

Max. Marks: 80

**Instructions:** 1) Q. no 1 & 2 are compulsory.  
2) Attempt any three questions from Q.no 3 to Q.No.7.  
3) Figure to right indicate full marks

**Q.1 A) Choose the correct alternative and rewrite the sentence. 10**

- Page 1 of 3

8) In absence of Hydrogen bonding the IR absorption band becomes \_\_\_\_\_.

- |          |          |
|----------|----------|
| a) Sharp | b) Broad |
| c) Weak  | d) Blur  |

9) Which of the following compound has single set of protons \_\_\_\_\_.

- |              |              |
|--------------|--------------|
| a) Propane   | b) n- Butane |
| c) n-Pentane | d) Ethane    |

10) Hydrocarbons shows \_\_\_\_\_ type of transitions.

- |                        |                  |
|------------------------|------------------|
| a) $\sigma - \sigma^*$ | b) $\pi - \pi^*$ |
| c) $n - \sigma^*$      | d) $n - \pi^*$   |

**B) Fill in the blanks.**

**06**

- Under constant experimental conditions in chromatographic techniques, Rf values are \_\_\_\_\_.
- In Polarography one electrode is made up of mercury and second electrode is made up of \_\_\_\_\_.
- The distance between sub peaks of the multiplet is known as \_\_\_\_\_.
- Propane shows how many NMR signals?
- Which gas is used in polarography for blowing purpose?
- How many fundamental modes of vibrations are observed in IR spectra of ammonia molecule?

**Q.2 Answer the following.**

**16**

- Write Classification of Chromatography.
- Write note on analysis Nox.
- Write the basic principle of fluorescence spectroscopy.
- Write a note on activity ratio.

**Q.3 Answer the following.**

**16**

- Explain the terms chromophore, auxochrome, hypsochromic shift and bathochromic shift.
- Write principle, methodology and advantages of TLC.

**Q.4 Answer the following.**

**16**

- Write note on various regions of IR spectroscopy.
- Describe analysis of  $\text{NH}_3$  and  $\text{H}_2\text{S}$

**Q.5 Answer the following.**

**16**

- Explain neutron activation analysis and its applications.
- What is chemical shift? How is it measured?

**Q.6 Answer the following.****16**

- a) Describe in brief instrumentation of polarography.
- b) How many NMR signals are possible for following compounds.
  - i)  $\text{H}_3\text{C}-\text{CO}-\text{CH}_3$
  - ii)  $\text{H}_3\text{C}-\text{CHO}$
  - iii)  $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_3$
  - iv)  $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{CH}_3$

**Q.7 Answer the following.****16**

- a) Explain various types of transitions in IR spectroscopy.
- b) Write basic principle of mass spectroscopy and draw schematic diagram of mass spectrometer.

Max. Marks: 80

**Q.1 A) Choose correct alternative.**

a) Low Earth Orbit                      b) Medium Earth Orbit  
c) Geostationary Orbit                d) Elliptical Orbit

- 8) The primary function of a satellite transponder is to: \_\_\_\_\_.  
 a) Transmit Signals  
 b) Amplify and retransmit signals  
 c) Convert analog signals into digital  
 d) None of the above
- 9) Which of the following is the simplest modulation technique for analog communication?  
 a) AM  
 b) FM  
 c) PM  
 d) ASK
- 10) The primary function of the GSM system is: \_\_\_\_\_.  
 a) Voice communication  
 b) Text messaging  
 c) Internet data transfer  
 d) All of the above

**B) Fill in the blanks.****06**

- 1) \_\_\_\_\_ is a technique used in digital modulation where the phase of the carrier signal is shifted to represent data.
- 2) The process of converting an analog signal into a digital form is called \_\_\_\_\_.
- 3) TDM is a method used for \_\_\_\_\_.
- 4) \_\_\_\_\_ is a modulation technique where the amplitude of the carrier signal is varied.
- 5) Bluetooth operates at the \_\_\_\_\_ frequency range.
- 6) The base station in cellular communication manages a group of \_\_\_\_\_.

**Q.2 Answer the following questions.****16**

- a) Explain the need for modulation in communication systems.
- b) Discuss the basic block diagram of an AM transmitter and receiver with qualitative analysis.
- c) What is the Sampling Theorem? Explain with an example.
- d) Define channel capacity. How does it relate to the bandwidth of a communication channel?

**Q.3 Answer the following questions.****16**

- a) Explain Frequency Division Multiplexing (FDM) and its applications.
- b) Describe the working of a Phase Modulation (PM) technique with a block diagram.

**Q.4 Answer the following questions.****16**

- a) Explain Digital Modulation Technique: ASK, PSK with their applications.
- b) Discuss the basic principles of cellular communication systems, including GSM.

**Q.5 Answer the following questions.****16**

- a) Explain the basic principles of FDMA, TDMA multiplexing methods.
- b) Describe the architecture and components of a satellite communication system.

- Q.6 Answer the following questions. 16**
- a) Explain the difference between analog and digital communication techniques.
  - b) Discuss the features of 4G mobile communication and its advancements over 3G.
- Q.7 Answer the following questions. 16**
- a) Explain the working of FM transmitter circuit with block diagram.
  - b) Explain the working of AM receiver circuit with block diagram.

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**M.Sc. (Semester - III) (CBCS) Examination: March/April - 2025**  
**Biostatistics**  
**Applied Statistics (MSC16308)**

Day & Date: Sunday, 01-June-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

- Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks.  
 4) Use of calculator is allowed.

**Q.1 A) Choose the correct alternative. 10**

- 1) The Crude Birth Rate (CBR) is calculated as \_\_\_\_\_.  
 a) (Number of births / Total population)  $\times 1000$   
 b) (Number of marriages / Total population)  $\times 1000$   
 c) (Number of deaths / Total population)  $\times 1000$   
 d) (Number of child birth / Total number of birth)  $\times 1000$
- 2) The value of Net Reproduction Rate (NRR)  $< 1$  is indicative of \_\_\_\_\_.  
 a) Increase in population      b) Decrease in population  
 c) Constancy in population      d) All of the above
- 3) Changes due to general tendency of a phenomenon are called \_\_\_\_\_.  
 a) Secular trend      b) Seasonal variation  
 c) Irregular variation      d) Cyclic variation
- 4) Most preferred type of the average for index numbers is \_\_\_\_\_.  
 a) Arithmetic mean      b) Geometric mean  
 c) Harmonic mean      d) None of the above
- 5) Fisher's ideal index number is of \_\_\_\_\_ Laspeyres's index number and Paasche's index number.  
 a) Product      b) Sum  
 c) Quotient      d) Square root of the product
- 6) In simple random sampling with replacement, the same sampling unit may be included in the sample \_\_\_\_\_.  
 a) Only once      b) Only twice  
 c) More than once      d) Hundred times
- 7) In simple random sampling, the process of selecting the sample is \_\_\_\_\_.  
 a) based on convenience  
 b) based on non random  
 c) complete random and unbiased  
 d) based on subjective judgment

- 8) The faults due to assignable causes \_\_\_\_\_.  
 a) can be removed  
 b) cannot removed  
 c) can sometimes be removed  
 d) impossible to remove
- 9) In the context of simple random sampling, a sampling frame refers to \_\_\_\_\_.  
 a) A tool used for dividing the population into strata  
 b) A list of all individuals or units in the population from which the sample will be drawn.  
 c) The method used to divide the population into groups.  
 d) The procedure to calculate the sample size.
- 10) C chart is appropriate when \_\_\_\_\_.  
 a) defects can occur in varying quantities per unit  
 b) each unit can have only one defect  
 c) there are no defects in the process  
 d) variable data is collected

**B) Fill in the blanks.****06**

- 1) The component of a time series attached to long-term variation is termed as \_\_\_\_\_.  
 2) Fisher index number lies between \_\_\_\_\_.  
 3) The base year is usually assigned an index value of \_\_\_\_\_.  
 4) Increase in prices of air conditioners in summer is an example of \_\_\_\_\_ variation of time series.  
 5) Upper control limit for np chart is \_\_\_\_\_.  
 6) Laspeyres's index formula uses weights of the \_\_\_\_\_.

**Q.2 Answer the following questions.****16**

- a) Explain factor reversal test for index numbers.  
 b) Describe simple random sampling with replacement (SRSWR) with example.  
 c) Write a note on fraction nonconforming (p) charts.  
 d) Explain non-sampling errors.

**Q.3 Answer the following questions.****16**

- a) What is control chart? Explain how it helps to control the quality of manufactured product.  
 b) Construct the mean and range chart for the following data. Check whether process is in control or not.

Sample No.	1	2	3	4	5	6	7	8	9	10
Mean ( $\bar{X}$ )	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2
Range (R)	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0

(Given:  $n = 5$ ,  $A_2 = 0.58$ ,  $D_3 = 0$ ,  $D_4 = 2.11$ )



**Q.4 Answer the following question. 16**

- a) What is time series? Describe in brief its components. Give example of each component.
- b) Calculate 5 yearly moving average of students in a commerce college as shown by the following figures

Year	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
No. of students	332	317	357	392	402	405	410	427	405	431

**Q.5 Answer the following question. 16**

- a) What is index numbers? Explain
- Laspeyres's quantity index number
  - Paasche's quantity index number
  - Fisher quantity index number
- b) Construct price index number of process from the following data using
- Laspeyres's
  - Paasche's and
  - Fisher's methods

Commodity	1960		1970	
	Price	Quantity	Price	Quantity
A	6	50	10	56
B	2	100	2	120
C	4	60	6	6
D	10	30	12	12
E	8	40	12	12

**Q.6 Answer the following question. 16**

- a) Explain, in detail, stratified random sampling. Discuss the allocation problem for this method.
- b) What is cost of living index number? Explain its uses. Describe the procedure followed in its construction.

**Q.7 Answer the following. 16**

- a) Explain the terms:
- Crude Death Rate
  - Specific Death Rate
  - Standardized Death Rate
  - Total Fertility Rate

- b) The number of births occurring in a country in a particular year is shown here classified according to age of mother, together with the female population in each age group of the reproductive period.

Age-group	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Female population	84,796	70,018	72,660	75,924	75,109	71,625	66,660
No of births to mother in the age-group	2,349	14,547	16,746	10,229	5,257	1,432	93

The total population of the city during the year was 22,85,800. With the above data determine

- i) The crude birth rate
- ii) The general fertility rate
- iii) Age specific fertility rate
- iv) Total fertility rate

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**M.Sc. (Sem - III) (CBCS) Examination: March/April – 2025**  
**Biotechnology**  
**Advanced Pharmaceuticals (MSC33311)**

Day & Date: Sunday, 01-06-2025  
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

**Instructions:**

- 1) Q. no 1 & 2 are compulsory.
- 2) Attempt any three questions from Q.no 3 to Q.No.7.
- 3) Figure to right indicate full marks.
- 4) Draw neat diagrams and give equations whenever necessary.

**Q.1 A) Choose correct alternatives. 10**

- 1) The concentration at which micelle formation occurs is termed \_\_\_\_\_.
  - a) Kraft point
  - b) isoelectric point
  - c) CMC
  - d) Cloud point
- 2) When surfactants are added to the air/liquid (water) interface, they accumulate at the interface, a process that is generally described as \_\_\_\_\_.
  - a) Absorption
  - b) Adsorption
  - c) Capillary action
  - d) repulsion
- 3) \_\_\_\_\_ provides the best definition of pharmaceuticals.
  - a) It is the study of dosage form design, including associated manufacturing techniques
  - b) It is the study of the effect that drugs have on the body
  - c) It is the study of the effect that the body has on drugs
  - d) It is the study of how drugs can be chemically synthesised
- 4) SLS has an HLB of \_\_\_\_\_.
  - a) 10
  - b) 14
  - c) 40
  - d) 18
- 5) Minimum temp at which surfactant forms micelle is called as \_\_\_\_\_.
  - a) Cloud point
  - b) Kraft point
  - c) Turbidity point
  - d) Critical point
- 6) Pycnometer is used to determine \_\_\_\_\_.
  - a) Density
  - b) Refractive index
  - c) Angle of repose
  - d) Porosity
- 7) Coulter counter is used to determine \_\_\_\_\_.
  - a) Refractive Index
  - b) Surface Area
  - c) Particle Size
  - d) Partition Coefficient

- 8) \_\_\_\_\_ is the length that bisects the particle image.  
 a) Volume diameter                      b) Surface diameter  
 c) Martin diameter                      d) Ferets diameter
- 9) 1  $\mu\text{m}$  (micrometer) is equal to \_\_\_\_\_ m.  
 a)  $10^{-6}$                                       b)  $10^{-5}$   
 c)  $10^{-8}$                                       d)  $10^{-2}$
- 10) Noys & Whitneys equation is used to study \_\_\_\_\_.  
 a) Diffusion                                      b) Solubility  
 c) Osmosis                                      d) Dissolution

**B) Write true or False.****06**

- 1) HLB range for wetting agents is 14 to 16.
- 2) Carr's index is used to predict Flow property.
- 3) Polymers are used in pharmaceuticals for controlled drug release.
- 4) To predict shelf life, accelerated studies are not used.
- 5) Rheology studies the flowability of drugs.
- 6) Volume diameter is the diameter of the sphere having the same surface area as the particle in question.

**Q.2 Answer the following.****16**

- a) Note on accelerated stability studies.
- b) An account on biological implications of surfactants.
- c) Define and write about co-solvents.
- d) Define polymers and explain its applications.

**Q.3 Answer the following.****16**

- a) Explain in detail about cyclodextrin inclusion complexes with a neat diagram.
- b) Describe in detail about the characterization of polymers.

**Q.4 Answer the following.****16**

- a) Define micellization and give a detailed account on micelle structure, size and shape.
- b) Write a detailed note on factors responsible for destabilization of pharmaceutical products.

**Q.5 Answer the following.****16**

- a) Describe the particle characterization by size of individual particle.
- b) Define surfactants and explain its phase behaviour in ternary systems along with its neat diagram.

**Q.6 Answer the following.****16**

- a) Define dissolution and explain theories of dissolution along with diagrams.
- b) Describe in detail about thermodynamics of polymer solutions.

**Q.7 Answer the following.**

**16**

- a)** Explain in detail about the design of any two of the dissolution test apparatus along with diagrams.
- b)** Explain the characterization and applications of solid dispersions.

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**M.Sc. (Sem - III) (CBCS) Examination: March/April – 2025**

**BOTANY**

**Plant growth and Development (MSC24314)**

Day & Date: Sunday, 01-06-2025

Max. Marks: 80

Time: 11:00 AM To 02:00 PM

- Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks.  
 4) Draw neat labelled diagrams whenever necessary.

**Q.1 A) Choose correct alternative from the following. 10**

- 1) \_\_\_\_\_ are the photosynthetic compounds.
  - a) Phytochrome
  - b) Cytochrome
  - c) Both a & b
  - d) Bundle sheath cell
- 2) Pfr absorbs the light in the range of \_\_\_\_\_.
  - a) 550 nm
  - b) 730 nm
  - c) 640 nm
  - d) 770 nm
- 3) In ripening fruits wall of fruits become \_\_\_\_\_.
  - a) Hard
  - b) Soft
  - c) No change
  - d) Become rough
- 4) For storage of fruits \_\_\_\_\_ conditions maintained.
  - a) Drying
  - b) Sorting
  - c) Cleaning
  - d) All
- 5) Brassinosteroids are obtained from \_\_\_\_\_.
  - a) Carica papaya
  - b) Phyllanthus emblica
  - c) Brassica napas
  - d) Acrus zapota
- 6) \_\_\_\_\_ is the main function of ABA.
  - a) Shoot elongation
  - b) Root elongation
  - c) Internode elongation
  - d) Senescence
- 7) \_\_\_\_\_ function of auxin.
  - a) Root elongation
  - b) Shoot elongation
  - c) Flowering
  - d) Root hair formation
- 8) \_\_\_\_\_ change in chlorophyll during senescence.
  - a) Chlorosis
  - b) Necrosis
  - c) Flowering
  - d) None

- 9) Plant growth means \_\_\_\_\_.  
 a) Cell division                      b) Plant elongation  
 c) Respiration                        d) Both a & b

- 10) \_\_\_\_\_ means senescence.  
 a) Retardation towards death  
 b) Retardation towards growth  
 c) Chlorosis  
 d) Necrosis

**B) Fill in the blanks.**

**06**

- 1) \_\_\_\_\_ acts as precursor for synthesis of ethylene.
- 2) Presence of \_\_\_\_\_ plant part is important for flowering.
- 3) \_\_\_\_\_ is the first step during vegetable storage.
- 4) \_\_\_\_\_ is a type of growth retardant.
- 5) \_\_\_\_\_ plant is model of plant development.
- 6) In leaves \_\_\_\_\_ chlorophyll pigments increases during senescence.

**Q.2 Answer the following.**

**16**

- a) What are phytochrome & cytochromes
- b) Give physiological role of ABA
- c) What are morphactins
- d) What are the properties of plant growth retardants

**Q.3 Answer the following.**

- a) Describe mutants in *Arabidopsis thaliana*.
- b) Describe petal senescence.

**08**

**08**

**Q.4 Answer the following.**

- a) Describe mechanism of action of triacontanol.
- b) Describe the role of CCC as growth retardant.

**08**

**08**

**Q.5 Answer the following.**

- a) Write a note on physiology of seed development.
- b) Write a note on post harvest technology for fruits.

**08**

**08**

**Q.6 Answer the following.**

- a) Give the role of salicylic acid.
- b) Describe mechanism of action of Phytochrome & cytochrome.

**08**

**08**

**Q.7 Answer the following.**

- a) Describe signalling mechanism of auxin along with its physiological importance.
- b) Describe metabolism of stored seeds.

**08**

**08**

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**M.Sc. (Sem - III) (CBCS) Examination: March/April – 2025**

**BOTANY**

**Herbal and Drug Technology (MSC24315)**

Day & Date: Sunday, 01-06-2025

Max. Marks: 80

Time: 11:00 AM To 02:00 PM

- Instructions:** 1) Q. Nos. 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks.

**Q.1 A) Choose correct alternative.**

**10**

- 1) Withaferin-A and withanone are the major biological active constituents of \_\_\_\_\_.  
 a) Ashwaghandha                      b) Tulsi  
 c) Gulvel                                  d) Clove
- 2) Siddha system of medicine originate from \_\_\_\_\_.  
 a) Bengali culture                      b) Punjabi culture  
 c) Tamil culture                        d) Gujrati culture
- 3) Homeopathy of medicines is based on the principles of \_\_\_\_\_.  
 a) Law of similar                        b) minimum dose  
 c) totality of symptoms                d) all of these
- 4) Advantages of bioinsecticides are \_\_\_\_\_.  
 a) natural  
 b) less toxic  
 c) effective in small concentrations  
 d) all of these
- 5) HPLC is an abbreviation for \_\_\_\_\_.  
 a) high performance liquid chromatography  
 b) high profit liquid chromatography  
 c) higher performance low chromatography  
 d) higher profit low chromatography
- 6) Which of the following is not the class of secondary metabolites \_\_\_\_\_.  
 a) Terpenes                                b) Phenolics  
 c) alkaloids                                d) amino acids
- 7) Chromatography is a physical method that is used to separate and analyse \_\_\_\_\_.  
 a) simple mixture                        b) complex mixture  
 c) viscous mixture                        d) metal



- 8) In chromatography, the stationary phase can be \_\_\_\_\_ supported on a solid.  
 a) solid or liquid                      b) liquid or gas  
 c) solid only                              d) liquid only
- 9) The word herb is derived from \_\_\_\_\_.  
 a) herbarium                              b) herba  
 c) herbaum                                d) harba
- 10) Rich source of vitamin 'C' is \_\_\_\_\_.  
 a) *Terminalia belerica*                  b) *Syzigium aromaticum*  
 c) *Ocimum sanctum*                    d) *Embllica officinale*

**B) Fill in the blanks.****06**

- 1) The plant part of *zingiber officinale* used in the herbal medicine is \_\_\_\_\_.
- 2) \_\_\_\_\_ is used as a carrier gas in gas chromatography.
- 3) Beta-carotene, a plant pigment falls under \_\_\_\_\_ of classes of terpenes.
- 4) \_\_\_\_\_ is a biocontrol agent against plant diseases.
- 5) Powder made calcification is also known as \_\_\_\_\_.
- 6) A griding method is used to make \_\_\_\_\_.

