
   a) int
   b) string
   c) float
   d) Boolean

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) What is the output of data frame, head() method _____.
a) return only the first row
b) return only headers or column name of the Data Frame
c) return the first five rows of the Data Frame
d) throw an exception as it expects

2) Which of the following is true about outliers?
a) Data points that deviate a lot from normal
b) can reduce the accuracy of model
c) a & b
d) None of these

3) After installing Pandas, which command is used to import it in a Python script?
a) import pandas as pd
b) import pandas
c) from pandas import *
d) import pandas as pd as np

4) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna()
b) df.fillna()
c) df.isna()
d) df.replace()

5) What is the default type of join used when using pd.merge()?
a) Left join
b) Inner join
c) Right join
d) Outer join

6) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

7) Which of the following data types in Python is used to represent real numbers?
a) int
b) string
c) float
d) Boolean

8) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables
b) variable, attributes
c) variable, features
d) All of the above

9) _____ is not a measure of central tendency.
a) Mode
b) Mean
c) Range
d) Median

10) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

11) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

12) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

13) To calculate the median, all the items of a series have to be arranged in a/an _____.
a) Descending order
b) Ascending order
c) Ascending or descending order
d) None of the above

14) Which method can be used to convert text data to numerical values?
a) One-hot encoding
b) Normalization
c) Binning
d) Grouping

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna() b) df.fillna()
c) df.isna() d) df.replace()

2) What is the default type of join used when using pd.merge()?
a) Left join b) Inner join
c) Right join d) Outer join

3) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

4) Which of the following data types in Python is used to represent real numbers?
a) int b) string
c) float d) Boolean

5) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables b) variable, attributes
c) variable, features d) All of the above

6) _____ is not a measure of central tendency.
a) Mode b) Mean
c) Range d) Median

7) Which of the following is an example of a nominal variable?
   a) Blood pressure
   b) Eye color
   c) Height of individuals
   d) Time taken to complete a task

8) Which of the following is NOT a step in preparing data tables for analysis?
   a) Data cleaning
   b) Data visualization
   c) Removing irrelevant observations
   d) Converting data into a suitable format for analysis

9) The process of cleaning the data primarily involves _____.
   a) Creating visualizations
   b) Removing missing or invalid data and correcting errors
   c) Aggregating data into groups
   d) Generating hypotheses from data

10) To calculate the median, all the items of a series have to be arranged in a/an _____.
   a) Descending order
   b) Ascending order
   c) Ascending or descending order
   d) None of the above

11) Which method can be used to convert text data to numerical values?
   a) One-hot encoding
   b) Normalization
   c) Binning
   d) Grouping

12) What is the output of data frame, head() method _____.
   a) return only the first row
   b) return only headers or column name of the Data Frame
   c) return the first five rows of the Data Frame
   d) throw an exception as it expects

13) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
   b) can reduce the accuracy of model
   c) a & b
   d) None of these

14) After installing Pandas, which command is used to import it in a Python script?
   a) import pandas as pd
   b) import pandas
   c) from pandas import *
   d) import pandas as pd as np

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) To calculate the median, all the items of a series have to be arranged in a/an _____.
a) Descending order
b) Ascending order
c) Ascending or descending order
d) None of the above

2) Which method can be used to convert text data to numerical values?
a) One-hot encoding b) Normalization
c) Binning d) Grouping

3) What is the output of data frame, head() method _____.
a) return only the first row
b) return only headers or column name of the Data Frame
c) return the first five rows of the Data Frame
d) throw an exception as it expects

4) Which of the following is true about outliers?
a) Data points that deviate a lot from normal
b) can reduce the accuracy of model
c) a & b
d) None of these

5) After installing Pandas, which command is used to import it in a Python script?
a) import pandas as pd b) import pandas
c) from pandas import * d) import pandas as pd as np

6) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna()
b) df.fillna()
c) df.isna()
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7) What is the default type of join used when using pd.merge()?
a) Left join
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c) Right join
d) Outer join

8) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

9) Which of the following data types in Python is used to represent real numbers?
a) int
b) string
c) float
d) Boolean

10) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables
b) variable, attributes
c) variable, features
d) All of the above

11) _____ is not a measure of central tendency.
a) Mode
b) Mean
c) Range
d) Median

12) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

13) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

14) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

SLR-QH-225

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
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4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) Each row of the table describes an _____ and each column describes a _____.
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c) variable, features d) All of the above

2) _____ is not a measure of central tendency.
a) Mode b) Mean
c) Range d) Median

3) Which of the following is an example of a nominal variable?
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b) Eye color
c) Height of individuals
d) Time taken to complete a task

4) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

5) The process of cleaning the data primarily involves _____.
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   a) Descending order
   b) Ascending order
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7) Which method can be used to convert text data to numerical values?
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8) What is the output of data frame, head() method _____.
   a) return only the first row
   b) return only headers or column name of the Data Frame
   c) return the first five rows of the Data Frame
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9) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
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   c) a & b
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10) After installing Pandas, which command is used to import it in a Python script?
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13) Which of the following correctly plots a histogram using Matplotlib?
   a) plt.hist(data, bins=10)
   b) plt.histogram(data, bins=10)
   c) sns.histplot(data=data, bins=10)
   d) pit.hist(data, 10)

14) Which of the following data types in Python is used to represent real numbers?
   a) int
   b) string
   c) float
   d) Boolean

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) What is the output of data frame, head() method _____.
a) return only the first row
b) return only headers or column name of the Data Frame
c) return the first five rows of the Data Frame
d) throw an exception as it expects

2) Which of the following is true about outliers?
a) Data points that deviate a lot from normal
b) can reduce the accuracy of model
c) a & b
d) None of these

3) After installing Pandas, which command is used to import it in a Python script?
a) import pandas as pd
b) import pandas
c) from pandas import *
d) import pandas as pd as np

4) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna()
b) df.fillna()
c) df.isna()
d) df.replace()

5) What is the default type of join used when using pd.merge()?
a) Left join
b) Inner join
c) Right join
d) Outer join

6) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

7) Which of the following data types in Python is used to represent real numbers?
a) int
b) string
c) float
d) Boolean

8) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables
b) variable, attributes
c) variable, features
d) All of the above

9) _____ is not a measure of central tendency.
a) Mode
b) Mean
c) Range
d) Median

10) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

11) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

12) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

13) To calculate the median, all the items of a series have to be arranged in a/an _____.
a) Descending order
b) Ascending order
c) Ascending or descending order
d) None of the above

14) Which method can be used to convert text data to numerical values?
a) One-hot encoding
b) Normalization
c) Binning
d) Grouping

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna() b) df.fillna()
c) df.isna() d) df.replace()

2) What is the default type of join used when using pd.merge()?
a) Left join b) Inner join
c) Right join d) Outer join

3) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

4) Which of the following data types in Python is used to represent real numbers?
a) int b) string
c) float d) Boolean

5) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables b) variable, attributes
c) variable, features d) All of the above

6) _____ is not a measure of central tendency.
a) Mode b) Mean
c) Range d) Median

7) Which of the following is an example of a nominal variable?
   a) Blood pressure
   b) Eye color
   c) Height of individuals
   d) Time taken to complete a task

8) Which of the following is NOT a step in preparing data tables for analysis?
   a) Data cleaning
   b) Data visualization
   c) Removing irrelevant observations
   d) Converting data into a suitable format for analysis

9) The process of cleaning the data primarily involves _____.
   a) Creating visualizations
   b) Removing missing or invalid data and correcting errors
   c) Aggregating data into groups
   d) Generating hypotheses from data

10) To calculate the median, all the items of a series have to be arranged in a/an _____.
   a) Descending order
   b) Ascending order
   c) Ascending or descending order
   d) None of the above

11) Which method can be used to convert text data to numerical values?
   a) One-hot encoding
   b) Normalization
   c) Binning
   d) Grouping

12) What is the output of data frame, head() method _____.
   a) return only the first row
   b) return only headers or column name of the Data Frame
   c) return the first five rows of the Data Frame
   d) throw an exception as it expects

13) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
   b) can reduce the accuracy of model
   c) a & b
   d) None of these

14) After installing Pandas, which command is used to import it in a Python script?
   a) import pandas as pd
   b) import pandas
   c) from pandas import *
   d) import pandas as pd as np

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) To calculate the median, all the items of a series have to be arranged in a/an _____.
a) Descending order
b) Ascending order
c) Ascending or descending order
d) None of the above

2) Which method can be used to convert text data to numerical values?
a) One-hot encoding b) Normalization
c) Binning d) Grouping

3) What is the output of data frame, head() method _____.
a) return only the first row
b) return only headers or column name of the Data Frame
c) return the first five rows of the Data Frame
d) throw an exception as it expects

4) Which of the following is true about outliers?
a) Data points that deviate a lot from normal
b) can reduce the accuracy of model
c) a & b
d) None of these

5) After installing Pandas, which command is used to import it in a Python script?
a) import pandas as pd b) import pandas
c) from pandas import * d) import pandas as pd as np

6) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna()
b) df.fillna()
c) df.isna()
d) df.replace()

7) What is the default type of join used when using pd.merge()?
a) Left join
b) Inner join
c) Right join
d) Outer join

8) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

9) Which of the following data types in Python is used to represent real numbers?
a) int
b) string
c) float
d) Boolean

10) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables
b) variable, attributes
c) variable, features
d) All of the above

11) _____ is not a measure of central tendency.
a) Mode
b) Mean
c) Range
d) Median

12) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

13) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

14) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

SLR-QH-225

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables b) variable, attributes
c) variable, features d) All of the above

2) _____ is not a measure of central tendency.
a) Mode b) Mean
c) Range d) Median

3) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

4) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

5) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

6) To calculate the median, all the items of a series have to be arranged in a/an _____.
   a) Descending order
   b) Ascending order
   c) Ascending or descending order
   d) None of the above

7) Which method can be used to convert text data to numerical values?
   a) One-hot encoding
   b) Normalization
   c) Binning
   d) Grouping

8) What is the output of data frame, head() method _____.
   a) return only the first row
   b) return only headers or column name of the Data Frame
   c) return the first five rows of the Data Frame
   d) throw an exception as it expects

9) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
   b) can reduce the accuracy of model
   c) a & b
   d) None of these

10) After installing Pandas, which command is used to import it in a Python script?
   a) import pandas as pd
   b) import pandas
   c) from pandas import *
   d) import pandas as pd as np

11) Which Pandas method is used to remove rows with missing data from a DataFrame?
   a) df.dropna()
   b) df.fillna()
   c) df.isna()
   d) df.replace()

12) What is the default type of join used when using pd.merge()?
   a) Left join
   b) Inner join
   c) Right join
   d) Outer join

13) Which of the following correctly plots a histogram using Matplotlib?
   a) plt.hist(data, bins=10)
   b) plt.histogram(data, bins=10)
   c) sns.histplot(data=data, bins=10)
   d) pit.hist(data, 10)

14) Which of the following data types in Python is used to represent real numbers?
   a) int
   b) string
   c) float
   d) Boolean

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) What is the output of data frame, head() method _____.
a) return only the first row
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a) df.dropna()
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6) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
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8) Each row of the table describes an _____ and each column describes a _____.
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b) variable, attributes
c) variable, features
d) All of the above

9) _____ is not a measure of central tendency.
a) Mode
b) Mean
c) Range
d) Median

10) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

11) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

12) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

13) To calculate the median, all the items of a series have to be arranged in a/an _____.
a) Descending order
b) Ascending order
c) Ascending or descending order
d) None of the above

14) Which method can be used to convert text data to numerical values?
a) One-hot encoding
b) Normalization
c) Binning
d) Grouping

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna() b) df.fillna()
c) df.isna() d) df.replace()

2) What is the default type of join used when using pd.merge()?
a) Left join b) Inner join
c) Right join d) Outer join

3) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

4) Which of the following data types in Python is used to represent real numbers?
a) int b) string
c) float d) Boolean

5) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables b) variable, attributes
c) variable, features d) All of the above

6) _____ is not a measure of central tendency.
a) Mode b) Mean
c) Range d) Median