**Q.2 Answer the following.****16**

- a) Give some herbal medicinal products.
- b) What are the chemical constituent and uses of *Adhatoda zeylanica*.
- c) Define crushing. Describe the different types of crushing.
- d) Explain in detail about secondary metabolites

**Q.3 Answer the following.****16**

- a) Define chromatography. Give an account on TLC. (Thin layer chromatography)
- b) Add a detailed note on pest and pest management.

**Q.4 Answer the following.****16**

- a) Give the method of preparation and standardization of
  - i) Arishtas
  - ii) Gutikas
- b) Explain in short about the phytochemical screening test for steroids and flavonoids.

**Q.5 Answer the following.****16**

- a) What is filtration. Add a note on types of filters.
- b) Describe the morphology, useful parts, chemical constituents and uses of *Zingiber officinale*.

**Q.6 Answer the following.** **16**

- a) What are the good agricultural practices in cultivation of medicinal plants.
- b) Explain in brief the solvent extraction and distillation techniques for chromatography.

**Q.7 Answer the following.** **16**

- a) What is solid handling. Describe in detail about electrostatic and magnetic stirrer.
- b) Write basic principles of ayurvedic and homeopathy system of medicines.

**M.Sc. (Semester - III) (CBCS) Examination: March/April - 2025**  
**Organic Chemistry**  
**Applied Organic Chemistry (MSC07310)**

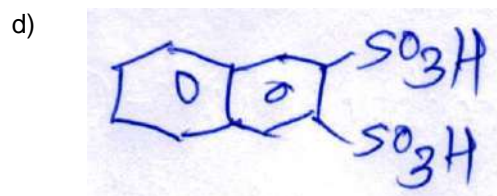
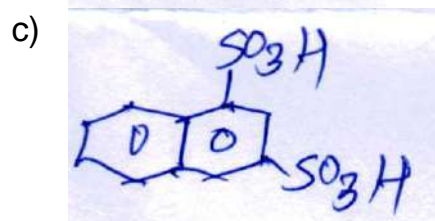
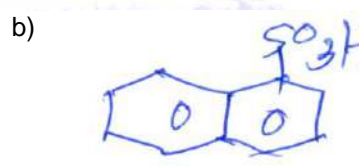
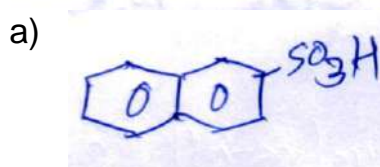
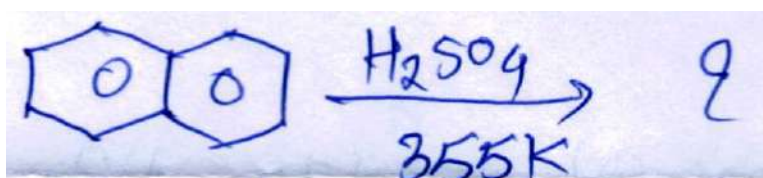
Max. Marks: 80

**Instructions:** 1) Q. no 1 & 2 are compulsory.  
2) Attempt any three questions from Q.no 3 to Q.No.7.  
3) Figure to right indicate full marks

## 10

- According to Green Chemistry, the chemical involved in the production must be \_\_\_\_\_.  
a) Non-Toxic  
b) Toxic  
c) Highly toxic  
d) Produces the toxic by product
- Which of the following is not a principle of Green Chemistry?  
a) Green solvents and auxiliaries  
b) Use of renewable feedstock  
c) Hazardous chemical synthesis  
d) Design for energy efficiency
- Which class of carbohydrates is considered as non-sugar?  
a) Monosaccharides  
b) Disaccharides  
c) Polysaccharides  
d) Oligosaccharides
- Which among the following is not a Disaccharides?  
a) Lactose  
b) Maltose  
c) Sucrose  
d) Dextrose
- Glucose is represented by which of the following formulae?  
a)  $C_6H_{14}O_8$   
b)  $C_6H_{12}O_6$   
c)  $C_6H_6O_6$   
d)  $C_6H_{10}O_6$
- Which of the following interactions is not typically considered an intermolecular force in supramolecular chemistry?  
a) Hydrogen bonding  
b) Vander Waals interactions  
c) Covalent bonding  
d)  $\pi - \pi$  interactions
- Which of the following will give  $\pi - \pi$  interactions?  
a) Complex of [15]- crown-5 with  $Na^+$   
b) Interaction between carboxylic acid  
c)  $K^+$  in benzene  
d) Benzene and Graphite

- 8)**  $\gamma$ -cyclodextrin has \_\_\_\_\_ glucose units in its structure.
- a) 8                                      b) 7  
c) 6                                      d) 5
- 9)** Chemical formula of naphthalene is \_\_\_\_\_.  
a) C<sub>6</sub>H<sub>6</sub>                                  b) C<sub>8</sub>H<sub>8</sub>  
c) C<sub>10</sub>H<sub>8</sub>                                d) C<sub>12</sub>H<sub>10</sub>
- 10)** The major product of the following reaction is \_\_\_\_\_



### B) True or false

06

- 1) Cyclodextrin has tertiary alcohol in its structure.
- 2) Lactose is an example of oligosaccharides.
- 3) Albert Einstein is father of green chemistry.
- 4) Haworth synthesis is used for synthesis of phenanthrene.
- 5) Dipole-dipole interaction is a type of non-covalent interactions.
- 6) Se is used for dehydrogenation of hydroaromatic compounds.

**Q.2 Answer the following.**

16

- Write a note on complementarity.
- Discuss the term Ionic liquids.
- What is mutarotation? Explain with suitable example.
- Discuss the synthesis of Pyrene.

**Q.3 Answer the following.**

16

- a) Explain Haworth synthesis for synthesis of phenanthrene.
- b) Discuss electrophilic substitution reaction of naphthalene with mechanism and suitable examples.

**Q.4 Answer the following.**

16

- a)** What are carbohydrates? Discuss its classification.
- b)** Explain Kiliani-Fischer synthesis

- Q.5 Answer the following. 16**
- a) Discuss the different types of non-covalent interactions.
  - b) What cryptands? Give its synthesis and applications.
- Q.6 Answer the following. 16**
- a) Discuss the basic principles of Green Chemistry.
  - b) Explain the terms:
    - i) Solvent free synthesis
    - ii) Ultrasound assisted synthesis
- Q.7 Answer the following. 16**
- a) Describe the terms:
    - i) Pre-organization
    - ii) Co-operativity and chelate effect
  - b) Explain in detail:
    - i) Anomeric effect
    - ii) Dehydrogenation of hydroaromatic compounds using Se and Pd-C.

Seat No.	
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Set **P**

**M.Sc. (Semester - III) (CBCS) Examination: March/April - 2025**  
**Industrial Chemistry**  
**Advanced Topics in Industrial Chemistry-I (MSC06309)**

Day & Date: Sunday, 01-June-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

- Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks.

**Q.1 A) Multiple Choice Questions.****10**

- 1) Which of the following contains highest percentage of volatile matter?
 

a) Peat	b) Lignite
c) Bituminous coal	d) Anthracite
- 2) What is the significance of calorific value?
 

a) Helps in deciding which fuel is goods
b) Helps in locating fuel
c) Helps in deciding ignition temperature
d) Helps in deciding fire point
- 3) Which calorimeter is used to find calorific values of solid and liquid fuels?
 

a) Boy's calorimeter	b) Bomb calorimeter
c) Junker's calorimeter	d) Calvet-type calorimeter
- 4) Orsat apparatus is used to measure \_\_\_\_\_.
 

a) Viscosity	b) Gas analysis
c) Density	d) Temperature
- 5) Which of the following does not come under the category of 'secondary nutrient' for plant growth?
 

a) Calcium	b) Sulphur
c) Oxygen	d) Phosphorus
- 6) If there is lack of nitrogen in soil, plants turn \_\_\_\_\_.
 

a) Red	b) Yellow
c) Blue	d) To be underdeveloped

- 7) Which of the following statements is true?
- Drugs and drug targets generally have similar molecular weights
  - Drugs are generally smaller than drug targets.
  - Drugs are generally larger than drug targets.
  - There is no general rule regarding the relative size of drugs and their targets
- 8) What is meant by a binding site?
- The area of a macromolecular target that is occupied by a drug when it binds.
  - The portion of the drug to which a drug target binds.
  - The functional groups used by a drug in binding to a drug target.
  - The bonds involved in binding a drug to its target.
- 9) Which of the following statements is not true about receptors?
- Most receptors are proteins situated in the cell membrane
  - Receptors contain a hollow or cleft on their surface which is known as a binding site.
  - Receptors bind chemical messengers such as neurotransmitters or hormones.
  - Receptors catalyse reactions on chemical messengers.
- 10) Tablets are often coated: \_\_\_\_.
- To protect the drug from the external environment
  - To mask bitter tastes
  - To increase friability
  - To make swallowing easier

**B) Write true/false.****06**

- Drug release from reservoir systems normally follow zero-order kinetics.
  - True
  - False
- Semipermeable membrane that allows solvent particles as well as solute particles, to pass through it.
  - True
  - False
- In green synthetic methods, the high-quality product with no Contamination is produced.
  - True
  - False
- The green synthesis methods should have High harmful by products.
  - True
  - False
- Excessive use of macronutrients to crops leads to the deficiency of Semi nutrients.
  - True
  - False
- Normality is the expression of the concentration of a solution in terms of moles per litre.
  - True
  - False

- Q.2 Answer the following questions. 16**
- a) Define Gross and Net Calorific value.
  - b) Give the synthesis of Alprazolam.
  - c) What are the primary raw materials required for potassium and phosphorus fertilizer
  - d) What is meant by prodrug?
- Q.3 Answer the following questions. 16**
- a) Explain in detail the ultimate analysis of coal.
  - b) Describe the receptors and explain the G-protein-coupled receptors along with its diagram.
- Q.4 Answer the following. 16**
- a) Describe the liquid oral dosage forms syrups in short.
  - b) Describe in details the working and construction of Bomb calorimeter.
- Q.5 Answer the following. 16**
- a) Describe the Kjeldahl's method of the determination of total nitrogen in fertilizer sample.
  - b) Explain with suitable example Schnoiger's Oxygen flask method in analysis of drugs
- Q.6 Answer the following. 16**
- a) Explain in detail the determination of moisture content in pharmaceutical drug using K.F titrator.
  - b) Explain in detail what is drug, its need and the pharmacokinetics (ADME) of drug.
- Q.7 Answer the following. 16**
- a) Explain in detail the use of Microwave in organic synthesis with suitable examples.
  - b) Describe the synthesis of Salbutamol.



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Set **P**

**M.Sc. (Semester - III) (CBCS) Examination: March/April - 2025**  
**Polymer Chemistry**  
**Spectral and Instrumental Analysis of Polymers (MSC05312)**

Day & Date: Sunday, 01-June-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

- Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks

**Q.1 A) Choose the correct alternative.****10**

- 1) \_\_\_\_\_ can be identified by using UV- Visible Spectroscopy for polymers.
  - a) Residual Monomer
  - b) Inhibitors
  - c) Antioxidants
  - d) All of the above
- 2) The thermal analysis of polymer can be done by \_\_\_\_\_ technique.
  - a) XRD
  - b) AFM
  - c) POM
  - d) TGA
- 3) In Raman spectroscopy the line with same frequency as that of original frequency is called as \_\_\_\_\_ line.
  - a) Stoke
  - b) Rayleigh
  - c) Antistoke
  - d) Parallel
- 4) In SEM technique \_\_\_\_\_ is/are used as a source of illumination.
  - a) Light
  - b) X-rays
  - c) Electrons
  - d) Infra-red
- 5) The ATR crystal is made up of \_\_\_\_\_.
  - a) Zinc Selenide
  - b) Diamond
  - c) Germanium
  - d) All of these
- 6) In NMR analysis \_\_\_\_\_ is used as internal standard.
  - a) TMS
  - b) TDS
  - c) TPP
  - d) TPS
- 7) In TGA analysis \_\_\_\_\_ gas is used to maintain inert atmosphere.
  - a) O<sub>2</sub>
  - b) N<sub>2</sub>
  - c) H<sub>2</sub>
  - d) He<sub>2</sub>
- 8) By DEPT-45° \_\_\_\_\_ group can be identified.
  - a) -CH
  - b) -CH<sub>3</sub>
  - c) -CH<sub>2</sub>
  - d) All of these

- 9)** In UV-Visible spectroscopy the unsaturated compound containing heteroatom shows \_\_\_\_\_ transition.
- a)  $\pi - \pi^*$
- b)  $n - \pi^*$
- c)  $\sigma - \sigma^*$
- d)  $\sigma - \pi^*$
- 10)** In X-ray diffraction analysis Bragg's law is gives as \_\_\_\_\_.
- a)  $n\lambda = 2d \sin \theta$
- b)  $2n = \lambda \sin \theta$
- c)  $n d = 2\lambda \sin \theta$
- d)  $2d = n\lambda \sin \theta$

**B) Fill in the blanks.**

06

- 1) In FT-NMR the irradiation of the sample is done with constant magnetic field while the radio frequency is varied, it is called as \_\_\_\_\_ method.
- 2) The wavelength of X-ray is \_\_\_\_\_ Å.
- 3) The technique of XPS is also known as \_\_\_\_\_.
- 4) In Differential Thermal Analysis \_\_\_\_\_ is measured.
- 5) In Mass spectroscopy particle are characterized by their \_\_\_\_\_ ratio.
- 6)  $^1\text{H}$ - $^1\text{H}$  Correlation Spectroscopy is better known as \_\_\_\_\_.

**Q.2 Answer the following questions.**

16

- Write down the difference between  $^1\text{H}$  NMR and  $^{13}\text{C}$  NMR spectroscopy.
- Explain the study of kinetics of reaction and hydrogen bonding by IR-spectroscopic method.
- Define 2D NMR spectroscopy & explain COSY with suitable example.
- Write a short note on DEPT technique.

**Q.3 Answer the following questions.**

16

- What is the Principle of Raman spectroscopy? Explain any two applications of it to determine various characteristic of polymers.
- Write a note on FT-NMR spectroscopy & give its advantages.

**Q.4 Answer the following question.**

16

- Give details on the working of powder X-ray diffractometer.
- Define Pyrolysis & describe PGCMS technique.

**Q.5** Answer the following question.

16

- a) Give details of any two applications of UV-Visible spectroscopy with suitable examples.
- b) Describe instrumentation and working of XPS technique with suitable diagram.

**Q.6 Answer the following question.**

16

- Describe briefly the working of TEM technique with schematic diagram.
- Give the principle of TGA. Explain the analysis of thermal stability & moisture content by TGA.

**Q.7 Answer the following.**

16

- a)** Describe the method of production of X-rays with diagrammatic representation.
- b)** Describe the principle of AFM technique with imaging modes.

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Set P

**M.Sc. (Semester - III) (CBCS) Examination: March/April - 2025**  
**Physical Chemistry**  
**Solid State Chemistry (MSC11310)**

Day & Date: Sunday, 01-June-2025  
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

**Instructions:** 1) Q. no 1 & 2 are compulsory.  
2) Attempt any three questions from Q.no 3 to Q.No.7.  
3) Figure to right indicate full marks.

**Q.1 A) Choose correct alternative.**

10

- The smallest interplanar spacing in a crystal which will give nth order Bragg reflection is \_\_\_\_\_.
  - $d_{hkl} = n/2$
  - $d_{hkl} = n$
  - $d_{hkl} = n/3$
  - $d_{hkl} = n/4$
- Graphite is good conductor of electricity due to the presence of \_\_\_\_\_.
  - Anions
  - Cations
  - Lone pair of electrons
  - Free valence electrons
- The colour of the nano gold particles is \_\_\_\_\_.
  - Yellow
  - Orange
  - Red
  - Variable
- An amorphous substance is \_\_\_\_\_.
  - isotropic
  - anisotropic
  - liquid crystal
  - a liquid
- Metal alkoxides generally used in nanomaterial formation is/are \_\_\_\_\_.
  - Aluminates
  - Borates
  - Titanates
  - All of these
- In simple cubic BCC and FCC structure, the ratio of number of atoms present is respectively \_\_\_\_\_.
  - 8:1:6
  - 1:2:4
  - 4:2:1
  - 4:2:3
- Which of the following technique/es are included in scanning probe microscopy?
  - AFM
  - STM
  - SEM
  - only (a) and (b)
- Spherical gold nanoparticles are \_\_\_\_\_ dimensional nanomaterials.
  - Zero
  - One
  - Two
  - Three

- 9)** The governing factors for the growth of nanostructures is/are \_\_\_\_\_.  
a) Nature of the capping agent  
b) Structure of the stabilizing agent  
c) Kinetics of nucleation  
d) All of these
- 10)** The quantum dots (QDs) are spherical nanocrystals of \_\_\_\_\_ nm diameter.  
a) 0-1 nm  
b) 1-10 nm  
c) 10-100 nm  
d) 100-1000 nm

**B) Fill in the blanks OR write true / false.**

06

- 1) A cubic crystal has - three fold axes of symmetry.
- 2) AgBr crystal exhibits both Schottky and Frenkel defects. [True/False]
- 3) Bragg's equation is expressed as \_\_\_\_\_.
- 4) Triclinic is the most unsymmetrical Bravais lattice in terms of axial distances and angles. [True/False]
- 5) Typical precursor used in sol-gel are \_\_\_\_\_.
- 6) One nanometer is equivalent to \_\_\_\_\_ meter.

**Q.2 Answer the following questions.**

16

- Explain Kirkendall effect.
- Discuss Langmuir-Blodgett technique for composite material synthesis.
- On the basis of the energy band structure, explain the types of solids.
- Write on seven crystal systems.

**Q.3 Answer the following questions.**

16

- Describe the  $\text{Sin}^2\theta$  method for the crystal structure determination of cubic systems.
- Mention different methods for single crystal growth. Illustrate verneuil method.

**Q.4 Answer the following question.**

16

- Discuss the tarnish reactions with reference to its mechanism by considering suitable example.
- Explain the hydrothermal and solvothermal method for synthesis of nanomaterials.

**Q.5** Answer the following question.

16

- a)** Draw the schematic diagram of Czochralski method to grow single crystals and mention its advantage over the other.
- b)** Lists different characterization tools used for nanomaterial characterization. Explain any one electron microscopic technique with respect to its principle and working.

**Q.6 Answer the following question. 16**

- a) Discuss in detail the term structure factor and electron density.
- b) Describe the concept of imperfections in solids by taking an example of point defects.

**Q.7 Answer the following. 16**

- a) Mention different types of solid state reactions. Discuss the decomposition reactions with reference to its mechanism by taking suitable example.
- b) Discuss the optical and electrical properties of metal nano particles.

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Set P
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**M.Sc. (Sem - III) (CBCS) Examination: March/April – 2025**  
**ANALYTICAL CHEMISTRY**  
**Analytical Spectroscopy (MSC013310)**

Day & Date: Sunday, 01-06-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

**Instructions:** 1) Q. No. 1 & 2 are compulsory.  
 2) Attempt any three questions from Q. No. 3 to Q. No. 7.  
 3) Figure to right indicate full marks.

**Q.1 A) Choose correct alternative.**

**10**

- 1) UPS is used to eject \_\_\_\_\_ Electrons.
  - a) Valence shell
  - b) Inner shell
  - c) Core shell
  - d) None of these
- 2) Number of lines in ESR spectrum of CD<sub>3</sub> is \_\_\_\_\_ [I=1]
  - a) 9
  - b) 5
  - c) 3
  - d) 7
- 3) Raman band is characterized not only by its wave number shift and intensity but also by its \_\_\_\_\_.
  - a) Shape
  - b) Half Band width
  - c) Polarization characteristics
  - d) All of the above
- 4) \_\_\_\_\_ scattering is observed in Raman spectroscopy.
  - a) Elastic
  - b) Inelastic
  - c) Rayleigh
  - d) Diffraction
- 5) In NQR,  $\eta$  is measure of \_\_\_\_\_.
  - a) Non symmetry of EFG
  - b) Spin
  - c) Symmetry of EFG
  - d) Couplings
- 6) In X-ray Photoelectron Spectroscopy \_\_\_\_\_ of ejected electron is measured.
  - a) Ionization Energy
  - b) Binding Energy
  - c) Kinetic Energy
  - d) Potential Energy
- 7) The Source used in ESR Spectroscopy \_\_\_\_\_.
  - a) LASER
  - b) Nernst Glower
  - c) Klystron valve
  - d) Deuterium lamp
- 8) Raman Scattering is the result of a change in the \_\_\_\_\_.
  - a) Polarization of light
  - b) Wavelength of incident light
  - c) Speed of light
  - d) None of these

- 9)** If the incident radiation is x-ray, then the spectroscopic technique is called as \_\_\_\_\_.  
a) Infra Red                      b) UPS  
c) ESCA                          d) NMR
- 10)** Isomer shift in Mössbauer spectroscopy is also known as \_\_\_\_\_.  
a) environment shift              b) chemical shift  
c) volume shift                    d) nuclear shift

**B) Fill in the blanks OR write true/false.**

06

- 1) \_\_\_\_\_ spectroscopy is most useful in the study of free radicals.
- 2) In NQR, 'η' is a measure of \_\_\_\_\_.
- 3) In Raman spectroscopy the elastic scattering of photons is called as \_\_\_\_\_.
- 4) Mössbauer spectroscopy is due to the absorption of \_\_\_\_\_ radiations.
- 5) Water and alcohol are not suitable solvents for ESR spectroscopic study. (True or False)
- 6) The binding energy of electron in PES is the energy require to remove the electron from atom or molecule. (True or False).

**Q.2 Answer the following questions.**

16

- What are the scope and limitations of ESCA.
- Write a short note on electron microscopy.
- Explain principle of photoelectron spectroscopy.
- Give the applications of ESR.

**Q.3 Answer the following questions.**

**(10+6 OR 8+8)**

- Explain the term Resonance Raman effect.
- Discuss instrumentation of ESCA.

**Q.4 Answer the following questions.**

**(10+6 OR 8+8)**

- a) Explain the principle and instrumentation of ESR spectrometer.
- b) Describe the Instrumentation, and applications of Mossbauer spectroscopy.

**Q.5** Answer the following questions.

**(10+6 OR 8+8)**

- Explain the use of Mössbauer spectroscopy in the investigation of tin compound.
- Discuss in detail Atomic force Microscopy with application.

**Q.6 Answer the following questions.**

**(10+6 OR 8+8)**

- Describe the Instrumentation, and applications of Raman Spectroscopy.
- Explain in detail the theory of XPS and UPS.

**Q.7 Answer the following questions.**

**(10+6 OR 8+8)**

- Discuss principle of Raman spectroscopy.
- What are the applications of NQR?

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Set P
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**M.Sc. (Sem - III) (CBCS) Examination: March/April – 2025**  
**Pharmaceutical Chemistry**  
**Medicinal Chemistry (MSC012310)**

Day & Date: Sunday, 01-06-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

**Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks.

**Q.1 A) Choose correct alternative. 10**

- 1) Imipramine drug is a \_\_\_\_\_ derivative of tricyclic antidepressants.
 

a) Dibenzazepine	b) Dibenzocycloheptane
c) Dibenzoxepine	d) Dibenzthiazepine
- 2) Which of the following drug contains thiazole ring which is bioisostere of imidazole heterocycle of H<sub>2</sub> receptor antagonist.
 

a) Nizatidine	b) Rabeprazole
c) Famotidine	d) Both A & C
- 3) Insulin is biosynthesized from Linking A chain & B chain by two \_\_\_\_\_ bonds.
 

a) dioxo	b) disulphide
c) dinitro	d) disulphoxide
- 4) Lisinopril drug contains basic amino acid moiety as \_\_\_\_\_.
 

a) alanine	b) lysine
c) tyrosine	d) phenylalanine
- 5) Which of the followings are halogenated hydrocarbons used as anaesthetic agent.
 

a) Enflurane	b) Halothane
c) Sevoflurane	d) All of the above
- 6) \_\_\_\_\_ are cytotoxic chemotherapeutic agents similar sulphur mustard or mustard gas.
 

a) Nitrogen mustard	b) Bis (beta haloalkyl) amines
c) Chloro mustard	d) Both A & B
- 7) Which of the followings are the examples of drugs used in Angina Pectoris?
 

a) Glyceryl trinitrate	b) Erythrityl tetranitrate
c) Isosorbide dinitrate	d) All of the above



- 8) Isosteric replacement of \_\_\_\_\_ group at position 1 of the hydantoin system with oxygen atom yields Oxazolidine-2,4-dione class of anticonvulsant agent.
- a) N-H                                      b) C-H  
c) O-H                                      d) S-H
- 9) Which of the following NSAIDS drug contains sulphonamide group with side effect hepatotoxicity.
- a) Piroxicam                                b) Rofecoxib  
c) Nimesulide                               d) Mefenamic acid
- 10) Chlorpropamide is an example of \_\_\_\_\_.
- a) Biguanides                                b) Thiazolidinediones  
c) Meglitinides                              d) Sulfonyl ureas

**B) State true or false.**

06

- Ranitidine drug is a proton pump inhibitor used in the treatment of gastric acidity.  
a) True                                      b) False
- Class -II of Antiarrhythmic drug contains beta adrenergic blockers.  
a) True                                      b) False
- Glimepiride is the first generation sulfonyl ureas of oral antidiabetic drug.  
a) True                                      b) False

**Q.2 Answer the following questions.**

16

- Write on SAR of Sulphonamides.
- Discuss Hydantoin class of anticonvulsants.
- Discuss on any one Anesthetic agent.
- Define and classify Antihypertensive agents.

**Q.3 Answer the following questions.**

- a)** Discuss SAR of penicillin. Write a note on Captopril  
**b)** Explain with any one drug of H<sub>2</sub> antagonist & Proton Pump Inhibitor.

**Q.4 Answer the following question.**

- Elaborate on Tetracyclin. Discuss on Beta blockers.
- Define & classify Antiviral agents. Discuss on Remdesivir.

**Q.5** Answer the following question.

- a)** Define-and classify Hypnotics & sedatives. Write in detail on Diazepam with its synthesis.
- b)** Write a note on Meglitinides of oral hypoglycemic agents. Write synthesis of Metformin.

**Q.6 Answer the following question.**

- a)** Define & classify Antimalarial agents. Discuss in detail on 4-aminoquinolines. **08**
- b)** Discuss on aryl acetic acid class of NSAIDS. Give synthesis of Chloramphenicol. **08**

**Q.7 Answer the following.**

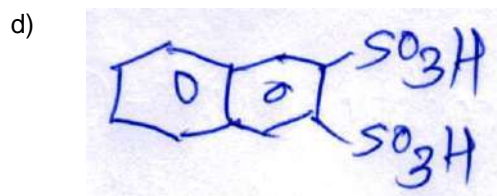
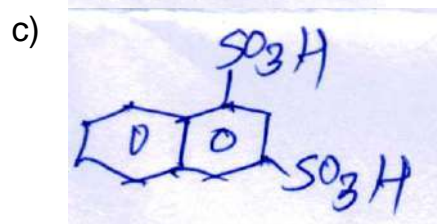
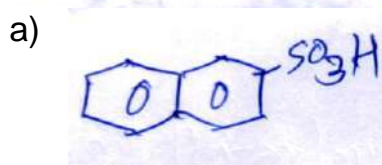
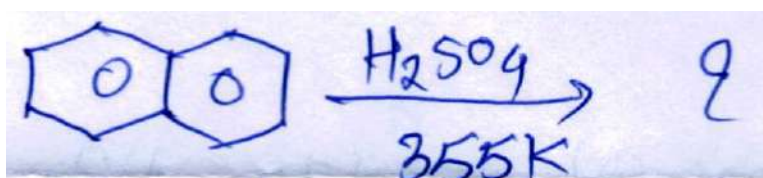
- a)** Discuss Mechanism of action of Sulphonamides. Elaborate on Antimetabolites. **08**
- b)** Discuss with suitable example first generation cephalosporins. Discuss SAR of it. **08**

## Max. Marks: 80

<b>Q.1</b>	<b>A) Multiple Choice Questions.</b>	<b>10</b>
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- Page 1 of 3

- 8)**  $\gamma$ -cyclodextrin has \_\_\_\_\_ glucose units in its structure.
- a) 8                                      b) 7  
c) 6                                      d) 5
- 9)** Chemical formula of naphthalene is \_\_\_\_\_.  
a) C<sub>6</sub>H<sub>6</sub>                                  b) C<sub>8</sub>H<sub>8</sub>  
c) C<sub>10</sub>H<sub>8</sub>                                d) C<sub>12</sub>H<sub>10</sub>
- 10)** The major product of the following reaction is \_\_\_\_\_



**B) True or false**

06

- 1) Cyclodextrin has tertiary alcohol in its structure.
- 2) Lactose is an example of oligosaccharides.
- 3) Albert Einstein is father of green chemistry.
- 4) Haworth synthesis is used for synthesis of phenanthrene.
- 5) Dipole-dipole interaction is a type of non-covalent interactions.
- 6) Se is used for dehydrogenation of hydroaromatic compounds.

**Q.2 Answer the following.**

16

- Write a note on complementarity.
- Discuss the term Ionic liquids.
- What is mutarotation? Explain with suitable example.
- Discuss the synthesis of Pyrene.

**Q.3 Answer the following.**

16

- Explain Haworth synthesis for synthesis of phenanthrene.
- Discuss electrophilic substitution reaction of naphthalene with mechanism and suitable examples.

**Q.4 Answer the following.**

16

- What are carbohydrates? Discuss its classification.
- Explain Kiliani-Fischer synthesis

- Q.5 Answer the following. 16**
- a) Discuss the different types of non-covalent interactions.
  - b) What cryptands? Give its synthesis and applications.
- Q.6 Answer the following. 16**
- a) Discuss the basic principles of Green Chemistry.
  - b) Explain the terms:
    - i) Solvent free synthesis
    - ii) Ultrasound assisted synthesis
- Q.7 Answer the following. 16**
- a) Describe the terms:
    - i) Pre-organization
    - ii) Co-operativity and chelate effect
  - b) Explain in detail:
    - i) Anomeric effect
    - ii) Dehydrogenation of hydroaromatic compounds using Se and Pd-C.

Max. Marks: 80

**Q.1 A) Choosing correct alternatives (MCQ). 10**

- Page 1 of 3

9) All the three vitamins ( $K_1$ ,  $K_2$ ,  $K_3$ ) are \_\_\_\_\_ derivatives.

- a) Naphthoquinone                      b) Naphthol
- c) Pyridine                                d) All of the above

10) A neutral core of lipoprotein consists of \_\_\_\_\_.

- a) Phospholipid                          b) Triacylglycerol
- c) Cholesterol ester                    d) Both b & c

**B) State true or false.**

**06**

- 1) 1-4 glycosidic linkage is present in maltose & lactose sugars.
- 2) Separation of protein according to size is known as gel filtration.
- 3) A nucleotide has five characteristic components in their structure.
- 4) Thiamine has a specific coenzyme Thiamine pyrophosphate which is not associated with carbohydrate metabolism.
- 5) Iron is inserted in to porphyrins to form heme by means of an enzyme called Ferrochelatase.
- 6) Relative abundance of calcium in the sea water is 1 ppm.

**Q.2 Answer the following.**

**16**

- a) Define cell and describe different cell organelles in brief.
- b) Define amino acid and explain how ion exchange chromatography is used for protein purification.
- c) Describe the chemistry and biochemical functions of vitamin A.
- d) Explain the enzyme Aspartate Transcarbamoylase.

**Q.3 Answer the following.**

**16**

- a) Discuss in detail the chemical unity of diverse living organism and write importance of biochemistry in pharmaceutical sciences.
- b) Write Kiliani-Fischer's cyanohydrin synthesis for ascending sugar series. How will you convert aldose into ketoses?

**Q.4 Answer the following.**

**16**

- a) Discuss in detail Size-exclusion chromatography and Affinity chromatography for purification of protein.
- b) Explain in detail the physical and chemical properties of amino acids and describe term PI.

**Q.5 Answer the following.**

**16**

- a) What is nucleic acid? write any two chemical structures of deoxyribonucleotides. Discuss how DNA stores the genetic information.
- b) Explain the formation of dimer induced by UV light and discuss the chemical agents that causes DNA damage?

**Q.6 Answer the following.** **16**

- a) Describe the chemistry, biochemical functions, daily requirements, sources and deficiency manifestations of vitamin C.
- b) Explain in detail about Chylomicron, Low-density lipoprotein, Very low-density lipoprotein.

**Q.7 Answer the following.** **16**

- a) Comment on the Enzymes Involved in Mercury Detoxification and Metalloregulation of the Mercury Detoxification Genes.
- b) Explain with figure Metallointercalators and Conformational Recognition.



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Set **P**

**M.Sc. (Semester - III) (CBCS) Examination: March/April – 2025**  
**Computer Science**  
**Fundamental of Web Designing (MSC18310)**

Day & Date: Sunday, 01-06-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

**Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks.

**Q.1 A) Fill in the blanks by choosing correct alternatives given below. 10**

- 1) Use \_\_\_\_\_ to create online slideshows. Make beautiful presentations together with secure sharing in real-time and from any device.
  - a) SlideShare
  - b) Google Slides
  - c) Google Forms
  - d) Microsoft Powerpoint
- 2) Use Google \_\_\_\_\_ to create, and collaborate on online documents. Edit together with secure sharing in real-time and from any device.
  - a) Documents
  - b) Doctor
  - c) Docs
  - d) Dollar
- 3) The <img> tag is used to embed an \_\_\_\_\_ in an HTML page.
  - a) Films
  - b) Image
  - c) Fonts
  - d) Video
- 4) Google \_\_\_\_\_ is a structured wiki and web page creation tool included as part of the free, web-based Google suite offered by Google.
  - a) Sites
  - b) Website
  - c) Portal
  - d) Storage
- 5) \_\_\_\_\_ is the foundation of the World Wide Web, and is used to load webpages using hypertext links.
  - a) HyperText Transfer Protocol (HTTP)
  - b) HyperText Transfer Practise (HTTP)
  - c) HigherText Transfer Process (HTTP)
  - d) HyperTech Transfer Program (HTTP)
- 6) \_\_\_\_\_ tag defines the root of an HTML document.
  - a) <tail>
  - b) <root>
  - c) <html>
  - d) <body>
- 7) There are \_\_\_\_\_ defines HTML headings.
  - a) <h0> to <h5>
  - b) <h10> to <h16>
  - c) <h1> to <h6>
  - d) <h1> to <h4>

- 8)** The \_\_\_\_\_ tag inserts a single line break.
- a) <br>                                      b) <hr>  
c) <lr>                                      d) <b>
- 9)** The \_\_\_\_\_ tag defines a list item.
- a) <i>    b) <list>  
c) <table>                                d) <li>
- 10)** The \_\_\_\_\_ tag defines a standard data cell in an HTML table.
- a) <ts>                                      b) <td>  
c) <dc>                                      d) <cd>

**B) State true or false.**

06

- 1) `<p>` is used to specify type of list as ordered or unordered.
- 2) The closing tag states where the element begins or starts to take effect.
- 3) `<body></body>` sets the title of your page, which is the title that appears in the browser tab the page is loaded in.
- 4) Heading elements allow you to specify that certain parts of your content are headings.
- 5) HTML (HyperText Markup Language) is the code that is used to structure a web page and its content.
- 6) So as to add Image into our page in the position it appears. It does this via the `src` (source) attribute, which contains the path to our image file.

**Q.2 Answer the following questions.**

16

- What is Google Drive?
- What do you mean by HTML?
- What is `<head>` tag?
- What is the WWW?

**Q.3 Answer the following questions.**

- a) What is the basic structure of a HTML Document? **08**
- b) State and explain HTML based Working with text for formatting font styles such as font name, color, size? **08**

**Q.4 Answer the following question.**

- |           |   |           |
|-----------|---|-----------|
| <b>a)</b> | What is Google Search? What are the various components of Google Forms Design?      | <b>08</b> |
| <b>b)</b> | Discuss various types of list and related HTML tags to create a list with examples? | <b>08</b> |

**Q.5** Answer the following question.

- |           |   |           |
|-----------|---|-----------|
| <b>a)</b> | What are the basic five golden rules as the principle of the website design?        | <b>08</b> |
| <b>b)</b> | Explain in detail the Table tags for creating tables in HTML with suitable example? | <b>08</b> |

**Q.6 Answer the following question.**

- a)** State and explain the various application of Internet and Website? **08**
- b)** Explain paragraph and heading tag in HTML with suitable example? **08**

**Q.7 Answer the following.**

- a)** What are the various types of Websites? **08**
- b)** Explain in detail how to set and use Hyperlinks using HTML? **08**

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**M.Sc. (Semester - III) (CBCS) Examination: March/April – 2025**  
**ELECTRONICS**  
**Medical Instrumentation (MSC21310)**

Day & Date: Sunday, 01-06-2025  
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

- Instructions:** 1) Q. no 1 & 2 are compulsory.  
2) Attempt any three questions from Q.no 3 to Q.No.7.  
3) Figure to right indicate full marks.

**Q.1 A) Select Correct Alternative:**

**10**

- 1) The \_\_\_\_\_ Electrode is commonly used to record the unipolar chest leads.
  - a) Limb electrode
  - b) Suction cup electrode
  - c) Floating electrode
  - d) Pregelled disposable electrode
- 2) The internal resting potential within a cell is approximately \_\_\_\_\_ with reference to the outside of the cell.
  - a) -90 mv
  - b) +90 mv
  - c) -120 mv
  - d) +120 mv
- 3) How the bipolar recording done?
  - a) Omni channel EEG
  - b) Multi channel EEG
  - c) Uni Channel EEG
  - d) Non Channel EEG
- 4) Electrodes make a transfer from the \_\_\_\_\_ in the tissue to the electronic conduction which is necessary to make measurements.
  - a) electronic conduction
  - b) impulsive conduction
  - c) electric conduction
  - d) ionic conduction
- 5) In the case of a normal Heartbeat, Depolarization stimulus arises in which of the following?
  - a) Epicardium
  - b) Sinoatrial Node
  - c) Atrioventricular Node
  - d) His bundle
- 6) Impedance pneumography is a commonly-used technique to monitor a person's \_\_\_\_\_.
  - a) respiration rate
  - b) heart rate
  - c) pulse rate
  - d) skin impedance
- 7) The heart pumps about \_\_\_\_\_ liters of blood per minute.
  - a) 3
  - b) 4
  - c) 5
  - d) 6

- 8) The \_\_\_\_\_ is the enclosed and lies between the inferior and superior vena cava.
- |                     |                    |
|---------------------|--------------------|
| a) Right atrium     | b) Left atrium     |
| c) Right ventricles | d) Left ventricles |
- 9) The \_\_\_\_\_ Waves of ECG represent Repolarization?
- |            |                |
|------------|----------------|
| a) P wave  | b) QRS complex |
| c) RS wave | d) T wave      |
- 10) Which electrodes can work even after being induced to large electric discharge such as defibrillation?
- |                          |                              |
|--------------------------|------------------------------|
| a) polarizing electrodes | b) non-polarizing electrodes |
| c) magnetic electrodes   | d) electrolytic electrodes   |

**B) State true or false.****06**

- 1) The Capillaries are the smallest and last level of blood vessels.
- 2) Limb electrodes are generally made up of steel-silver.
- 3) The Veins are the thin walled and carry de-oxygenated.
- 4) The positive potential of the cell membrane during excitation is resting potential.
- 5) X-ray picture is called radiography.
- 6) The differential amplifier always provides the protection against leakage currents.

**Q.2 Answer the following questions.****16**

- a) Write note on heart sound.
- b) Write note on Sources of bioelectric potentials.
- c) Write note on x- ray Machine.
- d) Write note on Electric shock hazards.

**Q.3 Answer the following questions.**

- a) Explain in detail about Bedside patient monitoring system.
- b) Write note on Electromyograph (EMG).