7) Which of the following is an example of a nominal variable?
   a) Blood pressure
   b) Eye color
   c) Height of individuals
   d) Time taken to complete a task

8) Which of the following is NOT a step in preparing data tables for analysis?
   a) Data cleaning
   b) Data visualization
   c) Removing irrelevant observations
   d) Converting data into a suitable format for analysis

9) The process of cleaning the data primarily involves _____.
   a) Creating visualizations
   b) Removing missing or invalid data and correcting errors
   c) Aggregating data into groups
   d) Generating hypotheses from data

10) To calculate the median, all the items of a series have to be arranged in a/an _____.
   a) Descending order
   b) Ascending order
   c) Ascending or descending order
   d) None of the above

11) Which method can be used to convert text data to numerical values?
   a) One-hot encoding
   b) Normalization
   c) Binning
   d) Grouping

12) What is the output of data frame, head() method _____.
   a) return only the first row
   b) return only headers or column name of the Data Frame
   c) return the first five rows of the Data Frame
   d) throw an exception as it expects

13) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
   b) can reduce the accuracy of model
   c) a & b
   d) None of these

14) After installing Pandas, which command is used to import it in a Python script?
   a) import pandas as pd
   b) import pandas
   c) from pandas import *
   d) import pandas as pd as np

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) To calculate the median, all the items of a series have to be arranged in a/an _____.
a) Descending order
b) Ascending order
c) Ascending or descending order
d) None of the above

2) Which method can be used to convert text data to numerical values?
a) One-hot encoding b) Normalization
c) Binning d) Grouping

3) What is the output of data frame, head() method _____.
a) return only the first row
b) return only headers or column name of the Data Frame
c) return the first five rows of the Data Frame
d) throw an exception as it expects

4) Which of the following is true about outliers?
a) Data points that deviate a lot from normal
b) can reduce the accuracy of model
c) a & b
d) None of these

5) After installing Pandas, which command is used to import it in a Python script?
a) import pandas as pd b) import pandas
c) from pandas import * d) import pandas as pd as np

6) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna()
b) df.fillna()
c) df.isna()
d) df.replace()

7) What is the default type of join used when using pd.merge()?
a) Left join
b) Inner join
c) Right join
d) Outer join

8) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

9) Which of the following data types in Python is used to represent real numbers?
a) int
b) string
c) float
d) Boolean

10) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables
b) variable, attributes
c) variable, features
d) All of the above

11) _____ is not a measure of central tendency.
a) Mode
b) Mean
c) Range
d) Median

12) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

13) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

14) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

SLR-QH-225

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables b) variable, attributes
c) variable, features d) All of the above

2) _____ is not a measure of central tendency.
a) Mode b) Mean
c) Range d) Median

3) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

4) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

5) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

6) To calculate the median, all the items of a series have to be arranged in a/an _____.
   a) Descending order
   b) Ascending order
   c) Ascending or descending order
   d) None of the above

7) Which method can be used to convert text data to numerical values?
   a) One-hot encoding
   b) Normalization
   c) Binning
   d) Grouping

8) What is the output of data frame, head() method _____.
   a) return only the first row
   b) return only headers or column name of the Data Frame
   c) return the first five rows of the Data Frame
   d) throw an exception as it expects

9) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
   b) can reduce the accuracy of model
   c) a & b
   d) None of these

10) After installing Pandas, which command is used to import it in a Python script?
   a) import pandas as pd
   b) import pandas
   c) from pandas import *
   d) import pandas as pd as np

11) Which Pandas method is used to remove rows with missing data from a DataFrame?
   a) df.dropna()
   b) df.fillna()
   c) df.isna()
   d) df.replace()

12) What is the default type of join used when using pd.merge()?
   a) Left join
   b) Inner join
   c) Right join
   d) Outer join

13) Which of the following correctly plots a histogram using Matplotlib?
   a) plt.hist(data, bins=10)
   b) plt.histogram(data, bins=10)
   c) sns.histplot(data=data, bins=10)
   d) pit.hist(data, 10)

14) Which of the following data types in Python is used to represent real numbers?
   a) int
   b) string
   c) float
   d) Boolean

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. **14**

1) What is the output of data frame, head() method _____.
a) return only the first row
b) return only headers or column name of the Data Frame
c) return the first five rows of the Data Frame
d) throw an exception as it expects

2) Which of the following is true about outliers?
a) Data points that deviate a lot from normal
b) can reduce the accuracy of model
c) a & b
d) None of these

3) After installing Pandas, which command is used to import it in a Python script?
a) import pandas as pd
b) import pandas
c) from pandas import *
d) import pandas as pd as np

4) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna()
b) df.fillna()
c) df.isna()
d) df.replace()

5) What is the default type of join used when using pd.merge()?
a) Left join
b) Inner join
c) Right join
d) Outer join

6) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

7) Which of the following data types in Python is used to represent real numbers?
a) int
b) string
c) float
d) Boolean

8) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables
b) variable, attributes
c) variable, features
d) All of the above

9) _____ is not a measure of central tendency.
a) Mode
b) Mean
c) Range
d) Median

10) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

11) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

12) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

13) To calculate the median, all the items of a series have to be arranged in a/an _____.
a) Descending order
b) Ascending order
c) Ascending or descending order
d) None of the above

14) Which method can be used to convert text data to numerical values?
a) One-hot encoding
b) Normalization
c) Binning
d) Grouping

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna() b) df.fillna()
c) df.isna() d) df.replace()

2) What is the default type of join used when using pd.merge()?
a) Left join b) Inner join
c) Right join d) Outer join

3) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

4) Which of the following data types in Python is used to represent real numbers?
a) int b) string
c) float d) Boolean

5) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables b) variable, attributes
c) variable, features d) All of the above

6) _____ is not a measure of central tendency.
a) Mode b) Mean
c) Range d) Median

7) Which of the following is an example of a nominal variable?
   a) Blood pressure
   b) Eye color
   c) Height of individuals
   d) Time taken to complete a task

8) Which of the following is NOT a step in preparing data tables for analysis?
   a) Data cleaning
   b) Data visualization
   c) Removing irrelevant observations
   d) Converting data into a suitable format for analysis

9) The process of cleaning the data primarily involves _____.
   a) Creating visualizations
   b) Removing missing or invalid data and correcting errors
   c) Aggregating data into groups
   d) Generating hypotheses from data

10) To calculate the median, all the items of a series have to be arranged in a/an _____.
   a) Descending order
   b) Ascending order
   c) Ascending or descending order
   d) None of the above

11) Which method can be used to convert text data to numerical values?
   a) One-hot encoding
   b) Normalization
   c) Binning
   d) Grouping

12) What is the output of data frame, head() method _____.
   a) return only the first row
   b) return only headers or column name of the Data Frame
   c) return the first five rows of the Data Frame
   d) throw an exception as it expects

13) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
   b) can reduce the accuracy of model
   c) a & b
   d) None of these

14) After installing Pandas, which command is used to import it in a Python script?
   a) import pandas as pd
   b) import pandas
   c) from pandas import *
   d) import pandas as pd as np

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) To calculate the median, all the items of a series have to be arranged in a/an _____.
a) Descending order
b) Ascending order
c) Ascending or descending order
d) None of the above

2) Which method can be used to convert text data to numerical values?
a) One-hot encoding b) Normalization
c) Binning d) Grouping

3) What is the output of data frame, head() method _____.
a) return only the first row
b) return only headers or column name of the Data Frame
c) return the first five rows of the Data Frame
d) throw an exception as it expects

4) Which of the following is true about outliers?
a) Data points that deviate a lot from normal
b) can reduce the accuracy of model
c) a & b
d) None of these

5) After installing Pandas, which command is used to import it in a Python script?
a) import pandas as pd b) import pandas
c) from pandas import * d) import pandas as pd as np

6) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna()
b) df.fillna()
c) df.isna()
d) df.replace()

7) What is the default type of join used when using pd.merge()?
a) Left join
b) Inner join
c) Right join
d) Outer join

8) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

9) Which of the following data types in Python is used to represent real numbers?
a) int
b) string
c) float
d) Boolean

10) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables
b) variable, attributes
c) variable, features
d) All of the above

11) _____ is not a measure of central tendency.
a) Mode
b) Mean
c) Range
d) Median

12) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

13) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

14) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

SLR-QH-225

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables b) variable, attributes
c) variable, features d) All of the above

2) _____ is not a measure of central tendency.
a) Mode b) Mean
c) Range d) Median

3) Which of the following is an example of a nominal variable?
a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

4) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

5) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

6) To calculate the median, all the items of a series have to be arranged in a/an _____.
   a) Descending order
   b) Ascending order
   c) Ascending or descending order
   d) None of the above

7) Which method can be used to convert text data to numerical values?
   a) One-hot encoding
   b) Normalization
   c) Binning
   d) Grouping

8) What is the output of data frame, head() method _____.
   a) return only the first row
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   c) return the first five rows of the Data Frame
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9) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
   b) can reduce the accuracy of model
   c) a & b
   d) None of these

10) After installing Pandas, which command is used to import it in a Python script?
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   d) import pandas as pd as np

11) Which Pandas method is used to remove rows with missing data from a DataFrame?
   a) df.dropna()
   b) df.fillna()
   c) df.isna()
   d) df.replace()

12) What is the default type of join used when using pd.merge()?
   a) Left join
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13) Which of the following correctly plots a histogram using Matplotlib?
   a) plt.hist(data, bins=10)
   b) plt.histogram(data, bins=10)
   c) sns.histplot(data=data, bins=10)
   d) pit.hist(data, 10)

14) Which of the following data types in Python is used to represent real numbers?
   a) int
   b) string
   c) float
   d) Boolean

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

SLR-QH-225

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) What is the output of data frame, head() method _____.
a) return only the first row
b) return only headers or column name of the Data Frame
c) return the first five rows of the Data Frame
d) throw an exception as it expects

2) Which of the following is true about outliers?
a) Data points that deviate a lot from normal
b) can reduce the accuracy of model
c) a & b
d) None of these

3) After installing Pandas, which command is used to import it in a Python script?
a) import pandas as pd
b) import pandas
c) from pandas import *
d) import pandas as pd as np

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a) plt.hist(data, bins=10)
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d) Boolean

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b) variable, attributes
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d) All of the above

9) _____ is not a measure of central tendency.
a) Mode
b) Mean
c) Range
d) Median

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a) Blood pressure
b) Eye color
c) Height of individuals
d) Time taken to complete a task

11) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

12) The process of cleaning the data primarily involves _____.
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b) Removing missing or invalid data and correcting errors
c) Aggregating data into groups
d) Generating hypotheses from data

13) To calculate the median, all the items of a series have to be arranged in a/an _____.
a) Descending order
b) Ascending order
c) Ascending or descending order
d) None of the above

14) Which method can be used to convert text data to numerical values?
a) One-hot encoding
b) Normalization
c) Binning
d) Grouping

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
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Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
A. Patel	70
M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) Which Pandas method is used to remove rows with missing data from a DataFrame?
a) df.dropna() b) df.fillna()
c) df.isna() d) df.replace()

2) What is the default type of join used when using pd.merge()?
a) Left join b) Inner join
c) Right join d) Outer join

3) Which of the following correctly plots a histogram using Matplotlib?
a) plt.hist(data, bins=10)
b) plt.histogram(data, bins=10)
c) sns.histplot(data=data, bins=10)
d) pit.hist(data, 10)

4) Which of the following data types in Python is used to represent real numbers?
a) int b) string
c) float d) Boolean

5) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables b) variable, attributes
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6) _____ is not a measure of central tendency.
a) Mode b) Mean
c) Range d) Median

7) Which of the following is an example of a nominal variable?
   a) Blood pressure
   b) Eye color
   c) Height of individuals
   d) Time taken to complete a task

8) Which of the following is NOT a step in preparing data tables for analysis?
   a) Data cleaning
   b) Data visualization
   c) Removing irrelevant observations
   d) Converting data into a suitable format for analysis

9) The process of cleaning the data primarily involves _____.
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   b) Removing missing or invalid data and correcting errors
   c) Aggregating data into groups
   d) Generating hypotheses from data

10) To calculate the median, all the items of a series have to be arranged in a/an _____.
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   b) Ascending order
   c) Ascending or descending order
   d) None of the above

11) Which method can be used to convert text data to numerical values?
   a) One-hot encoding
   b) Normalization
   c) Binning
   d) Grouping

12) What is the output of data frame, head() method _____.
   a) return only the first row
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   c) return the first five rows of the Data Frame
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13) Which of the following is true about outliers?
   a) Data points that deviate a lot from normal
   b) can reduce the accuracy of model
   c) a & b
   d) None of these

14) After installing Pandas, which command is used to import it in a Python script?
   a) import pandas as pd
   b) import pandas
   c) from pandas import *
   d) import pandas as pd as np

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
P. Lee	35
R. Jones	52
J. Smith	45
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M. Owen	24
S. Green	43
N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data whenever needed & mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct alternative from the options. 14

1) To calculate the median, all the items of a series have to be arranged in a/an _____.
a) Descending order
b) Ascending order
c) Ascending or descending order
d) None of the above

2) Which method can be used to convert text data to numerical values?
a) One-hot encoding b) Normalization
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3) What is the output of data frame, head() method _____.
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4) Which of the following is true about outliers?
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5) After installing Pandas, which command is used to import it in a Python script?
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7) What is the default type of join used when using pd.merge()?
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8) Which of the following correctly plots a histogram using Matplotlib?
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b) plt.histogram(data, bins=10)
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a) int
b) string
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10) Each row of the table describes an _____ and each column describes a _____.
a) observation, variables
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11) _____ is not a measure of central tendency.
a) Mode
b) Mean
c) Range
d) Median

12) Which of the following is an example of a nominal variable?
a) Blood pressure
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c) Height of individuals
d) Time taken to complete a task

13) Which of the following is NOT a step in preparing data tables for analysis?
a) Data cleaning
b) Data visualization
c) Removing irrelevant observations
d) Converting data into a suitable format for analysis

14) The process of cleaning the data primarily involves _____.
a) Creating visualizations
b) Removing missing or invalid data and correcting errors
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d) Generating hypotheses from data

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Data Pre-processing & Visualization (CSEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data whenever needed & mention it clearly.

Section – I

Q.2 Attempt the following. (Any Three) **12**

a) Describe the process for making sense of data.

b) Explain the different types of variables.

c) What are the Key aspects of data preprocessing for hypothesis testing?

d) Write a short note on different sources of data.

Q.3 Attempt the following. (Any One) **08**

a) Define a Range? What are the Applications of Range? Explain the method of How to Find Range with example?

b) Why there is a need to generate consistent scale across variables? Describe with example.

Q.4 Compulsory Question. **08**

Calculate the following statistics for the variable Age from following Table:

Name	Age
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N. Cook	68
W. Hands	77
P. Rice	45
F. Marsh	28

i) Mode ii) Median
iii) Mean iv) Range
v) Variance vi) Standard deviation

Section – II

Q.5 Attempt the following. (Any Three) **12**

a) What is Data Visualization, identify the design principles of data visualization.

b) What is a dynamic technique in data visualization? Explain with example.

c) Explain univariate data visualization & Multivariate Data Visualization with suitable example.

d) Write a program to perform concat and merging operation of two datasets using Pandas library.

Q.6 Attempt the following. (Any One) **08**

a) Define a scatter plot? Write syntax of scatter plot and explain its parameter in the syntax.

b) What is frequency distribution table? Draw a frequency distribution table for suitable example.

Q.7 Compulsory Question. **08**

Write the Python code to draw the Bar Chart, Histogram using Matplotlib.

SLR-QH-226

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) This money is considered as an investment by the organisation in doing quality work.
a) Blue Money b) White Money
c) Green Money d) Red Money

2) It is an activity where we check the work products with reference to standards, guidelines and procedures.
a) Validation b) Quality Assurance
c) Verification d) None

3) This testing involves testing of high-level design as well as low-level design.
a) Big Bang b) Design Testing
c) Requirement Testing d) Code Testing

4) _____ coverage involves tracking a piece of data completely through the software.
a) Data flow b) Process flow
c) Information flow d) None

5) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
a) Test Planning b) Test Strategy
c) Test Design d) Equivalence Partitioning

6) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
c) Usability Testing d) Installation Testing

7) What are the types of Integration Testing?
a) Big Bang Testing
b) Bottom-Up Testing
c) Top-Down Testing
d) All the above

8) Reasons for not fixing all the bugs _____.
a) Too risky to fix
b) Not enough time
c) Inefficient bug reporting
d) All

9) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design
b) Test Procedures
c) Test Phases
d) Test Planning

10) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

11) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality
b) Quality Control
c) Software Availability
d) All

12) Goals of test case planning are _____.
a) Organization
b) Repeatability
c) Tracking
d) All

13) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

14) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors
b) Drivers
c) Stubs
d) Stress and Load Tools

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
c) Inefficient bug reporting d) All

2) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

3) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

4) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

5) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

6) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.

a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

7) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.

a) Viewers and Monitors
b) Drivers
c) Stubs
d) Stress and Load Tools

8) This money is considered as an investment by the organisation in doing quality work.

a) Blue Money
b) White Money
c) Green Money
d) Red Money

9) It is an activity where we check the work products with reference to standards, guidelines and procedures.

a) Validation
b) Quality Assurance
c) Verification
d) None

10) This testing involves testing of high-level design as well as low-level design.

a) Big Bang
b) Design Testing
c) Requirement Testing
d) Code Testing

11) _____ coverage involves tracking a piece of data completely through the software.

a) Data flow
b) Process flow
c) Information flow
d) None

12) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.

a) Test Planning
b) Test Strategy
c) Test Design
d) Equivalence Partitioning

13) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.

a) Regression Testing
b) Stress Testing
c) Usability Testing
d) Installation Testing

14) What are the types of Integration Testing?

a) Big Bang Testing
b) Bottom-Up Testing
c) Top-Down Testing
d) All the above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

2) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

3) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

4) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors b) Drivers
c) Stubs d) Stress and Load Tools

5) This money is considered as an investment by the organisation in doing quality work.
a) Blue Money b) White Money
c) Green Money d) Red Money

6) It is an activity where we check the work products with reference to standards, guidelines and procedures.
a) Validation b) Quality Assurance
c) Verification d) None

7) This testing involves testing of high-level design as well as low-level design.
a) Big Bang b) Design Testing
c) Requirement Testing d) Code Testing

8) _____ coverage involves tracking a piece of data completely through the software.
a) Data flow b) Process flow
c) Information flow d) None

9) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
a) Test Planning b) Test Strategy
c) Test Design d) Equivalence Partitioning

10) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
c) Usability Testing d) Installation Testing

11) What are the types of Integration Testing?
a) Big Bang Testing b) Bottom-Up Testing
c) Top-Down Testing d) All the above

12) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
c) Inefficient bug reporting d) All

13) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

14) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

SLR-QH-226

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
c) Usability Testing d) Installation Testing

2) What are the types of Integration Testing?
a) Big Bang Testing b) Bottom-Up Testing
c) Top-Down Testing d) All the above

3) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
c) Inefficient bug reporting d) All

4) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

5) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

6) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

7) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

8) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

9) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors b) Drivers
c) Stubs d) Stress and Load Tools

10) This money is considered as an investment by the organisation in doing quality work.
a) Blue Money b) White Money
c) Green Money d) Red Money

11) It is an activity where we check the work products with reference to standards, guidelines and procedures.
a) Validation b) Quality Assurance
c) Verification d) None

12) This testing involves testing of high-level design as well as low-level design.
a) Big Bang b) Design Testing
c) Requirement Testing d) Code Testing

13) _____ coverage involves tracking a piece of data completely through the software.
a) Data flow b) Process flow
c) Information flow d) None

14) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
a) Test Planning b) Test Strategy
c) Test Design d) Equivalence Partitioning

SLR-QH-226

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) This money is considered as an investment by the organisation in doing quality work.
a) Blue Money b) White Money
c) Green Money d) Red Money

2) It is an activity where we check the work products with reference to standards, guidelines and procedures.
a) Validation b) Quality Assurance
c) Verification d) None

3) This testing involves testing of high-level design as well as low-level design.
a) Big Bang b) Design Testing
c) Requirement Testing d) Code Testing

4) _____ coverage involves tracking a piece of data completely through the software.
a) Data flow b) Process flow
c) Information flow d) None

5) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
a) Test Planning b) Test Strategy
c) Test Design d) Equivalence Partitioning

6) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
c) Usability Testing d) Installation Testing

7) What are the types of Integration Testing?
a) Big Bang Testing
b) Bottom-Up Testing
c) Top-Down Testing
d) All the above

8) Reasons for not fixing all the bugs _____.
a) Too risky to fix
b) Not enough time
c) Inefficient bug reporting
d) All

9) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design
b) Test Procedures
c) Test Phases
d) Test Planning

10) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

11) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality
b) Quality Control
c) Software Availability
d) All

12) Goals of test case planning are _____.
a) Organization
b) Repeatability
c) Tracking
d) All

13) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

14) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors
b) Drivers
c) Stubs
d) Stress and Load Tools

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
c) Inefficient bug reporting d) All

2) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

3) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

4) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
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c) Software Availability d) All

5) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

6) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.

a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

7) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.

a) Viewers and Monitors
b) Drivers
c) Stubs
d) Stress and Load Tools

8) This money is considered as an investment by the organisation in doing quality work.

a) Blue Money
b) White Money
c) Green Money
d) Red Money

9) It is an activity where we check the work products with reference to standards, guidelines and procedures.

a) Validation
b) Quality Assurance
c) Verification
d) None

10) This testing involves testing of high-level design as well as low-level design.

a) Big Bang
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11) _____ coverage involves tracking a piece of data completely through the software.

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b) Process flow
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d) None

12) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.

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c) Test Design
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13) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.

a) Regression Testing
b) Stress Testing
c) Usability Testing
d) Installation Testing

14) What are the types of Integration Testing?

a) Big Bang Testing
b) Bottom-Up Testing
c) Top-Down Testing
d) All the above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	R

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

2) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

3) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
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b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

4) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors b) Drivers
c) Stubs d) Stress and Load Tools

5) This money is considered as an investment by the organisation in doing quality work.
a) Blue Money b) White Money
c) Green Money d) Red Money

6) It is an activity where we check the work products with reference to standards, guidelines and procedures.
a) Validation b) Quality Assurance
c) Verification d) None

7) This testing involves testing of high-level design as well as low-level design.
a) Big Bang b) Design Testing
c) Requirement Testing d) Code Testing

8) _____ coverage involves tracking a piece of data completely through the software.
a) Data flow b) Process flow
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9) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
a) Test Planning b) Test Strategy
c) Test Design d) Equivalence Partitioning

10) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
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13) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

14) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
c) Usability Testing d) Installation Testing

2) What are the types of Integration Testing?
a) Big Bang Testing b) Bottom-Up Testing
c) Top-Down Testing d) All the above

3) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
c) Inefficient bug reporting d) All

4) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

5) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

6) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

7) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

8) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

9) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors b) Drivers
c) Stubs d) Stress and Load Tools

10) This money is considered as an investment by the organisation in doing quality work.
a) Blue Money b) White Money
c) Green Money d) Red Money

11) It is an activity where we check the work products with reference to standards, guidelines and procedures.
a) Validation b) Quality Assurance
c) Verification d) None

12) This testing involves testing of high-level design as well as low-level design.
a) Big Bang b) Design Testing
c) Requirement Testing d) Code Testing

13) _____ coverage involves tracking a piece of data completely through the software.
a) Data flow b) Process flow
c) Information flow d) None

14) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
a) Test Planning b) Test Strategy
c) Test Design d) Equivalence Partitioning

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) This money is considered as an investment by the organisation in doing quality work.
a) Blue Money b) White Money
c) Green Money d) Red Money