**08****08****Q.4 Answer the following question.**

- a) Explain Magnetic Resonance System (MRI).
- b) Write note on Testing of biomedical equipment.

**10****06****Q.5 Answer the following question.**

- a) Explain The Engineering model of the Heart with suitable diagram.
- b) Explain Blood-Glucose sensors with suitable diagram.

**08****08****Q.6 Answer the following question.**

- a) Explain blood flow measurement system.
- b) Explain Potentiometric sensors.

**10****06****Q.7 Answer the following.**

- a) Explain the Use of WSN technology in central monitoring system.
- b) Write note on pH Monitoring.

**10****06**

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एम.ए./एम.एस.सी. (Geography) (सत्र – III) (CBCS) परीक्षा: मार्च/एप्रिल – २०२५  
Commercial Geography (MAG311)

वार, दिनांक : रविवार, ०१-०६-२०२५  
वेळ: सकाळी ११:०० ते ०२:००

कमाल गुण: ८०

- सूचना : १) प्रश्न. १ आणि प्रश्न. २ अनिवार्य आहेत.  
२) प्रश्न. ३ ते प्रश्न. ७ पैकी कोणतेही तीन प्रश्न सोडवा.  
३) सर्व प्रश्नांना समान गुण आहेत.  
४) नकाशा स्टेन्सिल वापरण्यास परवानगी आहे.

प्र.१ अ) योग्य पर्याय निवडून रिकाम्या जागा भरा.

१०

- १) आर्थिक भूगोलाची ——— भूगोल ही उपशाखा आहे.  
अ) व्यापारी                      ब) सामाजिक  
क) राजकीय                      ड) प्राकृतिक
- २) व्यापारी भूगोल हे पुस्तक ——— यांनी लिहिले.  
अ) टन्सले                      ब) पी. एन. पाडे  
क) डार्विन                      ड) रॉबिन्सन
- ३) WTO व्यापार संघटनेचे मुख्यालय ——— येथे आहे.  
अ) मुंबई                      ब) रोम  
क) दुबई                      ड) जिनीव्हा
- ४) किरकोळ आणि ——— व्यापार या व्यापाराच्या दोन पद्धती आहेत.  
अ) फिरती                      ब) साठा  
क) घाऊक                      ड) यापैकी नाही
- ५) ओपेक हा जगातील ——— उत्पादने निर्यात करणाऱ्या देशांचा संघ आहे.  
अ) पेट्रोलियम                      ब) कोळसा  
क) लोह                      ड) सोने
- ६) भारतातील ——— येथील दमट हवामान सुतीवस्त्र उद्योगाच्या प्रारंभास उपयुक्त ठरले आहे.  
अ) मुंबई                      ब) दिल्ली  
क) कानपूर                      ड) बंगलोर

- ७) दोन देशातील वस्तूच्या देवाण घेवाणीस ——— व्यापार म्हणतात.  
अ) राष्ट्रीय ब) आंतरराष्ट्रीय  
क) किरकोळ ड) घाऊक
- ८) पर्यटन हा जगातील ——— क्रमांकाचा उद्योग आहे.  
अ) पहिल्या ब) दुसरा  
क) तिसरा ड) चौथ्या
- ९) कृषी पर्यटन हा उद्योग ——— निगडीत आहे.  
अ) खनिज ब) प्राणी  
क) शेती ड) वनस्पती
- १०) भारताचा बहुतांश आंतरराष्ट्रीय व्यापार ——— मार्गाने होतो.  
अ) रस्ते ब) रेल्वे  
क) सागरी ड) हवाई

ब) रिकाम्या जागा भरा.

03

- १) ——— यांना आधुनिक आर्थिक भूगोलाचे जनक म्हणतात.
- २) मासेमारी हा ——— श्रेणीचा आर्थिक व्यवसाय आहे.
- ३) सौदी अरेबिया हा ——— मध्ये जगातील प्रमुख निर्यातदार आहे.
- ४) मॉरिशिस या देशाची संपूर्ण अर्थव्यवस्था ——— उद्योगावर अवलंबून आहे.
- ५) राष्ट्रीय आणि आंतरराष्ट्रीय असे दोन स्तर आहेत ज्यावर ——— करता येतो.
- ६) ——— हा भारतातील एक प्रमुख लोहखनिज पट्टा आहे.

प्र.२ खालील प्रश्नांची उत्तरे लिहा.

33

- अ) सांस्कृतिक पर्यावरणाबद्दल थोडक्यात लिहा.  
ब) व्यापारी भूगोलाचे महत्त्व सांगा.  
क) न्यूनतम लोकसंख्येची संकल्पना स्पष्ट करा.  
ड) भारतातील स्वयंचलित उद्योगाची माहिती लिहा.

प्र.३ खालील प्रश्नांची उत्तरे लिहा.

१३

- अ) व्यापारी भूगोलाचे दृष्टिकोन स्पष्ट करा.  
ब) भारतातील कृषी – पर्यटन विकासाचे वर्णन करा.

प्र.४ खालील प्रश्नांची उत्तरे लिहा.

१३

- अ) व्यापारी भूगोल म्हणजे काय? व्यापारी भूगोलाचे स्वरूप स्पष्ट करा.  
ब) मानवाच्या आर्थिक क्रियांचे वर्गीकरण स्पष्ट करा.

- प्र.५ खालील प्रश्नांची उत्तरे लिहा. १६
- अ) व्यापारी भूगोलाची व्याख्या सांगून त्याची व्याप्ती स्पष्ट करा.
- ब) पर्याप्त आणि अतिरिक्त लोकसंख्या संकल्पना स्पष्ट करा.
- प्र.६ खालील प्रश्नांची उत्तरे लिहा. १६
- अ) भारतातील लोह-पोलाद उद्योग विकासाचे वर्णन करा.
- ब) प्राकृतिक घटकांचा पर्यटन विकासावरील प्रभाव स्पष्ट करा.
- प्र.७ खालील प्रश्नांची उत्तरे लिहा. १६
- अ) भौगोलिक घटकांचा आंतरराष्ट्रीय व्यापारांवरील प्रभाव स्पष्ट करा.
- ब) भारतातील रेल्वे वाहतुकीची सविस्तर माहिती लिहा.



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**M.A./M.SC (Geography) (Semester – III) (CBCS) Examination:  
March/April – 2025  
Commercial Geography (MAG311)**

Day & Date: Sunday, 01-06-2025  
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

- Instructions:** 1) Q. No. 1 and 2 are compulsory.  
2) Attempt any three questions from Q. No. 3 to Q. No. 7  
3) Figures to the right indicate full marks.  
4) Use of Maps Stencils is allowed.

**Q.1 A) Choose the correct alternative.**

**10**

- 1) \_\_\_\_\_ Geography is the branch of Economic Geography.
  - a) Commercial
  - b) Social
  - c) Political
  - d) Physical
- 2) The book entitled 'Commercial Geography' is written by \_\_\_\_\_.
  - a) Tansely
  - b) P. N. Padey
  - c) Darwin
  - d) Robinson
- 3) The headquarter of WTO trade organization is in \_\_\_\_\_.
  - a) Mumbai
  - b) Rom
  - c) Dubai
  - d) Geneva
- 4) Retail and \_\_\_\_\_ trade are the two methods of trade.
  - a) Swing
  - b) Stock
  - c) Wholesale
  - d) None of these
- 5) OPEC is the producer group of the worlds \_\_\_\_\_ Products exporting countries.
  - a) Petroleum
  - b) coal
  - c) Iron
  - d) gold
- 6) The humid climate of \_\_\_\_\_ has helped the early growth of cotton Textile industry in India.
  - a) Mumbai
  - b) Delhi
  - c) Kanpur
  - d) Bangalore
- 7) Exchange of goods between two countries is called \_\_\_\_\_ Trade.
  - a) national
  - b) international
  - c) retail
  - d) wholesale
- 8) Tourism is the \_\_\_\_\_ Largest industries in the world.
  - a) 1<sup>st</sup>
  - b) 2<sup>nd</sup>
  - c) 3<sup>rd</sup>
  - d) 4<sup>th</sup>

- 9) Agro - Tourism** is an industry related to \_\_\_\_\_.  
a) mineral                      b) animal  
c) agriculture                d) vegetation

- 10)** Most of India's international trade is by \_\_\_\_\_ routes.
- a) road                      b) rail  
c) sea                        d) air

**B) Fill in the blanks:**

06

- 1) \_\_\_\_\_ is considered as father of modern economic geography.
- 2) Fishing is a \_\_\_\_\_ type of economic activity.
- 3) Saudi Arabia is the leading exporter of \_\_\_\_\_ in world.
- 4) The entire economy of Mauritius country depends on the \_\_\_\_\_ industry.
- 5) National and International are two levels at which \_\_\_\_\_ Can be conducted.
- 6) The \_\_\_\_\_ is a major iron ore belt in India.

**Q.2 Answer the following questions.**

16

- Write in brief cultural environment.
- Write importance of commercial geography.
- Explain the Concept of under population.
- Give an account of Automobile industry in India.

**Q.3 Answer the following questions.**

16

- a) Explain the approaches of commercial geography.
- b) Describe in brief Agro-tourism development in India.

**Q.4 Answer the following questions.**

16

- a) Define Commercial geography and explain its nature.
- b) Explain the classification of economic activities of man.

**Q.5 Answer the following questions.**

16

- a)** Define Commercial geography and explain its scope.
- b)** Explain the concept of optimum and over population.

**Q.6 Answer the following questions.**

16

- Describe the development of Iron and Steel industries in India.
- Explain the physical factors affecting on tourism development.

**Q.7 Answer the following questions.**

16

- Explain the geographical factors affecting on international trade.
- Give an account of Rail transport in India.

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**M.Sc. (Semester - III) (CBCS) Examination: March/April – 2025**  
**Material Science**

**Energy Harvesting Devices (MSC03312)**

Day & Date: Sunday, 01-06-2025

Max. Marks: 80

Time: 11:00 AM To 02:00 PM

- Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks.

**Q.1 A) Select Correct Alternative: 10**

- 1) \_\_\_\_\_ are photo-electrochemical systems based on a semiconductor set between a photo- sensitized anode and an electrolyte.
  - a) dye-sensitized solar cells
  - b) dry cells
  - c) piezoelectric cells
  - d) both (b) and (c)
- 2) Piezoelectric crystals generate \_\_\_\_\_.
  - a) high voltage
  - b) no voltage
  - c) low voltage
  - d) very high voltage
- 3) The operating temperature of Solid Oxide Fuel Cell is about \_\_\_\_\_ °C.
  - a) 250
  - b) 1000
  - c) 500
  - d) 2000
- 4) The piezoelectric ceramics can generate electric charge against \_\_\_\_\_ deformation and vice versa.
  - a) mechanical
  - b) electrical
  - c) thermal
  - d) light
- 5) The efficiency of QDSSC is \_\_\_\_\_ than DSSC because Multiple excitons.
  - a) lower
  - b) very less
  - c) higher
  - d) both (a) and (b)
- 6) In case of the hydrogen-oxygen fuel cell, the standard emf is \_\_\_\_\_.
  - a) 2.24 V
  - b) 1.23 V
  - c) 3.15 V
  - d) 0.96 V
- 7) Cyclic voltammetry is a potentiodynamic electrochemical technique widely used for studying \_\_\_\_\_ transfer mechanisms.
  - a) heat
  - b) electron
  - c) energy
  - d) all of these

- 8) In a p-n junction solar cell, formation of the junction causes \_\_\_\_\_ bending of both n- and p- semiconductor at the interface.
  - a) thickness
  - b) composition
  - c) band
  - d) None of these
- 9) In pseudocapacitor devices, larger amount of charge transfers and storage is achieved using \_\_\_\_\_ mechanisms.
  - a) non-faradaic
  - b) faradaic
  - c) both (a) and (b)
  - d) semi-faradaic
- 10) Photovoltaic effects generally refer to phenomena resulting from the conversion of \_\_\_\_\_ into electrical energy.
  - a) light energy
  - b) mechanical energy
  - c) electric energy
  - d) heat energy

**B) Fill in the blanks/ State True or False:****06**

- 1) In fabrication of energy harvesting MEMS, \_\_\_\_\_ are studied extensively.
- 2) \_\_\_\_\_ is reduced at the cathode in operation mechanism of a Proton Exchange Membrane Cell.
- 3) In a fuel cell, the positive electrode is called as \_\_\_\_\_.
- 4) The dye sensitized solar cell becomes a tandem cell after employing p-type semiconductor as photocathode cell. (True / False)
- 5) The development of Phosphoric acid fuel cells has been more slowly than other fuel cells Because of the low conductivity of acid. (True / False)
- 6) Fill factor is defined as the ratio of  $FF = \frac{V_m \times I_m}{V_{oc} \times I_{sc}}$  (True / False)

**Q.2 Answer the following questions.****16**

- a) Write in brief about piezoelectric polycrystalline ceramics?
- b) Explain in brief about the Supercapacitor characterizations.
- c) Draw the neat labelled diagram of CdTe based solar cell.
- d) Discuss in brief about fuel cell characterizations.

**Q.3 Answer the following questions.**

- a) Write in detail about piezoelectric micro power generators.
- b) Explain in short about piezoelectric thin films.

**10****06****Q.4 Answer the following question.**

- a) Elaborate the construction and working of dye sensitized solar cells.
- b) Explain in short about solar cell characterizations.

**10****06****Q.5 Answer the following question.**

- a) Elaborate the construction and working of Solid Oxide fuel cell.
- b) Differentiate between fuel cell and batteries.

**10****06**

**Q.6 Answer the following question.**

- |           |  |           |
|-----------|--|-----------|
| <b>a)</b> | Explain in detail about types of supercapacitors with suitable examples. | <b>10</b> |
| <b>b)</b> | Discuss the recent status of carbon-based supercapacitors.               | <b>06</b> |

**Q.7 Answer the following.**

- |           |  |           |
|-----------|--|-----------|
| <b>a)</b> | Explain the construction and working of organic solar cells. | <b>10</b> |
| <b>b)</b> | Write in brief about piezoelectric transducers.              | <b>06</b> |

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Set P
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**M.Sc. (Semester - III) (CBCS) Examination: March/April - 2025**  
**Mathematics**  
**Numerical Techniques (MSC15308)**

Day & Date: Sunday, 01-June-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

**Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks

**Q.1 A) Choose the correct alternative. 10**

- 1) The root of the equation  $f(x) = 0$  lies in interval  $(a, b)$  if \_\_\_\_\_.  
 a)  $f(a)f(b) = 0$                       b)  $f(a)f(b) > 0$   
 c)  $f(a)f(b) < 0$                       d)  $f(a)f(b) = 1$
- 2) If  $A = \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$  then the eigen values of  $A$  are \_\_\_\_\_.  
 a) 2,4                                      b) 3,1  
 c) 2,3                                      d) 1,5
- 3) Newton's \_\_\_\_\_ difference interpolation formula is useful for interpolation near the end of tabular values.  
 a) Forward                              b) Backward  
 c) Central                                d) None of these
- 4) How many real roots does the equation  $x^2 + 1 = 0$  have?  
 a) 2    b) 3  
 c) 1    d) 0
- 5) If a function is real and continuous in the region from  $a$  to  $b$  and  $f(a)$ ,  $f(b)$  have opposite signs then there is \_\_\_\_\_ root between  $a$  and  $b$ .  
 a) No real                                b) Real  
 c) Rational                              d) Irrational
- 6) If  $f(x) = x^2$  then the second order divided difference for the points  $x_0, x_1, x_2$  will be \_\_\_\_\_.  
 a) -1                                      b)  $\frac{-1}{x_1 - x_0}$   
 c) 1                                        d)  $\frac{1}{x_2 - x_1}$
- 7) The symbol used for shift operator is \_\_\_\_\_.  
 a)  $\mu$                                       b)  $E$   
 c)  $\Delta$                                       d)  $\nabla$

- 8)** The approximate value of  $y(0.1)$  from  $\frac{dy}{dx} = x^2y - 1$ ,  $y(0) = 1$  is \_\_\_\_.
- a) 0.900                      b) 0.222  
c) 1.001                      d) 0.994
- 9)** What is the value of the determinant  $\begin{vmatrix} 3 & -5 & 2 \\ 4 & 4 & 4 \\ 1 & -2 & 3 \end{vmatrix}$  ?
- a) -56                          b) 10  
c) 0                             d) 36
- 10)** Which of the following is true?
- a)  $\Delta = E\nabla$                       b)  $E = 1 + \Delta$   
c)  $\Delta = \nabla(1 - \nabla)^{-1}$         d) All of these

**B) Write true/false.**

06

- 1) The central difference formula  $\delta y_{\frac{1}{2}}$  is  $y_1 - y_0$ .
- 2) The approximate value of  $\pi$  is 3.1428571.
- 3) LU decomposition is more efficient than Gauss elimination when solving for the inverse of a matrix.
- 4) The Newton Raphson method fails if  $f'(x)$  is zero.
- 5) If  $A$  is invertible matrix then determinant of  $A$  is zero.
- 6) An approximate value of  $\frac{1}{3}$  is 0.30, then the absolute error  $E_A$  is  $\frac{1}{3}$ .

**Q.2 Answer the following questions.**

16

- a)** Show that,  $\Delta (af(x) + bg(x)) = a\Delta[f(x)] + b\Delta[g(x)]$   
**b)** Find the missing term in the following table:

$x$	0	1	2	3	4
$y = f(x)$	1	3	9	?	81

- c) Define eigen values and eigen vectors.  
d) Prove that,  $\nabla = \delta E^{\frac{-1}{2}}$

**Q.3 Answer the following questions.**

16

- a)** Find a real root of the equation  $x^3 - x - 4 = 0$  by method of False position, correct upto three decimal places.
- b)** Find the root of the equation  $x^4 - x - 10 = 0$  by Newton-Raphson method.

**Q.4 Answer the following question.**

16

- a)** If  $f(0.00) = 1.000, f(0.10) = 1.2214, f(0.20) = 1.4918, f(0.30) = 1.8221, f(0.40) = 2.255$  then find  $f(0.05)$  using Newton's forward Interpolation formula.
- b)** Evaluate  $\int_0^1 e^x dx$  using Simpson's  $\frac{1}{3}$  – rule by taking  $h = \frac{1}{6}$

**Q.5 Answer the following question.** 16

- a) Derive a Lagrange's interpolation formula.  
b) Find all the eigen values of the matrix  $\begin{bmatrix} 4 & 6 & 10 \\ 3 & 10 & 13 \\ -2 & -6 & -8 \end{bmatrix}$

**Q.6 Answer the following question.** 16

- a) Solve the following system of equations.  
 $2x + y + z = 5, 3x + 5y + 2z = 15, 2x + y + 4z = 8$   
by using Gauss-Seidel method.  
b) Write a note on Euler's modified method.

**Q.7 Answer the following.** 16

- a) Reduce the matrix  $A = \begin{bmatrix} 2 & -1 & -1 \\ -1 & 2 & -1 \\ -1 & -1 & 2 \end{bmatrix}$  to the tridiagonal form.  
b) Find a general formula for numerical integration using Newton's forward difference formula.



Seat No.	
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Set **P**

**M.Sc. (Semester - III) (CBCS) Examination: March/April – 2025**  
**Microbiology (Campus)**  
**Environmental Microbiology and Waste Management (MSC01311)**

Day & Date: Sunday, 01-06-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

- Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks.