2) It is an activity where we check the work products with reference to standards, guidelines and procedures.
a) Validation b) Quality Assurance
c) Verification d) None

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c) Test Design d) Equivalence Partitioning

6) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
c) Usability Testing d) Installation Testing

7) What are the types of Integration Testing?
a) Big Bang Testing
b) Bottom-Up Testing
c) Top-Down Testing
d) All the above

8) Reasons for not fixing all the bugs _____.
a) Too risky to fix
b) Not enough time
c) Inefficient bug reporting
d) All

9) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design
b) Test Procedures
c) Test Phases
d) Test Planning

10) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

11) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality
b) Quality Control
c) Software Availability
d) All

12) Goals of test case planning are _____.
a) Organization
b) Repeatability
c) Tracking
d) All

13) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

14) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors
b) Drivers
c) Stubs
d) Stress and Load Tools

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?

b) Difference between Black Box Testing v/s White Box Testing.

c) Explain GUI testing with different advantages and disadvantages.

d) Write short note on Equivalence Partitioning.

e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.

b) Explain the verification and validation model.

c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?

b) Why it is not possible to fix all the bugs?

c) Explain the elements of Software Quality Assurance.

d) Explain five views of quality.

e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.

b) Describe SQA Processes and Product characteristics in SQA.

c) What is automation test? Explain the benefits of automation test.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
c) Inefficient bug reporting d) All

2) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

3) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

4) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

5) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

6) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.

a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

7) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.

a) Viewers and Monitors
b) Drivers
c) Stubs
d) Stress and Load Tools

8) This money is considered as an investment by the organisation in doing quality work.

a) Blue Money
b) White Money
c) Green Money
d) Red Money

9) It is an activity where we check the work products with reference to standards, guidelines and procedures.

a) Validation
b) Quality Assurance
c) Verification
d) None

10) This testing involves testing of high-level design as well as low-level design.

a) Big Bang
b) Design Testing
c) Requirement Testing
d) Code Testing

11) _____ coverage involves tracking a piece of data completely through the software.

a) Data flow
b) Process flow
c) Information flow
d) None

12) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.

a) Test Planning
b) Test Strategy
c) Test Design
d) Equivalence Partitioning

13) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.

a) Regression Testing
b) Stress Testing
c) Usability Testing
d) Installation Testing

14) What are the types of Integration Testing?

a) Big Bang Testing
b) Bottom-Up Testing
c) Top-Down Testing
d) All the above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?

b) Difference between Black Box Testing v/s White Box Testing.

c) Explain GUI testing with different advantages and disadvantages.

d) Write short note on Equivalence Partitioning.

e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.

b) Explain the verification and validation model.

c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?

b) Why it is not possible to fix all the bugs?

c) Explain the elements of Software Quality Assurance.

d) Explain five views of quality.

e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.

b) Describe SQA Processes and Product characteristics in SQA.

c) What is automation test? Explain the benefits of automation test.

Seat No.	

Set | **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

2) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

3) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
a) 'Visual Test' named
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d) 'Dumb Monkey' Technique Based

4) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors b) Drivers
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5) This money is considered as an investment by the organisation in doing quality work.
a) Blue Money b) White Money
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6) It is an activity where we check the work products with reference to standards, guidelines and procedures.

a) Validation
b) Quality Assurance
c) Verification
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7) This testing involves testing of high-level design as well as low-level design.

a) Big Bang
b) Design Testing
c) Requirement Testing
d) Code Testing

8) _____ coverage involves tracking a piece of data completely through the software.

a) Data flow
b) Process flow
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d) None

9) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.

a) Test Planning
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c) Test Design
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10) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.

a) Regression Testing
b) Stress Testing
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11) What are the types of Integration Testing?

a) Big Bang Testing
b) Bottom-Up Testing
c) Top-Down Testing
d) All the above

12) Reasons for not fixing all the bugs _____.

a) Too risky to fix
b) Not enough time
c) Inefficient bug reporting
d) All

13) This defines the step-by-step details of exactly how to perform the test cases.

a) Test Design
b) Test Procedures
c) Test Phases
d) Test Planning

14) We can Achieve Software quality by using _____.

a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
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e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
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2) What are the types of Integration Testing?
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Seat No.		Set	S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?

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Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.

b) Explain the verification and validation model.

c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?

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e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.

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c) What is automation test? Explain the benefits of automation test.

SLR-QH-226

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

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b) Not enough time
c) Inefficient bug reporting
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a) Test Design
b) Test Procedures
c) Test Phases
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10) We can Achieve Software quality by using _____.
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14) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
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b) Drivers
c) Stubs
d) Stress and Load Tools

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
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Instructions: 1) Answer all the questions from Section - I & Section - II.
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SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?

b) Difference between Black Box Testing v/s White Box Testing.

c) Explain GUI testing with different advantages and disadvantages.

d) Write short note on Equivalence Partitioning.

e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.

b) Explain the verification and validation model.

c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?

b) Why it is not possible to fix all the bugs?

c) Explain the elements of Software Quality Assurance.

d) Explain five views of quality.

e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.

b) Describe SQA Processes and Product characteristics in SQA.

c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	Q

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
c) Inefficient bug reporting d) All

2) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

3) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

4) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

5) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

6) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.

a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

7) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.

a) Viewers and Monitors
b) Drivers
c) Stubs
d) Stress and Load Tools

8) This money is considered as an investment by the organisation in doing quality work.

a) Blue Money
b) White Money
c) Green Money
d) Red Money

9) It is an activity where we check the work products with reference to standards, guidelines and procedures.

a) Validation
b) Quality Assurance
c) Verification
d) None

10) This testing involves testing of high-level design as well as low-level design.

a) Big Bang
b) Design Testing
c) Requirement Testing
d) Code Testing

11) _____ coverage involves tracking a piece of data completely through the software.

a) Data flow
b) Process flow
c) Information flow
d) None

12) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.

a) Test Planning
b) Test Strategy
c) Test Design
d) Equivalence Partitioning

13) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.

a) Regression Testing
b) Stress Testing
c) Usability Testing
d) Installation Testing

14) What are the types of Integration Testing?

a) Big Bang Testing
b) Bottom-Up Testing
c) Top-Down Testing
d) All the above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?

b) Difference between Black Box Testing v/s White Box Testing.

c) Explain GUI testing with different advantages and disadvantages.

d) Write short note on Equivalence Partitioning.

e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.

b) Explain the verification and validation model.

c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?

b) Why it is not possible to fix all the bugs?

c) Explain the elements of Software Quality Assurance.

d) Explain five views of quality.

e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.

b) Describe SQA Processes and Product characteristics in SQA.

c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

2) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

3) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

4) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors b) Drivers
c) Stubs d) Stress and Load Tools

5) This money is considered as an investment by the organisation in doing quality work.
a) Blue Money b) White Money
c) Green Money d) Red Money

6) It is an activity where we check the work products with reference to standards, guidelines and procedures.

a) Validation
b) Quality Assurance
c) Verification
d) None

7) This testing involves testing of high-level design as well as low-level design.

a) Big Bang
b) Design Testing
c) Requirement Testing
d) Code Testing

8) _____ coverage involves tracking a piece of data completely through the software.

a) Data flow
b) Process flow
c) Information flow
d) None

9) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.

a) Test Planning
b) Test Strategy
c) Test Design
d) Equivalence Partitioning

10) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.

a) Regression Testing
b) Stress Testing
c) Usability Testing
d) Installation Testing

11) What are the types of Integration Testing?

a) Big Bang Testing
b) Bottom-Up Testing
c) Top-Down Testing
d) All the above

12) Reasons for not fixing all the bugs _____.

a) Too risky to fix
b) Not enough time
c) Inefficient bug reporting
d) All

13) This defines the step-by-step details of exactly how to perform the test cases.

a) Test Design
b) Test Procedures
c) Test Phases
d) Test Planning

14) We can Achieve Software quality by using _____.

a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?

b) Difference between Black Box Testing v/s White Box Testing.

c) Explain GUI testing with different advantages and disadvantages.

d) Write short note on Equivalence Partitioning.

e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.

b) Explain the verification and validation model.

c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?

b) Why it is not possible to fix all the bugs?

c) Explain the elements of Software Quality Assurance.

d) Explain five views of quality.

e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.

b) Describe SQA Processes and Product characteristics in SQA.

c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	S

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
c) Usability Testing d) Installation Testing

2) What are the types of Integration Testing?
a) Big Bang Testing b) Bottom-Up Testing
c) Top-Down Testing d) All the above

3) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
c) Inefficient bug reporting d) All

4) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

5) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

6) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

7) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

8) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

9) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors b) Drivers
c) Stubs d) Stress and Load Tools

10) This money is considered as an investment by the organisation in doing quality work.
a) Blue Money b) White Money
c) Green Money d) Red Money

11) It is an activity where we check the work products with reference to standards, guidelines and procedures.
a) Validation b) Quality Assurance
c) Verification d) None

12) This testing involves testing of high-level design as well as low-level design.
a) Big Bang b) Design Testing
c) Requirement Testing d) Code Testing

13) _____ coverage involves tracking a piece of data completely through the software.
a) Data flow b) Process flow
c) Information flow d) None

14) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
a) Test Planning b) Test Strategy
c) Test Design d) Equivalence Partitioning

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?

b) Difference between Black Box Testing v/s White Box Testing.

c) Explain GUI testing with different advantages and disadvantages.

d) Write short note on Equivalence Partitioning.

e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.

b) Explain the verification and validation model.

c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?

b) Why it is not possible to fix all the bugs?

c) Explain the elements of Software Quality Assurance.

d) Explain five views of quality.

e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.

b) Describe SQA Processes and Product characteristics in SQA.

c) What is automation test? Explain the benefits of automation test.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) This money is considered as an investment by the organisation in doing quality work.
a) Blue Money b) White Money
c) Green Money d) Red Money

2) It is an activity where we check the work products with reference to standards, guidelines and procedures.
a) Validation b) Quality Assurance
c) Verification d) None

3) This testing involves testing of high-level design as well as low-level design.
a) Big Bang b) Design Testing
c) Requirement Testing d) Code Testing

4) _____ coverage involves tracking a piece of data completely through the software.
a) Data flow b) Process flow
c) Information flow d) None

5) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
a) Test Planning b) Test Strategy
c) Test Design d) Equivalence Partitioning

6) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
c) Usability Testing d) Installation Testing

7) What are the types of Integration Testing?
a) Big Bang Testing
b) Bottom-Up Testing
c) Top-Down Testing
d) All the above

8) Reasons for not fixing all the bugs _____.
a) Too risky to fix
b) Not enough time
c) Inefficient bug reporting
d) All

9) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design
b) Test Procedures
c) Test Phases
d) Test Planning

10) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

11) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality
b) Quality Control
c) Software Availability
d) All

12) Goals of test case planning are _____.
a) Organization
b) Repeatability
c) Tracking
d) All

13) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

14) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors
b) Drivers
c) Stubs
d) Stress and Load Tools

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
c) Inefficient bug reporting d) All

2) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

3) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

4) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

5) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

6) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.

a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

7) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.

a) Viewers and Monitors
b) Drivers
c) Stubs
d) Stress and Load Tools

8) This money is considered as an investment by the organisation in doing quality work.

a) Blue Money
b) White Money
c) Green Money
d) Red Money

9) It is an activity where we check the work products with reference to standards, guidelines and procedures.

a) Validation
b) Quality Assurance
c) Verification
d) None

10) This testing involves testing of high-level design as well as low-level design.

a) Big Bang
b) Design Testing
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11) _____ coverage involves tracking a piece of data completely through the software.

a) Data flow
b) Process flow
c) Information flow
d) None

12) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.

a) Test Planning
b) Test Strategy
c) Test Design
d) Equivalence Partitioning

13) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.

a) Regression Testing
b) Stress Testing
c) Usability Testing
d) Installation Testing

14) What are the types of Integration Testing?

a) Big Bang Testing
b) Bottom-Up Testing
c) Top-Down Testing
d) All the above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.	

Set | **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

2) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

3) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
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b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

4) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors b) Drivers
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5) This money is considered as an investment by the organisation in doing quality work.
a) Blue Money b) White Money
c) Green Money d) Red Money

6) It is an activity where we check the work products with reference to standards, guidelines and procedures.

a) Validation
b) Quality Assurance
c) Verification
d) None

7) This testing involves testing of high-level design as well as low-level design.

a) Big Bang
b) Design Testing
c) Requirement Testing
d) Code Testing

8) _____ coverage involves tracking a piece of data completely through the software.

a) Data flow
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c) Information flow
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9) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.

a) Test Planning
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10) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.

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11) What are the types of Integration Testing?

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b) Bottom-Up Testing
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12) Reasons for not fixing all the bugs _____.

a) Too risky to fix
b) Not enough time
c) Inefficient bug reporting
d) All

13) This defines the step-by-step details of exactly how to perform the test cases.

a) Test Design
b) Test Procedures
c) Test Phases
d) Test Planning

14) We can Achieve Software quality by using _____.

a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data wherever necessary.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
c) Usability Testing d) Installation Testing

2) What are the types of Integration Testing?
a) Big Bang Testing b) Bottom-Up Testing
c) Top-Down Testing d) All the above

3) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
c) Inefficient bug reporting d) All

4) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

5) We can Achieve Software quality by using _____.
a) Project Management Techniques
b) Quality Control
c) Quality Assurance
d) All

6) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

7) Goals of test case planning are _____.
a) Organization b) Repeatability
c) Tracking d) All

8) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
a) 'Visual Test' named
b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

9) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors b) Drivers
c) Stubs d) Stress and Load Tools

10) This money is considered as an investment by the organisation in doing quality work.
a) Blue Money b) White Money
c) Green Money d) Red Money

11) It is an activity where we check the work products with reference to standards, guidelines and procedures.
a) Validation b) Quality Assurance
c) Verification d) None

12) This testing involves testing of high-level design as well as low-level design.
a) Big Bang b) Design Testing
c) Requirement Testing d) Code Testing

13) _____ coverage involves tracking a piece of data completely through the software.
a) Data flow b) Process flow
c) Information flow d) None

14) _____ is the process of methodically reducing the huge set of possible test cases into a much smaller, but still equally effective set.
a) Test Planning b) Test Strategy
c) Test Design d) Equivalence Partitioning

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?

b) Difference between Black Box Testing v/s White Box Testing.

c) Explain GUI testing with different advantages and disadvantages.

d) Write short note on Equivalence Partitioning.

e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.

b) Explain the verification and validation model.

c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?

b) Why it is not possible to fix all the bugs?

c) Explain the elements of Software Quality Assurance.

d) Explain five views of quality.

e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.

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c) What is automation test? Explain the benefits of automation test.

SLR-QH-226

Seat No.		Set	P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) This money is considered as an investment by the organisation in doing quality work.
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7) What are the types of Integration Testing?
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d) All the above

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b) Not enough time
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a) Test Design
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10) We can Achieve Software quality by using _____.
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b) Quality Control
c) Quality Assurance
d) All

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b) Quality Control
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12) Goals of test case planning are _____.
a) Organization
b) Repeatability
c) Tracking
d) All

13) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
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b) 'Macro Magic' named
c) 'Selenium' named
d) 'Dumb Monkey' Technique Based

14) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
a) Viewers and Monitors
b) Drivers
c) Stubs
d) Stress and Load Tools

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?

b) Difference between Black Box Testing v/s White Box Testing.

c) Explain GUI testing with different advantages and disadvantages.

d) Write short note on Equivalence Partitioning.

e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.

b) Explain the verification and validation model.

c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?

b) Why it is not possible to fix all the bugs?

c) Explain the elements of Software Quality Assurance.

d) Explain five views of quality.

e) Explain Random Testing in automation.

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b) Describe SQA Processes and Product characteristics in SQA.

c) What is automation test? Explain the benefits of automation test.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Reasons for not fixing all the bugs _____.
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c) Inefficient bug reporting d) All

2) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

3) We can Achieve Software quality by using _____.
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b) Quality Control
c) Quality Assurance
d) All

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c) Software Availability d) All

5) Goals of test case planning are _____.
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6) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.

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b) 'Macro Magic' named
c) 'Selenium' named
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7) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.

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b) Drivers
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d) Stress and Load Tools

8) This money is considered as an investment by the organisation in doing quality work.

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b) White Money
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d) Red Money

9) It is an activity where we check the work products with reference to standards, guidelines and procedures.

a) Validation
b) Quality Assurance
c) Verification
d) None

10) This testing involves testing of high-level design as well as low-level design.

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13) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.

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b) Stress Testing
c) Usability Testing
d) Installation Testing

14) What are the types of Integration Testing?

a) Big Bang Testing
b) Bottom-Up Testing
c) Top-Down Testing
d) All the above

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
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SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?

b) Difference between Black Box Testing v/s White Box Testing.

c) Explain GUI testing with different advantages and disadvantages.

d) Write short note on Equivalence Partitioning.

e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.

b) Explain the verification and validation model.

c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?

b) Why it is not possible to fix all the bugs?

c) Explain the elements of Software Quality Assurance.

d) Explain five views of quality.

e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.

b) Describe SQA Processes and Product characteristics in SQA.

c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) An effective software process applied in a manner that creates a useful product that provides measurable value for those who produce it and those who use it. This can be defined as _____.
a) Software Quality b) Quality Control
c) Software Availability d) All

2) Goals of test case planning are _____.
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3) For random testing a _____ automated testing tool with its continuous repetition and use, can expose bugs such as memory leaks that might not occur until many hours or days of normal use of a newly developed software.
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b) 'Macro Magic' named
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4) _____ test tool allows you to see details of the software's operation that you wouldn't normally be able to see.
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12) Reasons for not fixing all the bugs _____.
a) Too risky to fix b) Not enough time
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13) This defines the step-by-step details of exactly how to perform the test cases.
a) Test Design b) Test Procedures
c) Test Phases d) Test Planning

14) We can Achieve Software quality by using _____.
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c) Quality Assurance
d) All

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
2) Figures to the right indicate full marks.
3) Assume suitable data wherever necessary.

SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
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Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ is intended to determine whether the changed components have introduced any error in unchanged components of the system.
a) Regression Testing b) Stress Testing
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Seat No.	

Set | S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Software Testing & Quality Assurance (CSEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) Answer all the questions from Section - I & Section - II.
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SECTION – I

Q.2 Answer the following questions. (Any Four) **16**

a) What are the misconceptions about testing?
b) Difference between Black Box Testing v/s White Box Testing.
c) Explain GUI testing with different advantages and disadvantages.
d) Write short note on Equivalence Partitioning.
e) Explain Defect Life cycle.

Q.3 Answer any two questions. **12**

a) Explain Defect Management Process.
b) Explain the verification and validation model.
c) Explain the Integration Testing with Bottom up & Top Down testing approach.

SECTION – II

Q.4 Answer the following questions. (Any Four) **16**

a) What are the four reasons for Test Case Planning?
b) Why it is not possible to fix all the bugs?
c) Explain the elements of Software Quality Assurance.
d) Explain five views of quality.
e) Explain Random Testing in automation.

Q.5 Answer any two questions. **12**

a) Explain Test case planning in detail with diagram.
b) Describe SQA Processes and Product characteristics in SQA.
c) What is automation test? Explain the benefits of automation test.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

2) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

3) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

4) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

5) Passive heating uses _____.
a) External power b) Natural energy
c) Fuel d) Electricity

6) Direct gain system uses _____.
a) Windows b) Pipes
c) Pumps d) Fans

7) Solar drying removes _____.
a) Heat b) Moisture
c) Air d) Dust

8) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

9) PV effect converts _____.

a) Heat to electricity
b) Light to electricity
c) Mechanical
d) Chemical

10) Solar cell material _____.

a) Copper
b) Silicon
c) Iron
d) Aluminum

11) Petroleum is _____.

a) Renewable
b) Non-renewable
c) Biomass
d) Solar

12) Ground cooling uses _____.

a) Air temp
b) Earth temp
c) Sunlight
d) Pressure

13) Parallel connection increases _____.

a) Voltage
b) Current
c) Resistance
d) Frequency

14) MPPT improves _____.

a) Loss
b) Output
c) Cost
d) Weight

Seat No.	

Set **P**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

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MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Solar still produces _____.
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2) PV effect converts _____.
a) Heat to electricity b) Light to electricity
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3) Solar cell material _____.
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c) Iron d) Aluminum

4) Petroleum is _____.
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c) Biomass d) Solar

5) Ground cooling uses _____.
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8) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

9) Which is non-renewable?
a) Solar
b) Wind
c) Coal
d) Biomass

10) Hydrogen is _____.
a) Primary fuel
b) Energy carrier
c) Fossil fuel
d) Solid

11) Hydrogen production method _____.
a) Electrolysis
b) Combustion
c) Cooling
d) Filtration

12) Passive heating uses _____.
a) External power
b) Natural energy
c) Fuel
d) Electricity

13) Direct gain system uses _____.
a) Windows
b) Pipes
c) Pumps
d) Fans

14) Solar drying removes _____.
a) Heat
b) Moisture
c) Air
d) Dust

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

2) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

3) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

4) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

5) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

6) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

7) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

8) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

9) Passive heating uses _____.

a) External power
b) Natural energy
c) Fuel
d) Electricity

10) Direct gain system uses _____.

a) Windows
b) Pipes
c) Pumps
d) Fans

11) Solar drying removes _____.

a) Heat
b) Moisture
c) Air
d) Dust

12) Solar still produces _____.

a) Heat
b) Fresh water
c) Electricity
d) Steam

13) PV effect converts _____.

a) Heat to electricity
b) Light to electricity
c) Mechanical
d) Chemical

14) Solar cell material _____.

a) Copper
b) Silicon
c) Iron
d) Aluminum

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Direct gain system uses _____.
a) Windows b) Pipes
c) Pumps d) Fans

2) Solar drying removes _____.
a) Heat b) Moisture
c) Air d) Dust

3) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

4) PV effect converts _____.
a) Heat to electricity b) Light to electricity
c) Mechanical d) Chemical

5) Solar cell material _____.
a) Copper b) Silicon
c) Iron d) Aluminum

6) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

7) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

8) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

9) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

10) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

11) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

12) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

13) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

14) Passive heating uses _____.
a) External power b) Natural energy
c) Fuel d) Electricity

SLR-QH-227

Seat No.	

Set S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

2) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

3) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

4) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

5) Passive heating uses _____.
a) External power b) Natural energy
c) Fuel d) Electricity

6) Direct gain system uses _____.
a) Windows b) Pipes
c) Pumps d) Fans

7) Solar drying removes _____.
a) Heat b) Moisture
c) Air d) Dust

8) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

9) PV effect converts _____.

a) Heat to electricity
b) Light to electricity
c) Mechanical
d) Chemical

10) Solar cell material _____.

a) Copper
b) Silicon
c) Iron
d) Aluminum

11) Petroleum is _____.

a) Renewable
b) Non-renewable
c) Biomass
d) Solar

12) Ground cooling uses _____.

a) Air temp
b) Earth temp
c) Sunlight
d) Pressure

13) Parallel connection increases _____.

a) Voltage
b) Current
c) Resistance
d) Frequency

14) MPPT improves _____.

a) Loss
b) Output
c) Cost
d) Weight

SLR-QH-227

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

2) PV effect converts _____.
a) Heat to electricity b) Light to electricity
c) Mechanical d) Chemical

3) Solar cell material _____.
a) Copper b) Silicon
c) Iron d) Aluminum

4) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

5) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

6) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

7) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

8) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

9) Which is non-renewable?
a) Solar
b) Wind
c) Coal
d) Biomass

10) Hydrogen is _____.
a) Primary fuel
b) Energy carrier
c) Fossil fuel
d) Solid

11) Hydrogen production method _____.
a) Electrolysis
b) Combustion
c) Cooling
d) Filtration

12) Passive heating uses _____.
a) External power
b) Natural energy
c) Fuel
d) Electricity

13) Direct gain system uses _____.
a) Windows
b) Pipes
c) Pumps
d) Fans

14) Solar drying removes _____.
a) Heat
b) Moisture
c) Air
d) Dust

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

2) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

3) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

4) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

5) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

6) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

7) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

8) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

9) Passive heating uses _____.
a) External power
b) Natural energy
c) Fuel
d) Electricity

10) Direct gain system uses _____.
a) Windows
b) Pipes
c) Pumps
d) Fans

11) Solar drying removes _____.
a) Heat
b) Moisture
c) Air
d) Dust

12) Solar still produces _____.
a) Heat
b) Fresh water
c) Electricity
d) Steam

13) PV effect converts _____.
a) Heat to electricity
b) Light to electricity
c) Mechanical
d) Chemical

14) Solar cell material _____.
a) Copper
b) Silicon
c) Iron
d) Aluminum

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Direct gain system uses _____.
a) Windows b) Pipes
c) Pumps d) Fans

2) Solar drying removes _____.
a) Heat b) Moisture
c) Air d) Dust

3) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

4) PV effect converts _____.
a) Heat to electricity b) Light to electricity
c) Mechanical d) Chemical

5) Solar cell material _____.
a) Copper b) Silicon
c) Iron d) Aluminum

6) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

7) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

8) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

9) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

10) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

11) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

12) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

13) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

14) Passive heating uses _____.
a) External power b) Natural energy
c) Fuel d) Electricity

SLR-QH-227

Seat No.	