**Q.1 A) Choose correct alternative.****10**

- 1) The lake rich in nutrients is \_\_\_\_\_ lake.
  - a) Mesotrophic
  - b) Oligotrophic
  - c) Eutrophic
  - d) All of these
- 2) EIA is \_\_\_\_\_.
  - a) Environmental Impact Assessment
  - b) Environmental Information Assessment
  - c) Environmental Indian Association
  - d) Environmental Implementation Association
- 3) Advanced activated sludge systems are designed as this system \_\_\_\_\_ and can operate at higher biomass concentration.
  - a) Uses tapered aeration
  - b) Uses pure oxygen instead of air
  - c) Uses step aeration
  - d) None of these
- 4) The waste generated from paper & pulp industry is called as \_\_\_\_\_.
  - a) Yellow Liquor
  - b) Brown liquor
  - c) Spent wash
  - d) Black liquor
- 5) What are the three groups of the biotic factors?
  - a) Producer, Decomposer and Consumer
  - b) Decomposer, Consumer, and Rocks
  - c) Consumer, Water, and Producer
  - d) Weather, Consumer, and Decomposer
- 6) \_\_\_\_\_ is the amount of time in hours for wastewater to pass through a tank, such as an aeration tank and can be determined as the volume of the aeration tank divided by the influent flow rate and controls the time for biodegradation in wastewater.
  - a) MCRT
  - b) HRT
  - c) SRT
  - d) All of these

- 7) Identify which is metabolic stage in anaerobic digestion that leads to formation of methane and CO<sub>2</sub>.
  - a) Hydrolysis
  - b) Acidogenesis
  - c) Denitrification
  - d) Methanogenesis
- 8) For effective aerobic biological treatment process, the BOD:N:P ratio must be maintained at \_\_\_\_\_.
  - a) 100:50:10
  - b) 100:50:1
  - c) 100:5:1
  - d) 100:0:5:1
- 9) The effects of biodegradation on the biodegradation of 1, 2-dichloroethane was investigated by using \_\_\_\_\_ bacterial formulations.
  - a) *Desulfitobacterium dichloroeliminans* strain DCA1
  - b) *Mycobacterium fortuitum*, *Bacillus cereus*, *Microbacterium* sp
  - c) *Dehalococcoides ethenogenes* or *Desulfomonile tiedjei*
  - d) Both a) and b)
- 10) The term ecology was proposed by German ecologist \_\_\_\_\_.
  - a) A.G. Tansley
  - b) Ernst Haeckel
  - c) Robert Warden
  - d) Rachel carson

**B) Write true/false.**

06

- The rate of photosynthesis and that of rate of respiration is balanced in eutrophic lake.  
a) True                                      b) False
- Physical and chemical conditions of soil are studied under edaphic factors.  
a) True                                      b) False
- In cometabolism both the substrates are act as carbon & energy source for the growth of microorganisms.  
a) True                                      b) False
- In activated sludge process, MCRT stands for Mass cell reaction time.  
a) True                                      b) False
- Denitrification is a chemical reaction that occurs during anaerobic digestion of wastewater treatment system.  
a) True                                      b) False
- Biogas is the most important product of anaerobic digestion where organic matter is converted into simpler components by fermentation process.  
a) True                                      b) False

**Q.2 Answer the following questions.**

16

- Explain the characteristics of waste water related to Dissolved oxygen.
- Define bioaugmentation & biostimulation with respective of their diagram.
- Define the term- Neutralization & flocculation.
- Write a note on biotic and abiotic components.

- Q.3 Answer the following questions.**
- a) Write a note on Eutrophication. **10**
  - b) Write a note on microorganisms which are used for bioaugmentation. **06**
- Q.4 Answer the following question.**
- a) Define ETP with neat labeled diagram & explain primary treatment used for treatment of different industry waste water. **10**
  - b) Write a note on environmental audit. **06**
- Q.5 Answer the following question.**
- a) Explain in detail about Food chain & Food web. **10**
  - b) Write a note on water tracing. **06**
- Q.6 Answer the following question.**
- a) Write a note on biosorption. **10**
  - b) Explain in detail about activated sludge process. **06**
- Q.7 Answer the following.**
- a) Explain in detail about different characteristics & treatment of dairy industry, textile industry waste water. **10**
  - b) Define Bioremediation & what are the methods of bioremediation? **06**



- 8) Diazotrophs are \_\_\_\_\_.  
 a) Organisms capable of nitrogen fixation  
 b) Organisms such as Rhizobia, Frankia, Azospirillum  
 c) Both a and b  
 d) None of the above
- 9) Normal C: N ration in humus is \_\_\_\_\_.  
 a) 10:1                                      b) 1:10  
 c) 10:4                                      d) 10:3
- 10) *Trichoderma harzianum* is used for \_\_\_\_\_.  
 a) Wasteland reclamation  
 b) Bioremediation of contaminated soil  
 c) Biocontrol agent against plant pathogens  
 d) Gene transfer

**B) Fill in the blanks.****06**

- 1) Chemoautotrophy is discovered by \_\_\_\_\_.  
 2) \_\_\_\_\_ is defined as biological, chemical, and physical changes in soils that occur because of root exudates and rhizo-deposition.  
 3) Strains of \_\_\_\_\_ can kill certain insects such as lepidopterans.  
 4) \_\_\_\_\_ is nitrogen fixing multicellular actinomycete which establishes root-nodule symbiosis with actinorhizal plants.  
 5) Species of Thiobacillus and Beggiatoa play an important role in the \_\_\_\_\_ elemental cycle.  
 6) \_\_\_\_\_ are specialized nitrogen fixing cells formed by cyanobacteria during nitrogen starvation.

**Q.2 Answer the following questions.****16**

- a) Vermi-composting  
 b) Economic and future prospects of biopesticides  
 c) Green manure  
 d) Mosquito control by fungi

**Q.3 Answer the following questions.**

- a) Discuss in detail the role of microorganisms in organic matter decomposition and soil fertility.  
 b) Write on Phosphorus cycle.

**10****06****Q.4 Answer the following question.**

- a) What is Rhizospheric effect? Describe rhizosphere with respect to nitrogen fixation, crop productivity, and plant growth promoting bacteria.  
 b) Role of antibiotics and siderophores in biocontrol of plant pathogens.

**10****06**

**Q.5 Answer the following question.**

- |   |           |
|---|-----------|
| a) Describe different methods of recycling of Agriculture and animal waste in detail. | <b>10</b> |
| b) Take detailed account on plant tissue culture techniques and applications.         | <b>06</b> |

**Q.6 Answer the following question.**

- |  |           |
|--|-----------|
| a) Discuss scope, merits and limitations of Phosphate solubilizing bacteria and mycorrhizae as a biofertilizers. | <b>10</b> |
| b) Methods of application and evaluation of biofertilizers.  | <b>06</b> |

**Q.7 Answer the following.**

- |  |           |
|--|-----------|
| a) Explain in detail the process of <i>B. thuringiensis</i> gene transformation in transgenic crop plants.   | <b>10</b> |
| b) Write on Biological control in crop pests, disease management, merits and demerits of biological control. | <b>06</b> |

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Set **P****M.Sc. (Semester - III) (CBCS) Examination: March/April – 2025****Microbiology****Environment and Waste Management Technology (MSC023311)**

Day &amp; Date: Sunday, 01-06-2025

Max. Marks: 80

Time: 11:00 AM To 02:00 PM

- Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks.

**Q.1 A) Choose correct alternative.****10**

- 1) \_\_\_\_\_ is the process of overgrowth of plants and algae in lakes.
  - a) Transpiration
  - b) Reproduction
  - c) Eutrophication
  - d) Photosynthesis
- 2) Genetically Modified Organisms for the degradation of xenobiotics are called as \_\_\_\_\_.
  - a) Super strains
  - b) Master strains
  - c) Virulent strains
  - d) Superbugs
- 3) \_\_\_\_\_ is the addition of microorganisms that have the ability to biodegrade recalcitrant molecules in the polluted environment.
  - a) Bioaugmentation
  - b) Bioremediation
  - c) Biostimulation
  - d) Biolistics
- 4) An environmental audit helps in achieving \_\_\_\_\_.
  - a) Resource optimization
  - b) Waste minimization
  - c) Public awareness
  - d) All of these
- 5) The objective of EIA is to identify, predict and evaluate the \_\_\_\_\_ impact of development activities.
  - a) economic
  - b) environmental
  - c) social
  - d) All above
- 6) \_\_\_\_\_ test for oxygen consumption in water.
  - a) SPC
  - b) BOD
  - c) SOM
  - d) MPN
- 7) Which of the following is employed as an oxidation method?
  - a) Oxidation ponds
  - b) Trickling filters
  - c) Contact aerators
  - d) All of these

- 8) Carbon dioxide is called green-house gas because it is \_\_\_\_\_.  
a) Transparent to sunlight but traps heat  
b) Transparent to heat but traps sunlight  
c) Used in green-house to increase plant growth  
d) Transparent to both sunlight and heat
- 9) The chemical oxygen demand (COD) measures the \_\_\_\_\_.  
a) amount of oxygen required for growth of microorganisms in water  
b) amount of oxygen that would be required in order to oxidize pollution from the water  
c) amount of oxygen required to oxidize the calcium present in waste water  
d) none of the above
- 10) Mercury pollution is a serious issue because \_\_\_\_\_.  
a) Mercury is a pure metal and hard to digest.  
b) Mercury accumulates and concentration increases high up the food chain.  
c) Mercury is light and easily dispersed by wind.  
d) Mercury is very soluble in water and easily absorbed by human body.

**B) Fill in the blanks.****06**

- 1) \_\_\_\_\_ is a graphical representation showing the relationship between different organisms in an ecosystem.
- 2) \_\_\_\_\_ consists of all the organisms and the physical environment with which they interact.
- 3) \_\_\_\_\_ is the dissolved oxygen that microorganisms like bacteria need to oxidize, and organic substances in water.
- 4) \_\_\_\_\_ is highly acidic water droplets due to air emissions, most specifically the disproportionate levels of sulphur and nitrogen emitted by vehicles and manufacturing processes.
- 5) \_\_\_\_\_ is the amount of time, in days, that solid or bacteria are maintained in the activated sludge system.
- 6) The use of living microorganisms to degrade environmental pollutants is called as \_\_\_\_\_.

**Q.2 Answer the following questions.****16**

- a) What is COD? Give its significance.  
b) Water Tracing  
c) Bio-augmentation  
d) Environmental control Bodies

**Q.3 Answer the following questions.**

- a) Write on biological treatment methods of waste water.  
b) Applications of genetically engineered microorganisms in waste treatment.

**10****06**



**Q.4 Answer the following question.**

- a) Write on sources, enrichment, isolation and acclimatization of microorganisms used in waste treatment. **10**
- b) Take a detailed account on: use of aquatic plants for pollution control. **06**

**Q.5 Answer the following question.**

- a) Discuss mass scale production of microorganisms and mixed cultures used in waste water treatment. **10**
- b) Write on different types of enzymes used in pollution control. **06**

**Q.6 Answer the following question.**

- a) Write on F/M ratio, tank volume and flow rate in reactors. **10**
- b) Illustrate waste treatment systems of Dairy waste. **06**

**Q.7 Answer the following.**

- a) Illustrate waste treatment systems of distillery waste. **10**
- b) What specific aspects does a good EIA report and review include? **06**

Seat No.	
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Set **P****M.Sc. (Semester - III) (CBCS) Examination: March/April – 2025****Nano Physics****Energy Harvesting Devices (MSC09310)**

Day &amp; Date: Sunday, 01-06-2025

Max. Marks: 80

Time: 11:00 AM To 02:00 PM

- Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks.

**Q.1 A) Choose correct alternative from the following. 10**

- 1) \_\_\_\_\_ characteristics are related to solar cell.
  - a) Open circuit voltage
  - b) Short circuit current
  - c) Fill factor
  - d) All a, b, c
- 2) The first dye-sensitized solar cell concept is presented by \_\_\_\_\_.
  - a) Regan and Agratzel
  - b) Richard Feynman
  - c) De-Broglie
  - d) Kroon
- 3) \_\_\_\_\_ are non-conventional energy sources available in nature.
  - a) Solar energy
  - b) Wind energy
  - c) Ocean energy
  - d) All a, b, c
- 4) In battery electrical capacity gets lost when a battery is not being used it is called \_\_\_\_\_.
  - a) self discharge
  - b) deep discharge
  - c) rating
  - d) all a, b, c
- 5) A fuel cell is an electrical cell which converts \_\_\_\_\_.
  - a) light energy to electrical energy
  - b) electrical energy to light energy
  - c) chemical energy to electrical energy
  - d) thermal energy to chemical energy
- 6) Proton exchange membrane fuel cells typically operate at \_\_\_\_\_.
  - a) 160 to 195 K
  - b) 160 to 195 °C
  - c) 160 to 195 °F
  - d) 60 to 95 °F
- 7) Ruthenium oxide ( $\text{RuO}_2$ ) is used as \_\_\_\_\_.
  - a) electrochemical super capacitor material
  - b) electrode material
  - c) electrocatalytic surface
  - d) all a, b, c

- 8) Piezoelectric effect was discovered in \_\_\_\_\_.
  - a) silicon
  - b) quartz
  - c) germanium
  - d) calcium
- 9) Fuel cells are used for \_\_\_\_\_.
  - a) residential building
  - b) automobile
  - c) motorcycle
  - d) all a, b, c
- 10) In battery cell, the current flows in outer circuit from \_\_\_\_\_.
  - a) Positive to negative terminal and electrons from negative to positive
  - b) Positive to negative terminal and electrons from positive to negative
  - c) Negative to positive to terminal and electrons from negative to positive
  - d) Negative to positive to terminal and electrons from positive to negative

**B) Write True or False / Fill in the blanks.**

06

- 1) For high efficiency of solar cell resistive losses should be \_\_\_\_\_.
- 2) The short circuit current ( $I_{sc}$ ) is \_\_\_\_\_ to surface area.
- 3) In thin film solar cell, ideal I-V curve of solar cell is \_\_\_\_\_.
- 4) Pseudocapacitor is also called \_\_\_\_\_ capacitor
- 5) The advantages of piezo-composites are high coupling factor and Low acoustic impedance (True /False)
- 6) The optimum thermodynamic efficiency of heat engine is equal to  $1 + \frac{T_1}{T_2}$  (True/False)

**Q.2 Answer the following questions.**

16

- Writes in brief about Piezoelectric transducer.
- Writes short note on organic solar cells.
- Explain in brief about phosphoric acid fuel cell.
- Write a note on hybrid supercapacitor.

**Q.3 Answer the following questions.**

- |           |   |           |
|-----------|---|-----------|
| <b>a)</b> | Describe principal, construction and working of CdTe based solar cells.       | <b>10</b> |
| <b>b)</b> | What is photovoltaic effect? Write in brief about nanostructured solar cells. | <b>06</b> |

**Q.4 Answer the following question.**

- a) Explain in detail about double layer supercapacitor. 10**
- b) Write about  $\text{RuO}_2$  supercapacitor. 06**

**Q.5** Answer the following question.

- a)** Describe the construction and working of piezoelectric bulk power generator. **10**
- b)** Explain in brief about mechanical energy harvester. **06**

**Q.6 Answer the following question.**

- |   |           |
|---|-----------|
| a) Describe principal, working and material of DSSC | <b>10</b> |
| b) Write a short note on Pseudocapacitor.           | <b>06</b> |

**Q.7 Answer the following.**

- |  |           |
|--|-----------|
| a) Explain the construction and working of $\text{Cu}_2\text{S}$ based solar cell. | <b>10</b> |
| b) Explain in brief Piezoelectric polycrystalline ceramics.                        | <b>06</b> |

Seat No.	
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Set **P****M.Sc. (Semester - III) (CBCS) Examination: March/April – 2025****SOLID STATE PHYSICS****Energy Harvesting Devices (MSC10313)**

Day &amp; Date: Sunday, 01-06-2025

Max. Marks: 80

Time: 11:00 AM To 02:00 PM

- Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks.

**Q.1 A) Choose correct alternative.****10**

- 1) \_\_\_\_\_ technique is commonly used to fabricate nanostructured solar cells.
  - a) Etching
  - b) Lithography
  - c) Sol- gel processing
  - d) Hydrothermal synthesis
- 2) The polarization curve of fuel cell be divided into \_\_\_\_\_ regions.
  - a) One
  - b) Two
  - c) Three
  - d) Four
- 3) In traditional three electrode system to record CV, the electrode under test is called as \_\_\_\_\_.
  - a) counter electrode
  - b) reference electrode
  - c) working electrode
  - d) combine electrode
- 4) Which of these should not be a properties of fuel cell electrodes?
  - a) good electrical conductors
  - b) highly resistant to corrosive environment
  - c) should perform charge separation
  - d) take part in chemical reactions
- 5) The correct relation between power density ( $P_g$ ) and energy density ( $E_g$ ) of supercapacitor is \_\_\_\_\_, where  $\Delta t$  is discharging time.
  - a)  $P_g = \frac{E_g}{\Delta t}$
  - b)  $P_g = \frac{\Delta t}{E_g}$
  - c)  $P_g = \frac{E_g}{\Delta t} \times C_p$
  - d)  $P_g = \frac{\Delta t}{E_g} \times C_p$
- 6) Piezoelectric effect is observed when materials produce electric charges on application of \_\_\_\_\_.
  - a) voltage
  - b) mechanical stress
  - c) electric field
  - d) magnetic field

- 7) In MIS solar cells, the carriers flow through the insulating layer by \_\_\_\_\_.  
a) quantum mechanical tunnelling effect  
b) diffusion effect  
c) metal insulator throttling effect  
d) electron affinity effect
- 8) In Galvanostatic Charge Discharge (GCD), the supercapacitor is charged at a constant \_\_\_\_\_.  
a) current  
b) time  
c) voltage  
d) resistance
- 9) Which of the following types of fuel cells operates at the highest temperature?  
a) Proton exchange membrane (PEM) fuel cell  
b) Solid oxide fuel cell (SOFC)  
c) Alkaline fuel cell (AFC)  
d) Phosphoric acid fuel cell (PAFC)
- 10) \_\_\_\_\_ is a characteristic of piezoelectric materials.  
a) High dielectric constant  
b) High magnetic permeability  
c) High electromechanical coupling coefficient  
d) High thermal conductivity

**B) State True or False.****06**

- 1) Energy in EDLC supercapacitor is stored as electrostatic charge. (True/ False)
- 2) Single crystal materials typically have higher piezoelectric coefficients than polycrystalline ceramics. (True/ False)
- 3) Solid oxide fuel cells use an electrolyte that conducts oxide ( $O^{2-}$ ) ions from the anode to the cathode. (True/ False)
- 4) The I-V characteristics of a solar cell are drawn in the second quadrant. (True/ False)
- 5)  $CuInSe_2$  based solar cells are a type of thin-film solar cell. (True/ False)
- 6) Nanostructured solar cells use a thick absorber layer to increase efficiency. (True/ False)

**Q.2 Answer the following questions.****16**

- a) Explain photovoltaic effect.
- b) What are direct and converse piezoelectric effects?
- c) Write a note on carbon materials used for supercapacitor applications.
- d) Distinguish between fuel cells and batteries.

**Q.3 Answer the following questions.**

- a) Give detailed account of dye sensitized solar cell (DSSC) in terms of basic concept, working and materials used.
- b) Explain in brief heterojunction thin film solar cells.

**10****06**

**Q.4 Answer the following question.**

- a)** What is galvanostatic charge discharge (GCD) of supercapacitor? Explain the parameters obtained by GCD. **10**
- b)** Explain the energy storage mechanism in electric double layer supercapacitors. **06**

**Q.5 Answer the following question.**

- a)** What is the principle of fuel cell? Write a note on proton exchange membrane fuel cell. **10**
- b)** Write a note on applications of fuel cells. **06**

**Q.6 Answer the following question.**

- a)** Discuss parameters affecting piezoelectric performance. **10**
- b)** Give detailed account of piezoelectric transducers. **06**

**Q.7 Answer the following.**

- a)** What is cyclic voltammetry? How it can be used to determine the specific capacitance of supercapacitor? **08**
- b)** Discuss phosphoric acid fuel cell in details. **08**

Seat No.	
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Set **P**

**M.Sc. (Semester - III) (CBCS) Examination: March/April - 2025**  
**STATISTICS**  
**Applied Statistics (MSC16308)**

Day & Date: Sunday, 01-June-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

- Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks.  
 4) Use of calculator is allowed.