Set S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

SLR-QH-227

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

2) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

3) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

4) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

5) Passive heating uses _____.
a) External power b) Natural energy
c) Fuel d) Electricity

6) Direct gain system uses _____.
a) Windows b) Pipes
c) Pumps d) Fans

7) Solar drying removes _____.
a) Heat b) Moisture
c) Air d) Dust

8) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

9) PV effect converts _____.

a) Heat to electricity
b) Light to electricity
c) Mechanical
d) Chemical

10) Solar cell material _____.

a) Copper
b) Silicon
c) Iron
d) Aluminum

11) Petroleum is _____.

a) Renewable
b) Non-renewable
c) Biomass
d) Solar

12) Ground cooling uses _____.

a) Air temp
b) Earth temp
c) Sunlight
d) Pressure

13) Parallel connection increases _____.

a) Voltage
b) Current
c) Resistance
d) Frequency

14) MPPT improves _____.

a) Loss
b) Output
c) Cost
d) Weight

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

2) PV effect converts _____.
a) Heat to electricity b) Light to electricity
c) Mechanical d) Chemical

3) Solar cell material _____.
a) Copper b) Silicon
c) Iron d) Aluminum

4) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

5) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

6) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

7) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

8) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

9) Which is non-renewable?
a) Solar
b) Wind
c) Coal
d) Biomass

10) Hydrogen is _____.
a) Primary fuel
b) Energy carrier
c) Fossil fuel
d) Solid

11) Hydrogen production method _____.
a) Electrolysis
b) Combustion
c) Cooling
d) Filtration

12) Passive heating uses _____.
a) External power
b) Natural energy
c) Fuel
d) Electricity

13) Direct gain system uses _____.
a) Windows
b) Pipes
c) Pumps
d) Fans

14) Solar drying removes _____.
a) Heat
b) Moisture
c) Air
d) Dust

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

2) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

3) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

4) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

5) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

6) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

7) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

8) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

9) Passive heating uses _____.
a) External power
b) Natural energy
c) Fuel
d) Electricity

10) Direct gain system uses _____.
a) Windows
b) Pipes
c) Pumps
d) Fans

11) Solar drying removes _____.
a) Heat
b) Moisture
c) Air
d) Dust

12) Solar still produces _____.
a) Heat
b) Fresh water
c) Electricity
d) Steam

13) PV effect converts _____.
a) Heat to electricity
b) Light to electricity
c) Mechanical
d) Chemical

14) Solar cell material _____.
a) Copper
b) Silicon
c) Iron
d) Aluminum

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Direct gain system uses _____.
a) Windows b) Pipes
c) Pumps d) Fans

2) Solar drying removes _____.
a) Heat b) Moisture
c) Air d) Dust

3) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

4) PV effect converts _____.
a) Heat to electricity b) Light to electricity
c) Mechanical d) Chemical

5) Solar cell material _____.
a) Copper b) Silicon
c) Iron d) Aluminum

6) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

7) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

8) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

9) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

10) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

11) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

12) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

13) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

14) Passive heating uses _____.
a) External power b) Natural energy
c) Fuel d) Electricity

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

SLR-QH-227

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

2) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

3) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

4) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

5) Passive heating uses _____.
a) External power b) Natural energy
c) Fuel d) Electricity

6) Direct gain system uses _____.
a) Windows b) Pipes
c) Pumps d) Fans

7) Solar drying removes _____.
a) Heat b) Moisture
c) Air d) Dust

8) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

9) PV effect converts _____.

a) Heat to electricity
b) Light to electricity
c) Mechanical
d) Chemical

10) Solar cell material _____.

a) Copper
b) Silicon
c) Iron
d) Aluminum

11) Petroleum is _____.

a) Renewable
b) Non-renewable
c) Biomass
d) Solar

12) Ground cooling uses _____.

a) Air temp
b) Earth temp
c) Sunlight
d) Pressure

13) Parallel connection increases _____.

a) Voltage
b) Current
c) Resistance
d) Frequency

14) MPPT improves _____.

a) Loss
b) Output
c) Cost
d) Weight

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

2) PV effect converts _____.
a) Heat to electricity b) Light to electricity
c) Mechanical d) Chemical

3) Solar cell material _____.
a) Copper b) Silicon
c) Iron d) Aluminum

4) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

5) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

6) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

7) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

8) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

9) Which is non-renewable?
a) Solar
b) Wind
c) Coal
d) Biomass

10) Hydrogen is _____.
a) Primary fuel
b) Energy carrier
c) Fossil fuel
d) Solid

11) Hydrogen production method _____.
a) Electrolysis
b) Combustion
c) Cooling
d) Filtration

12) Passive heating uses _____.
a) External power
b) Natural energy
c) Fuel
d) Electricity

13) Direct gain system uses _____.
a) Windows
b) Pipes
c) Pumps
d) Fans

14) Solar drying removes _____.
a) Heat
b) Moisture
c) Air
d) Dust

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

2) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

3) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

4) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

5) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

6) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

7) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

8) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

9) Passive heating uses _____.
a) External power
b) Natural energy
c) Fuel
d) Electricity

10) Direct gain system uses _____.
a) Windows
b) Pipes
c) Pumps
d) Fans

11) Solar drying removes _____.
a) Heat
b) Moisture
c) Air
d) Dust

12) Solar still produces _____.
a) Heat
b) Fresh water
c) Electricity
d) Steam

13) PV effect converts _____.
a) Heat to electricity
b) Light to electricity
c) Mechanical
d) Chemical

14) Solar cell material _____.
a) Copper
b) Silicon
c) Iron
d) Aluminum

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Direct gain system uses _____.
a) Windows b) Pipes
c) Pumps d) Fans

2) Solar drying removes _____.
a) Heat b) Moisture
c) Air d) Dust

3) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

4) PV effect converts _____.
a) Heat to electricity b) Light to electricity
c) Mechanical d) Chemical

5) Solar cell material _____.
a) Copper b) Silicon
c) Iron d) Aluminum

6) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

7) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

8) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

9) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

10) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

11) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

12) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

13) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

14) Passive heating uses _____.
a) External power b) Natural energy
c) Fuel d) Electricity

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

SLR-QH-227

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

2) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

3) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

4) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

5) Passive heating uses _____.
a) External power b) Natural energy
c) Fuel d) Electricity

6) Direct gain system uses _____.
a) Windows b) Pipes
c) Pumps d) Fans

7) Solar drying removes _____.
a) Heat b) Moisture
c) Air d) Dust

8) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

9) PV effect converts _____.

a) Heat to electricity
b) Light to electricity
c) Mechanical
d) Chemical

10) Solar cell material _____.

a) Copper
b) Silicon
c) Iron
d) Aluminum

11) Petroleum is _____.

a) Renewable
b) Non-renewable
c) Biomass
d) Solar

12) Ground cooling uses _____.

a) Air temp
b) Earth temp
c) Sunlight
d) Pressure

13) Parallel connection increases _____.

a) Voltage
b) Current
c) Resistance
d) Frequency

14) MPPT improves _____.

a) Loss
b) Output
c) Cost
d) Weight

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

2) PV effect converts _____.
a) Heat to electricity b) Light to electricity
c) Mechanical d) Chemical

3) Solar cell material _____.
a) Copper b) Silicon
c) Iron d) Aluminum

4) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

5) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

6) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

7) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

8) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

9) Which is non-renewable?
a) Solar
b) Wind
c) Coal
d) Biomass

10) Hydrogen is _____.
a) Primary fuel
b) Energy carrier
c) Fossil fuel
d) Solid

11) Hydrogen production method _____.
a) Electrolysis
b) Combustion
c) Cooling
d) Filtration

12) Passive heating uses _____.
a) External power
b) Natural energy
c) Fuel
d) Electricity

13) Direct gain system uses _____.
a) Windows
b) Pipes
c) Pumps
d) Fans

14) Solar drying removes _____.
a) Heat
b) Moisture
c) Air
d) Dust

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

2) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

3) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

4) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

5) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

6) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

7) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

8) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

9) Passive heating uses _____.
a) External power
b) Natural energy
c) Fuel
d) Electricity

10) Direct gain system uses _____.
a) Windows
b) Pipes
c) Pumps
d) Fans

11) Solar drying removes _____.
a) Heat
b) Moisture
c) Air
d) Dust

12) Solar still produces _____.
a) Heat
b) Fresh water
c) Electricity
d) Steam

13) PV effect converts _____.
a) Heat to electricity
b) Light to electricity
c) Mechanical
d) Chemical

14) Solar cell material _____.
a) Copper
b) Silicon
c) Iron
d) Aluminum

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Direct gain system uses _____.
a) Windows b) Pipes
c) Pumps d) Fans

2) Solar drying removes _____.
a) Heat b) Moisture
c) Air d) Dust

3) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

4) PV effect converts _____.
a) Heat to electricity b) Light to electricity
c) Mechanical d) Chemical

5) Solar cell material _____.
a) Copper b) Silicon
c) Iron d) Aluminum

6) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

7) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

8) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

9) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

10) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

11) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

12) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

13) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

14) Passive heating uses _____.
a) External power b) Natural energy
c) Fuel d) Electricity

SLR-QH-227

Seat No.	

Set S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

2) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

3) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

4) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

5) Passive heating uses _____.
a) External power b) Natural energy
c) Fuel d) Electricity

6) Direct gain system uses _____.
a) Windows b) Pipes
c) Pumps d) Fans

7) Solar drying removes _____.
a) Heat b) Moisture
c) Air d) Dust

8) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

9) PV effect converts _____.

a) Heat to electricity
b) Light to electricity
c) Mechanical
d) Chemical

10) Solar cell material _____.

a) Copper
b) Silicon
c) Iron
d) Aluminum

11) Petroleum is _____.

a) Renewable
b) Non-renewable
c) Biomass
d) Solar

12) Ground cooling uses _____.

a) Air temp
b) Earth temp
c) Sunlight
d) Pressure

13) Parallel connection increases _____.

a) Voltage
b) Current
c) Resistance
d) Frequency

14) MPPT improves _____.

a) Loss
b) Output
c) Cost
d) Weight

Seat No.	