**Q.1 A) Choose the correct alternative. 10**

- 1) The Crude Birth Rate (CBR) is calculated as \_\_\_\_\_.  
 a) (Number of births / Total population)  $\times 1000$   
 b) (Number of marriages / Total population)  $\times 1000$   
 c) (Number of deaths / Total population)  $\times 1000$   
 d) (Number of child birth / Total number of birth)  $\times 1000$
- 2) The value of Net Reproduction Rate (NRR)  $< 1$  is indicative of \_\_\_\_\_.  
 a) Increase in population      b) Decrease in population  
 c) Constancy in population      d) All of the above
- 3) Changes due to general tendency of a phenomenon are called \_\_\_\_\_.  
 a) Secular trend      b) Seasonal variation  
 c) Irregular variation      d) Cyclic variation
- 4) Most preferred type of the average for index numbers is \_\_\_\_\_.  
 a) Arithmetic mean      b) Geometric mean  
 c) Harmonic mean      d) None of the above
- 5) Fisher's ideal index number is of \_\_\_\_\_ Laspeyres's index number and Paasche's index number.  
 a) Product      b) Sum  
 c) Quotient      d) Square root of the product
- 6) In simple random sampling with replacement, the same sampling unit may be included in the sample \_\_\_\_\_.  
 a) Only once      b) Only twice  
 c) More than once      d) Hundred times
- 7) In simple random sampling, the process of selecting the sample is \_\_\_\_\_.  
 a) based on convenience  
 b) based on non random  
 c) complete random and unbiased  
 d) based on subjective judgment



- 8) The faults due to assignable causes \_\_\_\_\_.  
 a) can be removed  
 b) cannot removed  
 c) can sometimes be removed  
 d) impossible to remove
- 9) In the context of simple random sampling, a sampling frame refers to \_\_\_\_\_.  
 a) A tool used for dividing the population into strata  
 b) A list of all individuals or units in the population from which the sample will be drawn.  
 c) The method used to divide the population into groups.  
 d) The procedure to calculate the sample size.
- 10) C chart is appropriate when \_\_\_\_\_.  
 a) defects can occur in varying quantities per unit  
 b) each unit can have only one defect  
 c) there are no defects in the process  
 d) variable data is collected

**B) Fill in the blanks.****06**

- 1) The component of a time series attached to long-term variation is termed as \_\_\_\_\_.  
 2) Fisher index number lies between \_\_\_\_\_.  
 3) The base year is usually assigned an index value of \_\_\_\_\_.  
 4) Increase in prices of air conditioners in summer is an example of \_\_\_\_\_ variation of time series.  
 5) Upper control limit for np chart is \_\_\_\_\_.  
 6) Laspeyres's index formula uses weights of the \_\_\_\_\_.

**Q.2 Answer the following questions.****16**

- a) Explain factor reversal test for index numbers.  
 b) Describe simple random sampling with replacement (SRSWR) with example.  
 c) Write a note on fraction nonconforming (p) charts.  
 d) Explain non-sampling errors.

**Q.3 Answer the following questions.****16**

- a) What is control chart? Explain how it helps to control the quality of manufactured product.  
 b) Construct the mean and range chart for the following data. Check whether process is in control or not.

Sample No.	1	2	3	4	5	6	7	8	9	10
Mean ( $\bar{X}$ )	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2
Range (R)	2.1	3.1	3.9	2.1	1.9	3.0	2.5	2.8	2.5	2.0

(Given:  $n = 5$ ,  $A_2 = 0.58$ ,  $D_3 = 0$ ,  $D_4 = 2.11$ )

**Q.4 Answer the following question.****16**

- a) What is time series? Describe in brief its components. Give example of each component.
- b) Calculate 5 yearly moving average of students in a commerce college as shown by the following figures

Year	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
No. of students	332	317	357	392	402	405	410	427	405	431

**Q.5 Answer the following question.****16**

- a) What is index numbers? Explain
- Laspeyres's quantity index number
  - Paasche's quantity index number
  - Fisher quantity index number
- b) Construct price index number of process from the following data using
- Laspeyres's
  - Paasche's and
  - Fisher's methods

Commodity	1960		1970	
	Price	Quantity	Price	Quantity
A	6	50	10	56
B	2	100	2	120
C	4	60	6	6
D	10	30	12	12
E	8	40	12	12

**Q.6 Answer the following question.****16**

- a) Explain, in detail, stratified random sampling. Discuss the allocation problem for this method.
- b) What is cost of living index number? Explain its uses. Describe the procedure followed in its construction.

**Q.7 Answer the following.****16**

- a) Explain the terms:
- Crude Death Rate
  - Specific Death Rate
  - Standardized Death Rate
  - Total Fertility Rate

- b) The number of births occurring in a country in a particular year is shown here classified according to age of mother, together with the female population in each age group of the reproductive period.

Age-group	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Female population	84,796	70,018	72,660	75,924	75,109	71,625	66,660
No of births to mother in the age-group	2,349	14,547	16,746	10,229	5,257	1,432	93

The total population of the city during the year was 22,85,800. With the above data determine

- i) The crude birth rate
- ii) The general fertility rate
- iii) Age specific fertility rate
- iv) Total fertility rate

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Set **P**

**M.Sc. (Semester - III) (CBCS) Examination: March/April – 2025**  
**ZOOLOGY**

**Wild Life and Conservation Biology (MSC31310)**

Day & Date: Sunday, 01-06-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

**Instructions:** 1) Q. no 1 & 2 are compulsory.  
 2) Attempt any three questions from Q.no 3 to Q.No.7.  
 3) Figure to right indicate full marks.

**Q.1 A) Choose correct alternative. 10**

- 1) Entities which are particularly adapted to colonize the lifeless barren regions and start an ecological community are known as \_\_\_\_\_.  
 a) Pioneer Species                      b) Climax community  
 c) Invasive                                  d) Exotic
- 2) The conservation breeding center of Great Indian Bustard is located in which Indian State?  
 a) Maharashtra                          b) Karnataka  
 c) Gujrat                                    d) Rajasthan
- 3) The resources a population actually uses constitutes its \_\_\_\_\_.  
 a) Realized niche                          b) Exploitation  
 c) Foraging                                  d) Fundamental niche
- 4) The place where two or more vegetation type meets is referred in ecology as \_\_\_\_\_?  
 a) Edaphic                                  b) Endemic  
 c) Edge                                        d) Ecotone
- 5) Silent Valley National Park is located in the Indian state of?  
 a) Nagaland                                b) Assam  
 c) Kerala                                      d) Karnataka
- 6) For the Cheetah Re-introduction programme the Cheetah's were translocated from \_\_\_\_\_.  
 a) Namibia                                  b) Amazon  
 c) Congo                                      d) Russia
- 7) The Great Indian Bustard Sanctuary, Nannaj is also known as \_\_\_\_\_.  
 a) Jawaharlal Nehru Wildlife Sanctuary  
 b) Indira Gandhi Wildlife Sanctuary  
 c) Sanjeev Gandhi Wildlife Sanctuary  
 d) Gandhi Abhayaranya

- 8) International Solar alliance initiative was first proposed by \_\_\_\_\_.  
a) France                                  b) India  
c) Australia                                d) Germany
- 9) \_\_\_\_\_ Is an area strictly reserved for the betterment of wildlife where activities like Forestry, Grazing and Cultivation is not permitted.  
a) Wildlife Sanctuaries                  b) Community reserves  
c) National Parks                         d) Zoo
- 10) Which of the following is a Non-renewable energy resource?  
a) Hydro energy                              b) Solar  
c) Wind                                         d) Natural Gas

**B) Write true / false.**

06

- 1) In an Ecosystem the energy flow is not always unidirectional.
- 2) Eutrophication is a good indicator of habitat
- 3) Biomass is a Renewable Resource
- 4) The process of protecting an endangered species of plant or animal within its natural habitat is called as Ex situ conservation
- 5) Great Indian Bustard is an grassland Indicator species.
- 6) Grazing can be permitted in National Parks.

**Q.2 Answer the following questions.**

16

- a) Write a short note on: Conservation Breeding
- b) Write a short note on: Realized Niche
- c) Write a short note on: Solar Energy
- d) Write a short note on: Ecotone

**Q.3 Answer the following questions.**

- a)** Write a detailed note on: Non - Renewable Energy Resources. **08**
- b)** Explain in detail Ecological Succession with reference to Hydrosere. **08**

**Q.4 Answer the following question.**

- |           |  |           |
|-----------|--|-----------|
| <b>a)</b> | Describe in detail Anthropogenic factors affecting the Ecosystem | <b>08</b> |
| <b>b)</b> | Explain the Traditional Wildlife Conservation Practices.         | <b>08</b> |

**Q.5 Answer the following question.**

- a) Describe the Primary Ecological Succession in detail. 08**
- b) Write a detailed note on the Wildlife (Protection) Act, 1972. 08**

**Q.6 Answer the following question.**

- a) Write a detailed note on: Indian Forest Act, 1980. **08**
- b) What are Biodiversity Hotspots? Explain with examples the significance of Biodiversity Hotspots. **08**

**Q.7 Answer the following.**

- a)** Explain the impact of introduction of Exotic species in the ecosystem. **08**  
**b)** Enlist and Explain different types of Habita. **08**

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**M.Sc. (Semester - III) (CBCS) Examination: March/April-2025**

**ZOOLOGY**

**Ecology and Ethology (MSC31311)**

Day & Date: Sunday, 01-06-2025

Max. Marks: 80

Time: 11:00 AM To 02:00 PM

- Instructions:** 1) Q. No. 1 & 2 are compulsory.  
 2) Attempt any three questions from Q. No. 3 to Q. No. 7.  
 3) Figure to the right indicate full marks.

**Q.1 A) Choose the most correct alternative given below to the question: 10**

- 1) The initial phase in sigmoidal (S-shaped) growth curve is \_\_\_\_\_.  
 a) Log phase                                      b) Lag phase  
 c) Declining phase                              d) Stationary phase
- 2) Phytoplankton, zooplankton, and the fungi are components of \_\_\_\_\_ ecosystem.  
 a) Fresh water                                      b) Land  
 c) Desert    d) Terrestrial
- 3) The type of succession starts in the area where no living organisms ever existed is \_\_\_\_\_.  
 a) Primary succession                              b) Secondary succession  
 c) Hydrogen succession                              d) Tertiary succession
- 4) Atmosphere and hydrosphere are reservoir for \_\_\_\_\_.  
 a) Carbon cycle                                      b) Sulphur cycle  
 c) Nitrogen cycle                                      d) Phosphorous cycle
- 5) The air pollutant responsible for acid rain is \_\_\_\_\_.  
 a) CO    b) SO<sub>2</sub>  
 c) SO<sub>2</sub>, N<sub>2</sub>O    d) N<sub>2</sub>O
- 6) As we move from tropic to polar region the biodiversity level \_\_\_\_\_.  
 a) Increases    b) Remains constant  
 c) Decreases    d) Unaffected
- 7) The interactions in which one partner is benefited and other is not affected any way is \_\_\_\_\_.  
 a) Mutualism    b) Predation  
 c) Both a & b    d) Competition
- 8) \_\_\_\_\_ is an abiotic factor of an ecosystem.  
 a) Protozoans    b) Bacteria  
 c) Water    d) Fungi

- 9)** Following are examples of decomposers except \_\_\_\_\_.  
a) Bacteria                      b) Fungi  
c) Actinomycetes                d) Phytoplankton
- 10)** Any recurring even or behaviour on time scale that is characteristic of all living organisms is \_\_\_\_\_.  
a) Biological rhythm              b) Echolocation  
c) Ecotone                          d) Succession

**B) Fill in the blanks.**

06

- 1) Two or more population in a geographical area forms \_\_\_\_\_.
- 2) The last stabilized community in a plant succession is known as \_\_\_\_\_ community.
- 3) The word ecology was first time used by \_\_\_\_\_.
- 4) \_\_\_\_\_ are also called as primary consumers.
- 5) The fuel burning in vehicle causes \_\_\_\_\_ pollution.
- 6) The changes in population or community structure that occurs at the boundary of two habitats is referred as \_\_\_\_\_.

**Q.2 Answer the following questions.**

16

- Explain the types of energy pyramids.
- Discuss the fundamental and realized niche.
- Write a note on echolocation.
- Give the application of Remote sensing.

**Q.3 Answer the following questions.**

- a) Explain in detail Nitrogen cycle.
- b) Discuss the species interaction-
  - i) mutualism
  - ii) competition

08

08

**Q.4 Answer the following questions.**

- Explain the causes, preventive and control measures of water pollution and land pollution.
- Write a note on community structure and ecotone.

08

08

**Q.5 Answer the following questions.**

- Explain in detail characteristics of population.
- What is biodiversity? Explain in detail patterns of biodiversity.

08

08

**Q.6 Answer the following questions.**

- Explain in detail attributes of community.
- Explain in detail structure and function of fresh water ecosystem with suitable example.

08

08

**Q.7 Answer the following questions.**

- What is ecological succession? Explain in detail primary and secondary succession.
- Discuss in detail social behaviour and altruistic behaviour.

08

08

Seat No.	
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Set P
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**M.A. (Rural Development) (Semester - III) (CBCS) Examination:  
March/April – 2025  
Human Development (MA04308)**

Day & Date: Sunday, 01-06-2025  
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

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

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

**16**

- 1) Which of the following is not one of the factors related to Human Development Index.
 

a) Longevity	b) Literacy
c) Decent standard of living	d) Increase in Govt. Jobs
- 2) Who was the originator of the Human Development Report?
 

a) Amartya Sen	b) Jan Tinberger
c) Mahboob-ul-Haq	d) Dr. Manmohan Singh
- 3) Human development concern with \_\_\_\_\_.
 

a) Quantitative Development	b) Qualitative development
c) Both (a and b)	d) None of these
- 4) Human development is \_\_\_\_\_.
 

a) Always negative	b) Always positive
c) Both	d) None of the above
- 5) What is the literacy rate of India on the basis of census 2011?
 

a) 74.1%	b) 66%
c) 92%	d) 82%
- 6) Which state has the highest per capita income in India?
 

a) Punjab	b) Bihar
c) Odhisha	d) Goa
- 7) The Multidimensional Poverty Index has been developed by \_\_\_\_\_.
 

a) The UNDP	b) Oxford HDI
c) The UNO	d) Morris D Morris
- 8) Who secured the top rank in The Human Development Report 2018?
 

a) Sweden	b) Norway
c) Switzerland	d) Austria



- 9) Who secured the lowest rank in The Human Development Report 2018?
- |                |          |
|----------------|----------|
| a) Afghanistan | b) Congo |
| c) Niger       | d) Kenya |
- 10) What is the rank of India in the Human Development Index 2018?
- |                      |                      |
|----------------------|----------------------|
| a) 142 <sup>nd</sup> | b) 136 <sup>th</sup> |
| c) 140 <sup>th</sup> | d) 130 <sup>th</sup> |
- 11) When was the Gender Inequality Index (GII) introduced?
- |         |         |
|---------|---------|
| a) 2010 | b) 2011 |
| c) 1999 | d) 2005 |
- 12) Which of the following index is not released by the UNDP?
- Human Development Index
  - Multidimensional Poverty Index
  - Gender Inequality Index
  - Environmental Quality Index
- 13) The state having the highest literacy rate in India \_\_\_\_.
- |           |               |
|-----------|---------------|
| a) Kerala | b) Tamil Nadu |
| c) Bihar  | d) Rajasthan  |
- 14) Which scheme was started in 1993 to create self-employment opportunities for educated unemployed youth in rural areas and small towns?
- Prime Minister Rozgar Yojana
  - National Rural Employment Guarantee Act
  - Rural Employment Generation Programme
  - Swarnajayanti Gram Swarozgar Yojana
- 15) The state having lowest literacy rate in India \_\_\_\_.
- |              |            |
|--------------|------------|
| a) Bihar     | b) Odhisha |
| c) Rajasthan | d) U. P.   |
- 16) Which state has the highest HDI?
- |            |                   |
|------------|-------------------|
| a) Punjab  | b) Kerala         |
| c) Gujarat | d) Madhya Pradesh |

**Q.2 Write short answers. (Any Four)**

**16**

- What is the meaning of human development?
- What is the meaning of economic security?
- What is the significance of human resource?
- What is the meaning of political security?
- What is the meaning of human poverty index?
- Why Human Development Index is important?

**Q.3 Answer the following questions. (Any Two) 16**

- 1) Explain the Methods of computing HDI.
- 2) What is the social determinants of Human capital?
- 3) Which are the protective factors of Personal Security?
- 4) What are the reasons for decline food grains?

**Q.4 Answer the following questions in detail. (Any One) 16**

- 1) Discuss the other attempts of capability approach in detail.

**OR**

- 2) Explain Amartya Sen's capability approach.

**Q.5 Answer the following question. 16**

Discuss the social determinants of human development in detail.

<b>Seat No.</b>	
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Set	P
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**M.A. (A.I.H.C & A.) (Semester - III) (CBCS) Examination:  
March/April – 2025  
Archaeology (MA19308)**

Day & Date: Sunday, 01-06-2025  
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

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

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

16

- 1) The Indus valley people lived in houses made of \_\_\_\_\_.  
a) Wood                                      b) Mud  
c) Bricks                                      d) Stone Slabs
- 2) The most impressive feature of the Harappan culture is \_\_\_\_\_.  
a) Town planning                          b) Arrangements of houses  
c) Drainage system                        d) Pottery
- 3) \_\_\_\_\_ is a Vahana (vehicle) of Lord Ganesha.  
a) Mouse (Mushaka)                      b) Bull (Nandi)  
c) Eagle (Garuda)                         d) Swan (Hansa)
- 4) Under water archaeology is also known as \_\_\_\_\_.  
a) Marine Archaeology                    b) Water science  
c) Ethno-archaeology                      d) Salvage archaeology
- 5) The head quarter of Archaeological Survey of India is at \_\_\_\_\_.  
a) Delhi                                        b) Mumbai  
c) Kolkata                                      d) Aurangabad
- 6) The Temples of North India is called \_\_\_\_\_ style Temples.  
a) Nagar                                        b) Dravid  
c) Vesara                                       d) Bhumija
- 7) Mount Abu is famous for \_\_\_\_\_.  
a) Hindu temples                            b) Jain temples  
c) Buddhist temples                        d) None of these
- 8) \_\_\_\_\_ is suitable for excavation of fortification.  
a) Quadrant method                        b) Horizontal method  
c) Step trench method                      d) Vertical method

- 9) If a terracotta pot is red in colour, it is assumed to be fired in \_\_\_\_\_ kiln.

a) Closed	b) Open
c) Half-closed	d) Partly closed
- 10) In Maharashtra excavation of stone circle was done at \_\_\_\_\_.

a) Nevasa	b) Inamgaon
c) Wakav	d) Mahurzari
- 11) \_\_\_\_\_ is the vehicle of Mahishasurmardini.

a) Bull	b) Elephant
c) Mahisha	d) Lion (Simha)
- 12) Excavated animal bones are studied in \_\_\_\_\_ branch of archaeology.

a) Anthropology	b) Archaeo-zoology
c) Ethno archaeology	d) Palaeontology
- 13) Sarnath is famous for \_\_\_\_\_.

a) Commercial center
b) Communal harmony
c) Dhamek stupa & first sermon
d) Centre of education
- 14) \_\_\_\_\_ is the oldest script in India.

a) Brahmi	b) Kharoshti
c) Tamil	d) Devanagari
- 15) \_\_\_\_\_ writing material not used by ancient Indian people.

a) Tad patra	b) Cotton
c) Paper	d) Ball pen
- 16) Which of the following method is primarily used to ‘Find the Archaeological sites’?

a) Experimental Method	b) Micro Method
c) Survey Method	d) None of the above

**Q.2 Write short notes. (Any Four)**

16

- a) Horizontal excavation
- b) Vertical excavation
- c) Dating Methods
- d) Arial Photography
- e) Ajanta caves
- f) Archaeology & History

**Q.3 Answer the following questions. (Any Two)**

16

- State the importance of prehistoric period
- Write in brief information about iconography.
- Elaborate, Archaeology & Natural Sciences.
- Describe the methods of archaeological excavation.