Set **P**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

2) PV effect converts _____.
a) Heat to electricity b) Light to electricity
c) Mechanical d) Chemical

3) Solar cell material _____.
a) Copper b) Silicon
c) Iron d) Aluminum

4) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

5) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

6) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

7) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

8) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

9) Which is non-renewable?
a) Solar
b) Wind
c) Coal
d) Biomass

10) Hydrogen is _____.
a) Primary fuel
b) Energy carrier
c) Fossil fuel
d) Solid

11) Hydrogen production method _____.
a) Electrolysis
b) Combustion
c) Cooling
d) Filtration

12) Passive heating uses _____.
a) External power
b) Natural energy
c) Fuel
d) Electricity

13) Direct gain system uses _____.
a) Windows
b) Pipes
c) Pumps
d) Fans

14) Solar drying removes _____.
a) Heat
b) Moisture
c) Air
d) Dust

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

2) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

3) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

4) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

5) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

6) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

7) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

8) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

9) Passive heating uses _____.
a) External power
b) Natural energy
c) Fuel
d) Electricity

10) Direct gain system uses _____.
a) Windows
b) Pipes
c) Pumps
d) Fans

11) Solar drying removes _____.
a) Heat
b) Moisture
c) Air
d) Dust

12) Solar still produces _____.
a) Heat
b) Fresh water
c) Electricity
d) Steam

13) PV effect converts _____.
a) Heat to electricity
b) Light to electricity
c) Mechanical
d) Chemical

14) Solar cell material _____.
a) Copper
b) Silicon
c) Iron
d) Aluminum

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Direct gain system uses _____.
a) Windows b) Pipes
c) Pumps d) Fans

2) Solar drying removes _____.
a) Heat b) Moisture
c) Air d) Dust

3) Solar still produces _____.
a) Heat b) Fresh water
c) Electricity d) Steam

4) PV effect converts _____.
a) Heat to electricity b) Light to electricity
c) Mechanical d) Chemical

5) Solar cell material _____.
a) Copper b) Silicon
c) Iron d) Aluminum

6) Petroleum is _____.
a) Renewable b) Non-renewable
c) Biomass d) Solar

7) Ground cooling uses _____.
a) Air temp b) Earth temp
c) Sunlight d) Pressure

8) Parallel connection increases _____.
a) Voltage b) Current
c) Resistance d) Frequency

9) MPPT improves _____.
a) Loss b) Output
c) Cost d) Weight

10) Renewable energy sources are _____.
a) Exhaustible b) Non-exhaustible
c) Fossil d) Nuclear

11) Which is non-renewable?
a) Solar b) Wind
c) Coal d) Biomass

12) Hydrogen is _____.
a) Primary fuel b) Energy carrier
c) Fossil fuel d) Solid

13) Hydrogen production method _____.
a) Electrolysis b) Combustion
c) Cooling d) Filtration

14) Passive heating uses _____.
a) External power b) Natural energy
c) Fuel d) Electricity

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Advanced Application in Renewable Energy (EEMDM-02A)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

Section – I

Q.2 Attempt the following. (Any Four) **16**

a) Differentiate renewable and non-renewable energy sources.
b) Explain global energy scenario.
c) Explain hydrogen energy system in detail.
d) Explain passive heating and cooling techniques.
e) Describe solar active heating system components.

Q.3 Attempt the following. (Any Two) **12**

a) Compare all renewable sources with advantages and limitations.
b) Explain solar air heater working.
c) Explain future scope of hydrogen fuel.

Section – II

Q.4 Attempt the following. (Any Four) **16**

a) Explain solar drying basics.
b) Types of solar dryers.
c) Explain photovoltaic effect.
d) Define solar cell efficiency.
e) Analyze PV system efficiency factors.

Q.5 Attempt the following. (Any Two) **12**

a) Explain industrial solar drying.
b) Discuss solar pumping system
c) Evaluate economic aspects of PV systems.

SLR-QH-228

Seat No.	

Set P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

2) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

3) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor b) Induction motor
c) Synchronous motor d) Permanent magnet motor

4) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

5) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

6) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

7) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

8) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control
b) Vector control
c) Direct torque control
d) All of the above

9) Identify the following starter is NOT a motor starter.
a) Stator resistance starter
b) Permanent magnet starter
c) Auto transformer starter
d) Star-delta starter

10) _____ is the main advantage of a star-delta starter.
a) High starting torque
b) Reduced starting current
c) Simple construction
d) Increased motor speed

11) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current
b) Frequency
c) Voltage
d) Torque

12) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

13) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances
b) Drones and robotics
c) Electric vehicles
d) All of the above

14) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter
b) Auto transformer starter
c) Star-delta starter
d) Soft starter

Seat No.		Set	P

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

SLR-QH-228

Seat No.	

Set Q

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control b) Vector control
c) Direct torque control d) All of the above

2) Identify the following starter is NOT a motor starter.
a) Stator resistance starter b) Permanent magnet starter
c) Auto transformer starter d) Star-delta starter

3) _____ is the main advantage of a star-delta starter.
a) High starting torque b) Reduced starting current
c) Simple construction d) Increased motor speed

4) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

5) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

6) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

7) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter
b) Auto transformer starter
c) Star-delta starter
d) Soft starter

8) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery
b) Electric motor
c) Inverter
d) Controller

9) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

10) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor
b) Induction motor
c) Synchronous motor
d) Permanent magnet motor

11) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

12) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

13) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

14) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

SLR-QH-228

Seat No.	

Set R

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

2) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

3) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

4) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter b) Auto transformer starter
c) Star-delta starter d) Soft starter

5) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

6) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

7) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor
b) Induction motor
c) Synchronous motor
d) Permanent magnet motor

8) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

9) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

10) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

11) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

12) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control
b) Vector control
c) Direct torque control
d) All of the above

13) Identify the following starter is NOT a motor starter.
a) Stator resistance starter
b) Permanent magnet starter
c) Auto transformer starter
d) Star-delta starter

14) _____ is the main advantage of a star-delta starter.
a) High starting torque
b) Reduced starting current
c) Simple construction
d) Increased motor speed

Seat No.	

Set **R**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

2) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

3) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control b) Vector control
c) Direct torque control d) All of the above

4) Identify the following starter is NOT a motor starter.
a) Stator resistance starter b) Permanent magnet starter
c) Auto transformer starter d) Star-delta starter

5) _____ is the main advantage of a star-delta starter.
a) High starting torque b) Reduced starting current
c) Simple construction d) Increased motor speed

6) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

7) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

8) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

9) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter b) Auto transformer starter
c) Star-delta starter d) Soft starter

10) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

11) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

12) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor b) Induction motor
c) Synchronous motor d) Permanent magnet motor

13) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

14) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

Seat No.		Set	S

S.Y. (B.Tech.) (Civil Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

SLR-QH-228

Seat No.	

Set P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

2) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

3) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor b) Induction motor
c) Synchronous motor d) Permanent magnet motor

4) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

5) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

6) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

7) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

8) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control
b) Vector control
c) Direct torque control
d) All of the above

9) Identify the following starter is NOT a motor starter.
a) Stator resistance starter
b) Permanent magnet starter
c) Auto transformer starter
d) Star-delta starter

10) _____ is the main advantage of a star-delta starter.
a) High starting torque
b) Reduced starting current
c) Simple construction
d) Increased motor speed

11) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current
b) Frequency
c) Voltage
d) Torque

12) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

13) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances
b) Drones and robotics
c) Electric vehicles
d) All of the above

14) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter
b) Auto transformer starter
c) Star-delta starter
d) Soft starter

Seat No.		Set	P

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control b) Vector control
c) Direct torque control d) All of the above

2) Identify the following starter is NOT a motor starter.
a) Stator resistance starter b) Permanent magnet starter
c) Auto transformer starter d) Star-delta starter

3) _____ is the main advantage of a star-delta starter.
a) High starting torque b) Reduced starting current
c) Simple construction d) Increased motor speed

4) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

5) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

6) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

7) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter
b) Auto transformer starter
c) Star-delta starter
d) Soft starter

8) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery
b) Electric motor
c) Inverter
d) Controller

9) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

10) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor
b) Induction motor
c) Synchronous motor
d) Permanent magnet motor

11) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

12) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

13) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

14) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

2) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

3) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

4) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter b) Auto transformer starter
c) Star-delta starter d) Soft starter

5) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

6) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

7) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor
b) Induction motor
c) Synchronous motor
d) Permanent magnet motor

8) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

9) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

10) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

11) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

12) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control
b) Vector control
c) Direct torque control
d) All of the above

13) Identify the following starter is NOT a motor starter.
a) Stator resistance starter
b) Permanent magnet starter
c) Auto transformer starter
d) Star-delta starter

14) _____ is the main advantage of a star-delta starter.
a) High starting torque
b) Reduced starting current
c) Simple construction
d) Increased motor speed

Seat No.	

Set **R**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

2) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

3) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control b) Vector control
c) Direct torque control d) All of the above

4) Identify the following starter is NOT a motor starter.
a) Stator resistance starter b) Permanent magnet starter
c) Auto transformer starter d) Star-delta starter

5) _____ is the main advantage of a star-delta starter.
a) High starting torque b) Reduced starting current
c) Simple construction d) Increased motor speed

6) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

7) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

8) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

9) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter b) Auto transformer starter
c) Star-delta starter d) Soft starter

10) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

11) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

12) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor b) Induction motor
c) Synchronous motor d) Permanent magnet motor

13) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

14) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

Seat No.		Set	S

S.Y. (B.Tech.) (Computer Science and Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

SLR-QH-228

Seat No.	

Set P

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

2) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

3) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor b) Induction motor
c) Synchronous motor d) Permanent magnet motor

4) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

5) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

6) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

7) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

8) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control
b) Vector control
c) Direct torque control
d) All of the above

9) Identify the following starter is NOT a motor starter.
a) Stator resistance starter
b) Permanent magnet starter
c) Auto transformer starter
d) Star-delta starter

10) _____ is the main advantage of a star-delta starter.
a) High starting torque
b) Reduced starting current
c) Simple construction
d) Increased motor speed

11) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current
b) Frequency
c) Voltage
d) Torque

12) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

13) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances
b) Drones and robotics
c) Electric vehicles
d) All of the above

14) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter
b) Auto transformer starter
c) Star-delta starter
d) Soft starter

Seat No.	

Set **P**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control b) Vector control
c) Direct torque control d) All of the above

2) Identify the following starter is NOT a motor starter.
a) Stator resistance starter b) Permanent magnet starter
c) Auto transformer starter d) Star-delta starter

3) _____ is the main advantage of a star-delta starter.
a) High starting torque b) Reduced starting current
c) Simple construction d) Increased motor speed

4) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

5) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

6) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

7) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter
b) Auto transformer starter
c) Star-delta starter
d) Soft starter

8) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery
b) Electric motor
c) Inverter
d) Controller

9) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

10) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor
b) Induction motor
c) Synchronous motor
d) Permanent magnet motor

11) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

12) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

13) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

14) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

2) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

3) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

4) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter b) Auto transformer starter
c) Star-delta starter d) Soft starter

5) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

6) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

7) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor
b) Induction motor
c) Synchronous motor
d) Permanent magnet motor

8) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

9) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

10) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

11) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

12) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control
b) Vector control
c) Direct torque control
d) All of the above

13) Identify the following starter is NOT a motor starter.
a) Stator resistance starter
b) Permanent magnet starter
c) Auto transformer starter
d) Star-delta starter

14) _____ is the main advantage of a star-delta starter.
a) High starting torque
b) Reduced starting current
c) Simple construction
d) Increased motor speed

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

2) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

3) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control b) Vector control
c) Direct torque control d) All of the above

4) Identify the following starter is NOT a motor starter.
a) Stator resistance starter b) Permanent magnet starter
c) Auto transformer starter d) Star-delta starter

5) _____ is the main advantage of a star-delta starter.
a) High starting torque b) Reduced starting current
c) Simple construction d) Increased motor speed

6) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

7) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

8) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

9) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter b) Auto transformer starter
c) Star-delta starter d) Soft starter

10) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

11) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

12) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor b) Induction motor
c) Synchronous motor d) Permanent magnet motor

13) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

14) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

Seat No.	

Set | S

S.Y. (B.Tech.) (Electronics & Computer Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

SLR-QH-228

Seat No.	

Set P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

2) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

3) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor b) Induction motor
c) Synchronous motor d) Permanent magnet motor

4) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

5) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

6) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

7) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

8) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control
b) Vector control
c) Direct torque control
d) All of the above

9) Identify the following starter is NOT a motor starter.
a) Stator resistance starter
b) Permanent magnet starter
c) Auto transformer starter
d) Star-delta starter

10) _____ is the main advantage of a star-delta starter.
a) High starting torque
b) Reduced starting current
c) Simple construction
d) Increased motor speed

11) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current
b) Frequency
c) Voltage
d) Torque

12) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

13) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances
b) Drones and robotics
c) Electric vehicles
d) All of the above

14) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter
b) Auto transformer starter
c) Star-delta starter
d) Soft starter

Seat No.		Set	P

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control b) Vector control
c) Direct torque control d) All of the above

2) Identify the following starter is NOT a motor starter.
a) Stator resistance starter b) Permanent magnet starter
c) Auto transformer starter d) Star-delta starter

3) _____ is the main advantage of a star-delta starter.
a) High starting torque b) Reduced starting current
c) Simple construction d) Increased motor speed

4) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

5) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

6) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

7) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter
b) Auto transformer starter
c) Star-delta starter
d) Soft starter

8) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery
b) Electric motor
c) Inverter
d) Controller

9) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

10) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor
b) Induction motor
c) Synchronous motor
d) Permanent magnet motor

11) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

12) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

13) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

14) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set R

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

2) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

3) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

4) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter b) Auto transformer starter
c) Star-delta starter d) Soft starter

5) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

6) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

7) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor
b) Induction motor
c) Synchronous motor
d) Permanent magnet motor

8) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

9) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

10) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

11) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

12) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control
b) Vector control
c) Direct torque control
d) All of the above

13) Identify the following starter is NOT a motor starter.
a) Stator resistance starter
b) Permanent magnet starter
c) Auto transformer starter
d) Star-delta starter

14) _____ is the main advantage of a star-delta starter.
a) High starting torque
b) Reduced starting current
c) Simple construction
d) Increased motor speed

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

2) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

3) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control b) Vector control
c) Direct torque control d) All of the above

4) Identify the following starter is NOT a motor starter.
a) Stator resistance starter b) Permanent magnet starter
c) Auto transformer starter d) Star-delta starter

5) _____ is the main advantage of a star-delta starter.
a) High starting torque b) Reduced starting current
c) Simple construction d) Increased motor speed

6) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

7) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

8) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

9) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter b) Auto transformer starter
c) Star-delta starter d) Soft starter

10) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

11) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

12) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor b) Induction motor
c) Synchronous motor d) Permanent magnet motor

13) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

14) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electrical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

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Seat No.	

Set P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

2) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

3) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor b) Induction motor
c) Synchronous motor d) Permanent magnet motor

4) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

5) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

6) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

7) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

8) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control
b) Vector control
c) Direct torque control
d) All of the above

9) Identify the following starter is NOT a motor starter.
a) Stator resistance starter
b) Permanent magnet starter
c) Auto transformer starter
d) Star-delta starter

10) _____ is the main advantage of a star-delta starter.
a) High starting torque
b) Reduced starting current
c) Simple construction
d) Increased motor speed

11) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current
b) Frequency
c) Voltage
d) Torque

12) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

13) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances
b) Drones and robotics
c) Electric vehicles
d) All of the above

14) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter
b) Auto transformer starter
c) Star-delta starter
d) Soft starter

Seat No.	

Set | P

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
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3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control b) Vector control
c) Direct torque control d) All of the above

2) Identify the following starter is NOT a motor starter.
a) Stator resistance starter b) Permanent magnet starter
c) Auto transformer starter d) Star-delta starter

3) _____ is the main advantage of a star-delta starter.
a) High starting torque b) Reduced starting current
c) Simple construction d) Increased motor speed

4) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

5) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

6) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

7) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter
b) Auto transformer starter
c) Star-delta starter
d) Soft starter

8) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery
b) Electric motor
c) Inverter
d) Controller

9) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

10) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor
b) Induction motor
c) Synchronous motor
d) Permanent magnet motor

11) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

12) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

13) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

14) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

2) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

3) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

4) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter b) Auto transformer starter
c) Star-delta starter d) Soft starter

5) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

6) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

7) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor
b) Induction motor
c) Synchronous motor
d) Permanent magnet motor

8) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

9) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

10) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

11) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

12) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control
b) Vector control
c) Direct torque control
d) All of the above

13) Identify the following starter is NOT a motor starter.
a) Stator resistance starter
b) Permanent magnet starter
c) Auto transformer starter
d) Star-delta starter

14) _____ is the main advantage of a star-delta starter.
a) High starting torque
b) Reduced starting current
c) Simple construction
d) Increased motor speed

Seat No.	

Set **R**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

2) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

3) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control b) Vector control
c) Direct torque control d) All of the above

4) Identify the following starter is NOT a motor starter.
a) Stator resistance starter b) Permanent magnet starter
c) Auto transformer starter d) Star-delta starter

5) _____ is the main advantage of a star-delta starter.
a) High starting torque b) Reduced starting current
c) Simple construction d) Increased motor speed

6) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

7) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

8) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

9) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter b) Auto transformer starter
c) Star-delta starter d) Soft starter

10) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

11) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

12) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor b) Induction motor
c) Synchronous motor d) Permanent magnet motor

13) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

14) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

Seat No.		Set	S

S.Y. (B.Tech.) (Electronics and Telecommunication Engineering) (Semester - II) (New) (CBCS) Examination: March/April – 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

SLR-QH-228

Seat No.	

Set P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

2) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

3) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor b) Induction motor
c) Synchronous motor d) Permanent magnet motor

4) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

5) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

6) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

7) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

8) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control
b) Vector control
c) Direct torque control
d) All of the above

9) Identify the following starter is NOT a motor starter.
a) Stator resistance starter
b) Permanent magnet starter
c) Auto transformer starter
d) Star-delta starter

10) _____ is the main advantage of a star-delta starter.
a) High starting torque
b) Reduced starting current
c) Simple construction
d) Increased motor speed

11) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current
b) Frequency
c) Voltage
d) Torque

12) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

13) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances
b) Drones and robotics
c) Electric vehicles
d) All of the above

14) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter
b) Auto transformer starter
c) Star-delta starter
d) Soft starter

Seat No.		Set	P

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

SLR-QH-228

Seat No.	

Set Q

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. 14

1) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control b) Vector control
c) Direct torque control d) All of the above

2) Identify the following starter is NOT a motor starter.
a) Stator resistance starter b) Permanent magnet starter
c) Auto transformer starter d) Star-delta starter

3) _____ is the main advantage of a star-delta starter.
a) High starting torque b) Reduced starting current
c) Simple construction d) Increased motor speed

4) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

5) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

6) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

7) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter
b) Auto transformer starter
c) Star-delta starter
d) Soft starter

8) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery
b) Electric motor
c) Inverter
d) Controller

9) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

10) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor
b) Induction motor
c) Synchronous motor
d) Permanent magnet motor

11) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

12) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

13) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

14) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

Seat No.	

Set **Q**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set R

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

2) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

3) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

4) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter b) Auto transformer starter
c) Star-delta starter d) Soft starter

5) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

6) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

7) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor
b) Induction motor
c) Synchronous motor
d) Permanent magnet motor

8) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

9) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

10) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

11) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

12) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control
b) Vector control
c) Direct torque control
d) All of the above

13) Identify the following starter is NOT a motor starter.
a) Stator resistance starter
b) Permanent magnet starter
c) Auto transformer starter
d) Star-delta starter

14) _____ is the main advantage of a star-delta starter.
a) High starting torque
b) Reduced starting current
c) Simple construction
d) Increased motor speed

Seat No.	

Set **R**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.

Seat No.	

Set **S**

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 70
Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. No. 1 is compulsory. It should be solved in the first 30 minutes in Answer Book Page no 03 (Starting page of the Answer Book). Each question carries one mark.
2) Don't forget to Mention question paper set (P/Q/R/S) on top of page.
3) Figures to the right indicates full marks.
4) Assume suitable data if necessary and mention it clearly.

MCQ/Objective Type Questions

Duration: 30 Minutes Marks:14

Q.1 Choose the correct Answer. **14**

1) Identify the primary advantage of three-phase induction motors.
a) High efficiency and reliability
b) Low starting torque
c) Complex construction
d) High maintenance requirements

2) _____ is the role of the stator in a three-phase induction motor.
a) To rotate and produce torque
b) To generate a rotating magnetic field
c) To store electrical energy
d) To regulate voltage

3) _____ control strategy is commonly used in VFDs for induction motors.
a) Scalar control b) Vector control
c) Direct torque control d) All of the above

4) Identify the following starter is NOT a motor starter.
a) Stator resistance starter b) Permanent magnet starter
c) Auto transformer starter d) Star-delta starter

5) _____ is the main advantage of a star-delta starter.
a) High starting torque b) Reduced starting current
c) Simple construction d) Increased motor speed

6) _____ parameter is controlled by a soft starter to ensure smooth motor startup.
a) Current b) Frequency
c) Voltage d) Torque

7) _____ is the key characteristic of a Switched Reluctance Motor (SRM).
a) It uses permanent magnets in the rotor.
b) It operates based on variable reluctance.
c) It requires brushes for operation.
d) It has a squirrel cage rotor.

8) Identify the following application, BLDC motors are commonly used ____.
a) Small household appliances b) Drones and robotics
c) Electric vehicles d) All of the above

9) _____ type of starter provides the smoothest acceleration during motor startup.
a) Stator resistance starter b) Auto transformer starter
c) Star-delta starter d) Soft starter

10) _____ component is essential for converting electrical energy into mechanical energy in EVs.
a) Battery b) Electric motor
c) Inverter d) Controller

11) Identify the primary role of electric motors in EVs.
a) To store electrical energy
b) To generate electricity
c) To provide mechanical power for propulsion
d) To regulate battery voltage

12) _____ type of motor is most suitable for high-performance EVs due to its high power density.
a) DC motor b) Induction motor
c) Synchronous motor d) Permanent magnet motor

13) Identify the type of DC motor is commonly used for applications requiring high starting torque.
a) Series DC motor
b) Shunt DC motor
c) Compound DC motor
d) Permanent magnet DC motor

14) _____ is the role of brushes in a brushed DC motor.
a) To generate a magnetic field
b) To transfer current to the rotating armature
c) To regulate voltage
d) To reduce heat generation

Seat No.		Set	S

S.Y. (B.Tech.) (Mechanical Engineering) (Semester - II) (New) (CBCS)
Examination: March/April - 2026
Electrical Vehicle Motors (EEMDM-02B)

Day & Date: Thursday, 30-04-2026 Max. Marks: 56
Time: 03:00 PM To 06:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.

SECTION – I

Q.2 Solve any four. **16**

a) Discuss the operating principles of electric motors with emphasis on torque production.

b) Describe the role of electric motors in electric propulsion systems of EVs.

c) Illustrate the role of electric propulsion systems in EVs.

d) Describe the construction of a series-wound DC motor with a neat diagram.

e) Explain the major components of a brushed DC motor with a neat diagram.

f) Draw and explain any one method for Speed Control of DC Series Motor.

Q.3 Solve any two. **12**

a) Compare and contrast DC, induction, synchronous, and permanent magnet motors.

b) Draw a neat diagram and explain any two types of DC motors with advantages, disadvantages and applications.

c) Discuss the key parameters that influence the choice between a DC motor and an AC induction motor for EV applications.

SECTION – II

Q.4 Solve any four. **16**

a) Compare different types of motor starters used in EVs.

b) Explain rotor resistance Starter with a neat diagram.

c) Compare the advantages and disadvantages of induction motors in EVs.

d) Explain star delta Starter with a neat diagram.

e) Explain the working principle of three-phase induction motors.

f) Discuss the design considerations for induction motors in electric vehicles.

Q.5 Solve any two. **12**

a) Draw and explain the operation of Variable frequency drives (VFDs) with a neat diagram.

b) Explain the construction and working of Permanent Magnet Synchronous Motor (PMSM).

c) Explain construction and operation of BLDC motor with a neat diagram.