**Q.4 Answer the following questions in detail. (Any One) 16**

**a)** Describe the rock cut architecture with special reference to Karle caves.

**OR**

**b)** Discuss the features of Indus Valley Civilization.

**Q.5 Describe the methods of archaeological excavation. 16**

**एम.ए. (Prakrit) (सत्र – III) (CBCS) परीक्षा: मार्च/एप्रिल – २०२५**  
**Aa. Kundkunda and his Literature (MA16309)**

कमाल गुणः ८०

**सूचना :** १) सर्व प्रश्न अनिवार्य आहेत.  
२) उजवीकडील अंक पूर्ण गुण दर्शवितात.

१३

- १) आचार्य कुंदकुंद यांनी ——— प्राभृताची रचना केल्याचा उल्लेख मिळतो.  
अ) ०८ ब) १०८  
क) ८० ड) ८४
- २) आ. कुंदकुंदा नी ——— भाषेतून दशभक्ति रचली आहे.  
अ) संस्कृत ब) प्राकृत  
क) हिंदी ड) गुजराथी
- ३) कुंदकुंद यांना चार अंगुल आकाशात अधर गमनाची वृद्धी प्राप्त असल्याने त्यांना ——— विशेषण देऊन गौरविले आहे.  
अ) सर्वज्ञ ब) कलिकालसर्वज्ञ  
क) अरिहंत ड) पूज्यपाद
- ४) समयसार प्रवचनसार पंचास्तिकायसंग्रह नियमसार अष्टपाहूड हे ग्रंथ ——— नावाने प्रसिद्ध आहेत.  
अ) प्राभृतत्रयी ब) ग्रंथत्रयी  
क) आगम ड) पंचपरमागम
- ५) प्रवचनसार हा ज्ञान व ज्ञेय यांची मीमांसा करणारा ——— शैलीमध्ये लिहिलेला अद्वितीय ग्रंथ आहे.  
अ) दार्शनिक ब) पांचाली  
क) वैदर्भी ड) स्थापत्य
- ६) दर्शन व ज्ञान प्रधान चारित्र्याने वैभवासह ——— प्राप्ती होते.  
अ) स्वर्गाची ब) भौतिकतेची  
क) निर्वाणाची ड) वस्तुची

- ७) पंचास्तिकाय, प्रवचनसार आणि समयसार यातील ग्रंथांचा उल्लेख कोणत्या प्रकारे आला आहे?

अ) प्राभूतत्रय                      ब) भाषात्रय  
क) ग्रंथत्रय                        ड) वचनत्रय

८) दर्शन—ज्ञान प्रधान वीतराग चारित्र असेल तर कशाची प्राप्ती होते?

अ) मोक्षाची                      ब) चक्रवर्तीपदाची  
क) ज्ञानाची                        ड) ऐश्वर्य व संपत्ती

९) आचार्य कुंदकुंदाच्या ग्रंथांना प्रायः काय म्हटले जाते?

अ) प्राभूत                          ब) सूत्र  
क) अमृतवचन                    ड) उपदेश

१०) बारा अनुप्रेक्षांचे वर्णन आचार्य कुंदकुंद यांच्या कोणत्या रचनेत आहे?

अ) कार्तिकेयानुप्रेक्षा            ब) बारा भावना  
क) अनुप्रेक्षा                      ड) बारसाणुपेक्खा

११) 'प्रवचनसार' मधील प्रथम अध्यायाचे नाव काय आहे?

अ) ज्ञानतत्व प्रज्ञापन            ब) मोक्षतत्व प्रज्ञापन  
क) चरणानुयोगसूचकचूलीका    ड) धर्मतत्व प्रज्ञापन

१२) आचार्य कुंदकुंद यांच्यानंतर त्यांच्या पश्चात कोणत्या अन्वयाचा उगम झाला?

अ) वीरान्वय                      ब) गौतमान्वय  
क) कुंदकुंदान्वय                    ड) धर्मान्वय

१३) 'प्रवचनसार' यावर आ. अमृतचंद्र यांनी ——— टीकेची रचना केली आहे.

अ) तत्वप्रदीपिका                  ब) सरोजभास्कर  
क) विजयोदया                      ड) तत्वप्रज्ञापण

१४) जीवाचे ——— तीन उपयोग आहेत.

अ) अर्थ, धर्म, ज्ञान                  ब) व्यापार—व्यवसाय व चिंता  
क) शुद्ध, शुभ व अशुभ              ड) नोकरी, अर्थार्जन व सौख्य

१५) आ. कुंदकुंद यांनी 'बोधपाहूड' या रचनेत ——— यांचा गुरू म्हणून उल्लेख केला आहे.

अ) विशाखाचार्य                  ब) देवसेन  
क) भद्रबाहू                          ड) उमास्वामी

१६) 'प्रवचनसार' या ग्रंथात अमृतचंद्र यांच्या टिकेनुसार ——— गाथा आहेत.

अ) १९२                              ब) ३११  
क) २७५                              ड) १८७

## प्र.२ थोडक्यात उत्तरे द्या. (कोणतेही चार)

१६

- १) नियमसार ग्रंथाची माहिती थोडक्यात द्या.
- २) समयसार ग्रंथाचे स्वरूप कुंदकुंद यांच्या अनुसार लिहा.
- ३) वट्टेकर विरचित "मुलाचार" ग्रंथाची माहिती सांगा.
- ४) कुंदकुंद आचार्य यांच्या ग्रंथत्रयीची चर्चा करा.
- ५) प्रवचनसार मधील दुसऱ्या महाआधिकारा चे संक्षिप्त वर्णन करा.
- ६) मंगलाचरण म्हणजे काय ते सांगून प्रवचनसार या ग्रंथामध्ये आलेल्या मंगलाचरणासंबंधी गाथांचा अर्थ सांगा.

## प्र.३ थोडक्यात उत्तरे द्या. (कोणतेही दोन)

१६

- १) इंद्रिय ज्ञान व अतींद्रिय ज्ञान यातील फरक प्रवचनसार ग्रंथांच्या आधारे उदाहरण देऊन सांगा.
- २) मंगल म्हणजे काय? मंगलाचरण का करावे? मंगलाचरण संबंधी कारणे सांगा.
- ३) केवलज्ञानाची महिमा प्रवचनसाराच्या आधारे सांगा.
- ४) शुद्धोपयोग-शुभोपयोग व अशुभोपयोग यांच्या फळासंबंधी वर्णन करा.

## प्र.४ सविस्तर उत्तरे द्या. (कोणताही एक)

१६

- १) आचार्य कुंदकुंद यांचा जीवनपरिचय सांगून त्यांच्या साहित्याबद्दल माहिती द्या.  
किंवा
- २) प्रवचनसार ग्रंथाची विषयवस्तु सविस्तर लिहा.

## प्र.५ सविस्तर उत्तर द्या.

१६

'पाहुड म्हणजे काय'? आचार्य कुंदकुंदांच्या पाहुडांची सविस्तर चर्चा करा.



Seat No.	
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Set P
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**एम.ए. (Pali) (सत्र – III) (CBCS) परीक्षा: मार्च/एप्रिल – २०२५**  
**Boudhha Tatvadnyan (MA17308)**

वार, दिनांक : रविवार, ०१-०६-२०२५  
 वेळ: सकाळी ११:०० ते ०२:००

कमाल गुण: ८०

**सूचना :** १) सर्व प्रश्न अनिवार्य आहेत.  
 २) उजवीकडील अंक पूर्ण गुण दर्शवितात.

**प्र.१ खालील दिलेले योग्य पर्याय निवडून गाळलेल्या जागा भरा.**

१६

- १) 'बुद्धो' या शब्दाचे वचन कोणते आहे?
 

अ) एकवचन	ब) अनेकवचन
क) द्विवचन	ड) बहुवचन
- २) बुद्धांची प्रमुख लक्षणे किती आहेत?
 

अ) ३०	ब) ३२
क) ८०	ड) ८४
- ३) सातवा आर्य अष्टांगिक मार्ग कोणता आहे?
 

अ) सम्मा वायामो	ब) सम्मा आजीवो
क) सम्मा सति	ड) सम्मा कम्मन्तो
- ४) यो धम्मं पस्सति, सो ——— पस्सति ।
 

अ) पटिच्चसमुत्पादं	ब) पटिच्चसमुत्पाद
क) पटिच्चसमुत्पादं	ड) प्रटिच्चसमुत्पादा
- ५) वस्तूमात्रेतील होणाऱ्या सततच्या बदलाला काय म्हटले आहे?
 

अ) नित्यता	ब) अनित्यता
क) शाश्वतता	ड) परिवर्तन
- ६) भ. बुद्धांनी प्रथम धम्मोपदेश किती जणांना दिला?
 

अ) तीन	ब) चार
क) पाच	ड) सहा
- ७) 'सळायतन' या शब्दाचा अर्थ काय होतो?
 

अ) सळई	ब) सहा इंद्रिये
क) सळणे	ड) सलने

- ८) अकुशलतेपासून चित्ताची शुद्धता राखणे याला काय म्हणतात?  
 अ) कुशलता ब) निपुणता  
 क) शुद्ध भक्ती ड) चित्तशुद्धी

९) 'सम्मा सत्ति' याचा अर्थ काय होतो?  
 अ) समानता ब) सम्यक आठवण  
 क) योग्य विचार ड) योग्य सजगता

१०) 'नाम' या पालि शब्दाचा अर्थ काय होतो?  
 अ) नाव ब) सज्जा  
 क) मन ड) रूप

११) पञ्चउपादान कखन्दाची उत्पत्तीचा परिणाम कशात आहे?  
 अ) सुखात ब) आनंदात  
 क) भवात ड) दुःखात

१२) सतत जागृत असणारे कोण असतात?  
 अ) बुद्ध ब) पक्षी  
 क) जागरूक ड) मनुष्य

१३) 'अरियो सच्च' या शब्दाचा अर्थ काय होतो?  
 अ) आर्य सत्य ब) खरे सत्य  
 क) असे सत्य ड) याचे सत्य

१४) 'सरणं' या शब्दाचा अर्थ काय आहे?  
 अ) शरण ब) अनुसरण  
 क) नमन ड) सारण

१५) दुःखमुक्तीचा एकमेव मार्ग कोणता?  
 अ) स्वर्गाचा ब) आर्यअष्टांगिक  
 क) उपोसथाचा ड) भिक्षुचा

१६) 'ब्रह्मविहार' किती आहेत?  
 अ) दोन ब) तीन  
 क) चार ड) पाच

- प्र.२ टिपा लिहा. (कोणतेही चार) १६
- १) नामरूप
  - २) दुक्खं अरियसच्चं
  - ३) सम्मा वाचा
  - ४) अष्टशिल
  - ५) दुक्ख समुदय
  - ६) अनित्य
- प्र.३ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन) १६
- १) आर्य अष्टांगिक मार्ग पालि मध्ये सांगा.
  - २) खालील पालि गाथेचा मराठी अर्थ सांगा.  
 "स्वाखातो भगवता धम्मो, संदिट्ठीको, अकालिको,  
 एहि परिसको ओपनियको, पच्चतं वेदितब्बो विञ्जूहिति ।  
 धम्मं याव जीवितं सरणं गच्छामि ।
  - ३) अनात्मता म्हणजे काय थोडक्यात सांगा.
  - ४) उपेक्षा म्हणजे काय?
- प्र.४ खालील प्रश्नांची तपशीलवार उत्तरे द्या. (कोणताही एक) १६
- १) तीन लक्षण सिद्धांत स्पष्ट करा.  
 किंवा
  - २) धम्म आणि सद्धम्म याविषयी सविस्तर चर्चा करा.
- प्र.५ बुद्ध तत्वज्ञानानुसार निर्वाण आणि परिनिर्वाण संकल्पना स्पष्ट करा. १६



- ७) 'सज्जनेन दुर्जनः परिहर्तव्यः।' इदं वाक्यं ——— अस्ति ।  
 अ) कर्तरि  
 ब) द्विकर्मक  
 क) भावे  
 ड) कर्मणि
- ८) अधोमुखस्यापि कृतस्य ——— नाधः शिखा यान्ति कदाचिदेव ।।  
 अ) वह्निना  
 ब) वह्निं  
 क) वह्नेः  
 ड) वह्नये
- ९) 'दुह्, याच्, पच्, एते ——— धातवः सन्ति ।  
 अ) द्विकर्मक  
 ब) अकर्मक  
 क) सकर्मक  
 ड) अन्य
- १०) ——— ओदनं भुङ्क्ते ।  
 अ) पयसा  
 ब) पयः  
 क) पयेन  
 ड) पयसे
- ११) 'कन्यायै स्वस्ति' इत्यत्र 'स्वस्ति' योगेन कन्या शब्दस्य ——— विभक्तिः भवति ।  
 अ) तृतीया  
 ब) पंचमी  
 क) चतुर्थी  
 ड) द्वितीया
- १२) पदं ——— अस्ति ।  
 अ) वर्णसमूहः  
 ब) वाक्यसमूहः  
 क) पदसमूहः  
 ड) संधिसमूहः
- १३) हे राजेश, ——— पाठः कस्मिन् समये वर्तते?  
 अ) भवत्याः  
 ब) भवते  
 क) भवतः  
 ड) भवतीं
- १४) राज्ञा काव्यं श्रूयते । इत्यत्र ——— प्रयोगः वर्तते ।  
 अ) कर्तरि  
 ब) अकर्मक  
 क) भावे  
 ड) कर्मणि
- १५) अनीप्सित कर्मकारकस्य कृते ——— विभक्तिः भवति ।  
 अ) द्वितीया  
 ब) प्रथमा  
 क) तृतीया  
 ड) पंचमी
- १६) 'स्निह्' धातुयोगे ——— विभक्तिः भवति ।  
 अ) तृतीया  
 ब) द्वितीया  
 क) चतुर्थी  
 ड) सप्तमी

प्र.२ टिप्पणीं लिखत। (केवलं ४)  
टीपा लिहा. (फक्त ४)

१६

- १) प्रातिपदिक
- २) कर्मप्रवचनीयानि
- ३) प्रयोजकवाक्यरचना
- ४) कारकाणि
- ५) सकर्मकवाक्यप्रयोगः
- ६) कर्मणिप्रयोगः

प्र.३ द्वयोः प्रश्नयोः संस्कृते अनुवादं कुरुत।

१६

कोणत्याही दोन प्रश्नांचा संस्कृतमध्ये अनुवाद करा.

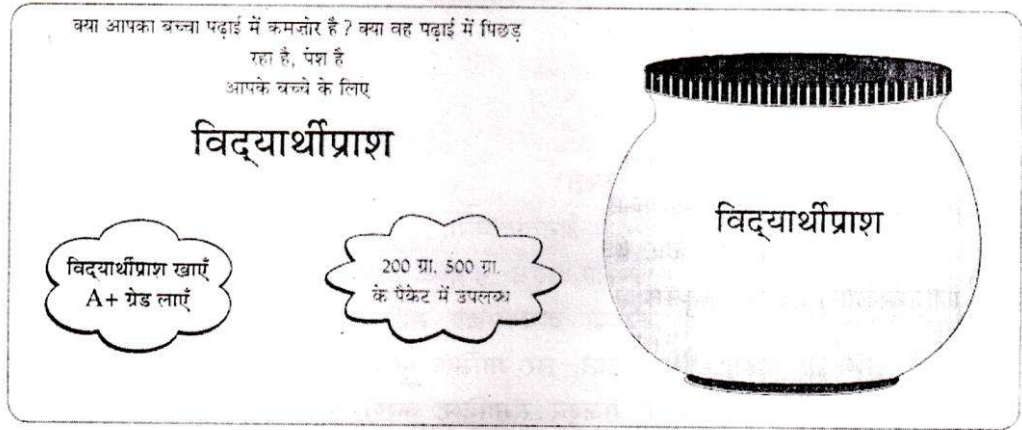
- १) मासिके व नियतकालिके: ह्या माध्यमाचे आयुष्य वृत्तपत्रापेक्षा निश्चितच अधिक असते. म्हणूनच वृत्तपत्राच्या एका प्रतीच्या वाचकांपेक्षा मासिकाच्या एका प्रतीचे वाचक अधिक असतात. वृत्तपत्र घाईत वाचले जाते, तर मासिके फुरसतीच्या वेळात वाचले जाते. म्हणून मासिकातील जाहिरातीत अधिक मजकूर समाविष्ट करणे शक्य होते. भारतात वृत्तपत्रापेक्षा मासिके, विशेषतः प्रादेशिक भाषांतील मासिके अधिक प्रमाणात छापली व वाचली जातात. मासिकांचे प्रकारही अनेक आहेत. समाजातील भिन्न स्तरांमध्ये त्यांचा वाचकवर्ग पसरला आहे. तसेच स्त्रिया वृत्तपत्रापेक्षा मासिकेच जास्त वाचतात.
- २) भारतीय स्टेट बँक (SBI) यांच्या आस्थापनेवरील अधिकारी पदांच्या एकूण ५४४७ जागा भरण्यासाठी जाहिरातीत दिलेल्या पदांनुसार पात्रताधारक उमेदवारांकडून ऑनलाईन पद्धतीने अर्ज मागविण्यात येत आहेत.  
**अधिकारी पदांच्या ५४४७ जागा**  
मंडळ आधारित अधिकारी पदांच्या जागा  
**शैक्षणिक पात्रता** – पदांनुसार सविस्तर शैक्षणिक पात्रतेकारिता कृपया मूळ जाहिरात डाऊनलोड करून पाहावी.  
**अर्ज करण्याची शेवटची तारीख** – दिनांक १२ डिसेंबर २०२३ पर्यंत ऑनलाईन पद्धतीने अर्ज करता येतील.  
अधिक माहितीसाठी कृपया मूळ जाहिरात डाऊनलोड करून वाचन करणे आवश्यक आहे.

३) विज्ञापन कैसे लिखते हैं?

सबसे पहले एक बॉक्स बनाकर ऊपर मध्य में विज्ञापित वस्तु का नाम मोटे अक्षरों में लिखना चाहिए। दाएँ एवं बाएँ किनारों पर सेल धमाका, खुशखबरी, खुल गया जैसे लुभावने शब्दों को लिखना चाहिए। बाईं ओर मध्य में विज्ञापित वस्तु के गुणों का उल्लेख करना चाहिए। दाहिनी ओर या मध्य में वस्तु का बड़ा-सा चित्र देना चाहिए।

विज्ञापन लेखन एक ऐसी कला है जिसमें आप विभिन्न माध्यमों के माध्यम से विज्ञापन बनाने का काम करते हैं। इसका मुख्य उद्देश्य आपके उत्पाद या सेवाओं की प्रचार करना है ताकि आप अधिक ग्राहकों को प्राप्त कर सकें और अपने व्यापार को बढ़ावा दे सकें।

४) 'विद्यार्थीप्राश' बनाने वाली कंपनी के लिए विज्ञापन तैयार कीजिए।



विद्यार्थीप्राश को रोज सेवन करें दिमाग को फिट रखें। साथ ही प्राणायाम करें। अधिक लाभ मिलेगा।

प्र.४ कश्चन एक: प्रश्न: समाधेय:। कोणत्याही एका प्रश्नाचे उत्तर लिहा.

१६

१) किशोर-विकास-नामकसेवासंस्थायां (NGO) प्रबन्धकपदसेवार्थ संस्कृते स्वपरिचयं लिखित्वा संस्कृते आवेदनं लिखत। (किशोर-विकास-नामक सेवा संस्थेत (NGO) प्रबन्धक पदासाठी संस्कृतमध्ये स्वपरिचय लिहून संस्कृतमध्ये अर्ज लिहा.)

किंवा

२) सोलापुरे मकरसंक्रमणोत्सवस्य यथास्थितं वर्णनं संस्कृते लिखत। (सोलापुरातील मकर संक्रमण उत्सवाचे यथास्थित वर्णन संस्कृतमध्ये लिहा.)

प्र.५ विस्तारेण उत्तरत।

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'चान्द्रयानं ३' अधिकृत्य संस्कृते निबन्धं लिखत। ('चान्द्रयान ३' विषयावर संस्कृतमध्ये निबन्ध लिहा.)

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**M.A. (Urdu) (Semester - III) (CBCS) Examination: March/April-2025**  
**Hindustan Mein Cinema (MA07306)**

Day & Date: Sunday, 01-06-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

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

16

سوال نمبر 1. صحیح متبادل کا انتخاب کر کے جوابی پرچے میں لکھیے۔

(1) ساحر لدھیانوی کا اصل نام کیا ہے؟

- (A) ساحر۔ (B) محمد ساحر۔  
 (C) عبداللہ۔ (D) عبداللہ۔

(2) ان میں سے کونسی فلم حب الوطنی کے موضوع پر بنائی گئی ہے؟

- (A) باڈر۔ (B) بڑے میاں چھوٹے میاں۔  
 (C) کبھی خوشی کبھی غم۔ (D) دل تو پاگل ہے۔

(3) غریب جان کے ہم کونہ بھلا دینا، کے نغمہ نگار کون ہیں؟

- (A) راحت اندوری۔ (B) جان الیا۔  
 (C) جاں نثار اختر۔ (D) ندافاضلی۔

(4) کون سی فلم ہندوستانی تہذیب کے متعلق بنائی گئی ہے؟

- (A) سوغات۔ (B) مدرانڈیا۔  
 (C) آنکھیں۔ (D) حکومت۔

(5) ہندوستان کی ابتدائی فلمیں کس ڈراما نگار کے زیر اثر بنی؟

- (A) امانت لکھنوی۔ (B) آغا حشر کاشمیری۔  
 (C) واجد علی شاہ۔ (D) کالی داس۔

(6) منشی پریم چند کے افسانے پر بنائی گئی فلم کا نام کیا ہے؟

- (A) شطرنج کی بازی۔ (B) زیور کا ڈبہ۔  
 (C) کالو بھنگی۔ (D) اختر۔



(7) تم کو دیکھا تو یہ خیال آیا۔ کے نغمہ نگار کون ہیں؟

- (A) بشر نواز۔  
(B) مخدوم محی الدین۔  
(C) ساحر لدھیانوی۔  
(D) آئند بخش۔

(8) ان میں سے کون فلموں کے مکالمہ نگار تھے؟

- (A) ایتا بھ بچن۔  
(B) دھر میندر۔  
(C) رشی کپور۔  
(D) قادر خان۔

(9) پہلی بولتی فلم کے پروڈیوسر کا نام کیا ہے؟

- (A) خان بہادر ارد۔  
(B) ہریش چندر۔  
(C) بال گندھرد۔  
(D) بابا صاحب پھالکے۔

(10) میں پل دوپل کا شاعر ہوں، کس کا گیت ہے؟

- (A) مجروح سلطان پوری۔  
(B) ساحر لدھیانوی۔  
(C) شکیل بدایونی۔  
(D) گلزار۔

(11) گلزار کا اصلی نام کیا ہے؟

- (A) چندر شیکھر۔  
(B) سمپورن سنگھ کارلا۔  
(C) گلزار احمد۔  
(D) گلزار محمد۔

(12) جاوید اختر کی پیدائش کہاں ہوئی؟

- (A) حیدر آباد۔  
(B) اورنگ آباد۔  
(C) گوالیار۔  
(D) دہلی۔

(13) فلم بنانے کے لیے کیا ضروری ہے؟

- (A) کھیل کا میدان۔  
(B) مووی کیمرہ۔  
(C) بیٹ بال۔  
(D) قبرستان۔

(14) ہندوستان کی پہلی کامیڈی فلم کون سی تھی؟

- (A) جگنو۔  
(B) رام اور شام۔  
(C) جوکر۔  
(D) چار چکر۔

15) دلپ کمار کا اصل نام کیا ہے؟

- (A) ابراہیم خان۔  
(B) شاہ رخ خان۔  
(C) یوسف خان۔  
(D) فیروز خان۔

16) فلم منڈی کی کہانی غلام عباس کے کون سے افسانے پر مبنی ہے؟

- (A) گنڈوان۔  
(B) نرملہ۔  
(C) بازار حسن۔  
(D) گوشہ عافیت۔

16

سوال نمبر 2. مختصر جواب لکھیے: (کوئی چار)

(1) فلم مغل اعظم کے کرداروں کا اجمالی جائزہ لیجیے۔

(2) بلیک اینڈ وائٹ فلموں کا اجمالی جائزہ لیجیے۔

(3) شکیل بدایونی کا تعارف بیان کیجیے۔

(4) سینیما سے کیا مراد ہے؟

(5) دادا صاحب پھالکے کا تعارف لکھیے۔

(6) اردو کے ایسے شاعر و ادیب جو فلمی دنیا سے جڑے ہیں ان کے نام لکھیے۔

16

سوال نمبر 3. مندرجہ ذیل سوالات کے جوابات لکھیے۔ (کوئی دو)

(1) ہندوستان میں علاقائی زبان کی فلموں کا اجمالی جائزہ لیجیے۔

(2) ہندوستان میں کون کون سی زبانوں کی فلمیں بنتی ہیں؟ ان کا اجمالی جائزہ لیجیے۔

(3) مجروح سلطان پوری کی نغمہ نگاری کا اجمالی جائزہ لیجیے۔

(4) کسی ایک ایسی فلم کا اجمالی جائزہ لیجیے جس میں ہندوستانی تہذیب کی عکاسی لی گئی ہو؟

16

سوال نمبر 4. مفصل جواب لکھیے۔ (کوئی ایک)

(1) جاوید اختر کی نغمہ نگاری کا تفصیلی جائزہ لیجیے۔

(2) ہندوستانی فلموں میں اردو اور ہندی زبانوں کی اہمیت و افادیت پر نوٹ لکھیے۔

16

سوال نمبر 5. ہندوستان میں سینیما کے سفر کا تفصیلی جائزہ لیجیے۔

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**M.A. (Economics Campus) (Semester – III) (CBCS) Examination:  
March/April – 2025  
Human Development (MA13308)**

Day & Date: Sunday, 01-06-2025  
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

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

**Q.1 Choose the Correct Alternative.**

**16**

- 1) For how many days NREGA provides employment?
  - a) 70
  - b) 80
  - c) 90
  - d) 100
- 2) Who is considered as poor?
  - a) Landlords
  - b) Landless labourer
  - c) A rich farmer
  - d) Businessman
- 3) Woman and children under the age of five are food insecure population due to:
  - a) Malnutrition
  - b) Healthy diet at
  - c) Fats
  - d) None of the above
- 4) By which year governments are aiming to meet the Millennium Development Goals including having the rate of global poverty?
  - a) 2011
  - b) 2015
  - c) 2045
  - d) 2035
- 5) Which of the following is an indicator of poverty in India?
  - a) Income level
  - b) Illiteracy level
  - c) Employment level
  - d) All of these
- 6) Which one of the following Economic groups is vulnerable to poverty?
  - a) Scheduled Caste
  - b) Scheduled Tribes
  - c) Rural Agricultural Household
  - d) All the above
- 7) In which year was N R E G A enacted?
  - a) 2005
  - b) 2000
  - c) 1999
  - d) 1993

- 8) HDI means \_\_\_\_\_.  
 a) Human Development Industry  
 b) Human Development Index  
 c) Human Development Investigation  
 d) None of these
- 9) \_\_\_\_\_ are protective factors of personal security.  
 a) Strength  
 b) Skill  
 c) Resources  
 d) All of these
- 10) \_\_\_\_\_ is social determinants of Human capital.  
 a) Gross Enrollment ratio  
 b) Assets  
 c) Income  
 d) All of these
- 11) Physical quality of life index to measure \_\_\_\_\_.  
 a) Literacy rate  
 b) Infant Mortality Rate  
 c) Life Expectancy Rate  
 d) All of these
- 12) \_\_\_\_\_ is reason for decline food grain.  
 a) Not commercial Purpose  
 b) Natural Problems  
 c) Traditional Cultivation of Land  
 d) All of these
- 13) School Health Programme is components of \_\_\_\_\_.  
 a) Intra Uterine Device  
 b) National Rural Health Mission  
 c) Community Health Center  
 d) All of these
- 14) Which three indicators are used in the Human Development Index (HDI)?  
 I) Standard of living  
 II) Education  
 III) Life expectancy  
 IV) Condition of environment  
 a) Only I, II, IV  
 b) Only I, II, & III  
 c) Only I & II  
 d) All of the above
- 15) \_\_\_\_\_ is developed PQLI.  
 a) D. Morris  
 b) Amartya Sen  
 c) Martha Nussbaum  
 d) None of these
- 16) According to David Clark \_\_\_\_\_ is a other attempt of capability Approach.  
 a) Jobs  
 b) Housing  
 c) Education  
 d) All of these

**Q.2 Write Short Answer. (Any Four)**

**16**

- 1) What are the criteria for selecting capabilities?
- 2) What is the meaning of human capital formation?
- 3) What is the meaning of environment security?
- 4) What is the meaning of Human capital?
- 5) What is the meaning of quality of life?
- 6) What is the meaning of Human poverty index?

**Q.3 Answer the following question. (Any Two) 16**

- 1) What is the meaning and importance of Health Security?
- 2) Explains the physical quality of life index.
- 3) What are the components of quality of life?
- 4) National Rural Health Mission is important how?

**Q.4 Answer the following question. (Any One) 16**

- 1) Explain the Gender Empowerment Measure.

**OR**

- 2) Elaborate Marshall Utility of a Commodity approach.

**Q.5 Answer the following question. 16**

Distinction between Human Resource Development and Human Development.

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**M.A. (Economics Campus) (Semester - III) (CBCS) Examination:  
March/April – 2025  
Economics of Transport (MA13309)**

Day & Date: Sunday, 01-06-2025  
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

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

**Q.1 Choose the Correct Alternative. 16**

- 1) \_\_\_\_\_ is the characteristics of transportation.
 

a) Mobility	b) Accessibility
c) Efficiency	d) All the above
  
- 2) \_\_\_\_\_ Aim to achieve interconnectivity by integrating different modes of transportation.
 

a) Transportation system	b) Technological advancement
c) Economic impact	d) Infrastructure
  
- 3) \_\_\_\_\_ is most common mode of transportation for short distance and within cities.
 

a) Railway transport	b) Road transport
c) Air transport	d) Water transport
  
- 4) \_\_\_\_\_ Transportation involves the use of pipelines to transport liquids, gases and other substances over long distance.
 

a) Pipeline transport	b) Space transport
c) Water transport	d) None of theses
  
- 5) \_\_\_\_\_ Refers to modes of transport that are available to the general public.
 

a) Private transportation	b) Public transportation
c) Cooperative transport	d) All the above
  
- 6) Freight Transportation refers to \_\_\_\_\_.
 

a) Transportation of goods
b) Transportation of cargoes
c) Transportation of Passenger
d) Only (A) and (B)
  
- 7) The functions of transportation system is \_\_\_\_\_.
 

a) Accessibility	b) Trade and commerce
c) Economic development	d) All the above

- 8) The linking regions and promoting regional integration is called as \_\_\_\_\_.  
a) Economic development  
b) Regional Integration  
c) Social Cohesion  
d) Emergency response and disaster
- 9) MSRTC is \_\_\_\_\_.  
a) Maharashtra State Road Transportation Corporation  
b) Maharashtra System Road Transportation Corporation  
c) Maharashtra State Road Transfer Cooperative  
d) Maharashtra State Road Transport Cooperative
- 10) \_\_\_\_\_ is the ability to move people and goods within cities.  
a) Rural Transportation                      b) Urban Transportation  
c) Remote area transportation      d) None of these
- 11) Advantages of water transportation is \_\_\_\_\_.  
a) High carrying capacity                      b) Reliability  
c) Safety    d) All the above
- 12) The limitations of Air transportation is \_\_\_\_\_.  
a) Noise and air pollution                      b) Restrictions on goods  
c) Environmental impact                      d) All the Above
- 13) The national highways system is the responsibility of \_\_\_\_\_.  
a) Local government                              b) District government  
c) State government                              d) Central government
- 14) \_\_\_\_\_ is the very longest National Highway in India?  
a) NH4    b) NH02  
c) NH44    d) NH01
- 15) Maximum volume of goods transported by the railways in India is \_\_\_\_\_.  
a) Iron and steel                                      b) Coal  
c) Mineral oil    d) Copper
- 16) The maximum number of dam in India is \_\_\_\_\_.  
a) Gujrat    b) Madhya Pradesh  
c) Maharashtra                                      d) Punjab

**Q.2 Write Short Answer. (Any Four)****16**

- 1) Define the transportation.
- 2) What is private transportation?
- 3) What is water transportation?
- 4) What is railway budgets?
- 5) What is civil aviation?
- 6) What is inland ocean transport?

- Q.3 Write Short Answer/Short notes (Any Two) 16**
- a) What is the classification of transportation?
  - b) What is the nature of road transportation?
  - c) What are the benefits of railway transportation?
  - d) What is classification of goods?
- Q.4 Write The Detail Answer (Any One) 16**
- a) What are the functions of transportation?
- OR**
- b) What is the nature, scope and significance of Water transportation?
- Q.5 Write the Detail Answer. 16**
- What is air transport? Explain the nature and scope of Air Transport.



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एम.ए. (Economics) (Aff. College) (सत्र — III) (CBCS) परीक्षा:

मार्च/एप्रिल — २०२५

Advanced Banking (MA24307)

वार, दिनांक : रविवार, ०१-०६-२०२५

कमाल गुण: ८०

वेळ: सकाळी ११:०० ते ०२:००

सूचना : १) सर्व प्रश्न अनिवार्य आहेत.

२) उजवीकडील अंक पूर्ण गुण दर्शवितात.

प्र.१ खालील दिलेले योग्य पर्याय निवडून गाळलेल्या जागा भरा.

१६

- १) मानवी अधिकार आणि सन्मानाचे जीवन यांची हमी — या बँकिंगमध्ये अभिप्रेत असते.
 

अ) ग्रीन	ब) शाश्वत
क) इंटरनेट	ड) कोअर
- २) पर्यावरण पूरक उद्योगांना किंवा प्रकल्पांना बँकाकडून होणारा वित्तपुरवठा म्हणजे — होय.
 

अ) व्यापारी बँक	ब) रिझर्व बँक
क) हरित बँक	ड) स्टेट बँक
- ३) K.Y.C म्हणजे — होय.
 

अ) तुमच्या ग्राहकांला जाणून घ्या	ब) तुमचे चारित्र्य जाणून घ्या
क) वरील दोन्ही	ड) वरीलपैकी काहीही नाही
- ४) बँक — साठी कर्ज देत नाही.
 

अ) पीक कर्ज	ब) शैक्षणिक कर्ज
क) गृह कर्ज	ड) मध्यपान आणि जुगार
- ५) डिपॉझिटरीज कायदा — या वर्षी करण्यात आला.
 

अ) १९८०	ब) १९९६
क) २०००	ड) २००५
- ६) विशिष्ट तारखेस बँकेची आर्थिक स्थिती दर्शविणारी मालमत्ता आणि दायित्व यांच्या संदर्भातील पत्रक म्हणजे — होय.
 

अ) अहवाल	ब) ताळेबंद
क) वचनचिठ्ठी	ड) खाते पुस्तक

- ७) भांडवल बाजार कर्ज ——— पुरविते.  
 अ) अल्पकालीन ब) मध्यमकालीन  
 क) दीर्घकालीन ड) यापैकी नाही

८) मुंबई रोखे बाजाराची स्थापना ——— या वर्षात झाली.  
 अ) १८६५ ब) १८७०  
 क) १८७५ ड) १८८०

९) राष्ट्रीय इलेक्ट्रॉनिक निधी हस्तांतरण ही प्रणाली भारतात नोव्हेंबर ——— मध्ये सुरू झाली.  
 अ) २००३ ब) २००४  
 क) २००५ ड) २००६

१०) मुदत ठेवीची कमाल मुदत ——— आहे.  
 अ) पाच वर्ष ब) सहा वर्ष  
 क) आठ वर्ष ड) दहा वर्ष

११) शेअर्स किंवा व्यवहाराच्या संदर्भात पेपर विरहित व्यवहाराची प्रक्रिया म्हणजे ——— खाते होय.  
 अ) डिमॅट खाते ब) शून्य शिल्लक खाते  
 क) मुदत ठेव खाते ड) बचत ठेव खाते

१२) इंटरनेट बँकिंगमुळे ———.  
 अ) इंटरनेटद्वारे खात्याचे संचालन करता येते  
 ब) एटीएमद्वारे खाते उघडता येते  
 क) दोन्ही अ आणि ब  
 ड) वरीलपैकी काहीही नाही

१३) ईलेक्ट्रॉनिक माध्यमाचा वापर ज्यात केला जातो तो बँक व्यवसाय ——— म्हणजे होय.  
 अ) ई-कॉमर्स ब) कोअरबँक  
 क) हरितबँक ड) ई-बँकिंग

१४) एन. आर. आय. म्हणजे ——— होय.  
 अ) ग्रामीण नसलेल्या व्यक्ती ब) अनिवासी भारतीय  
 क) गैर ग्रामीण स्थलांतरित ड) यापैकी नाही

१५) एटीएम ——— साठी वापरता येते.  
 अ) रोख पैसे काढणे ब) खाते चौकशी  
 क) खात्याचे विवरण ड) वरील सर्व

१६) — हा बँकेचा आर्थिक स्थितीचा आरसा असतो.

- अ) ठेवीदार                      ब) ताळेबंद  
क) धनादेश                     ड) हुंडी

प्र.२ खालील प्रश्नांची थोडक्यात उत्तरे लिहा. (कोणतेही चार)

१३

- १) के. वाय. सी. ची वैशिष्ट्ये सांगा.
- २) बँकेचे ताळेबंद पत्रक स्पष्ट करा.
- ३) वित्तीय व्यवस्थेची कार्ये स्पष्ट करा.
- ४) तारणाच्या पद्धती स्पष्ट करा.
- ५) वित्तीय व्यवस्थेची कार्ये स्पष्ट करा.
- ६) संयुक्त खात्याची संकल्पना स्पष्ट करा.

प्र.३ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन)

१३

- १) बँकेचे गुंतवणूक धोरण स्पष्ट करा.
- २) योग्य कर्जाची तत्वे स्पष्ट करा.
- ३) NEFT ची कार्यप्रणाली स्पष्ट करा.
- ४) व्यापारी बँकेची कार्ये स्पष्ट करा.

प्र.४ खालील प्रश्नाचे तपशीलवार उत्तर द्या. (कोणताही एक)

१३

- १) ठेवीचे विविध प्रकार स्पष्ट करा. किंवा  
२) हरित बँकेचा अर्थ आणि महत्त्व स्पष्ट करा.

प्र.५ खालील प्रश्नाचे तपशीलवार उत्तर द्या.

१३

- गाभा बँकेची संकल्पना गुणदोषासह स्पष्ट करा.

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**M.A. (Economics) (Aff. College) (Semester - III) (CBCS) Examination:**  
**March/April – 2025**  
**Advanced Banking (MA24307)**

Day & Date: Sunday, 01-06-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

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

**Q.1 Choose the Correct Alternatives. 16**

- 1) Guarantee of human rights and a life of dignity are intended in \_\_\_\_\_ Banking.
 

a) Green	b) Eternal
c) Internet	d) Core
- 2) Bank financing for environmental friendly industries or projects is \_\_\_\_\_.
 

a) Merchant Bank	b) Reserve Bank
c) Green Bank	d) State Bank
- 3) K.Y.C. Means \_\_\_\_\_.
 

a) Know Your Customers	b) Know Your Character
c) Both of the above	d) None of the above
- 4) Bank does not provide loan for \_\_\_\_\_.
 

a) crop loans	b) education loans
c) home loans	d) drinking and gambling
- 5) The Depositories Act was passed in the year \_\_\_\_\_.
 

a) 1980	b) 1996
c) 2000	d) 2005
- 6) The statement regarding assets and liabilities showing the financial condition of the bank on a particular date is \_\_\_\_\_.
 

a) Report	b) Balance sheet
c) Promise note	d) Account Book
- 7) The capital market provide \_\_\_\_\_ loans.
 

a) short term	b) medium term
c) long term	d) none of these
- 8) Bombay stock exchange was established in the year \_\_\_\_\_.
 

a) 1865	b) 1870
c) 1875	d) 1880

- 9) National Electronic Funds Transfer was started in India in November \_\_\_\_\_.  
a) 2003                                      b) 2004  
c) 2005                                      d) 2006
- 10) The maximum tenure of term deposit is \_\_\_\_\_.  
a) 5 years                                      b) 7 years  
c) 8 years                                      d) 10 years
- 11) The process of paperless translations of shares or other translation is known as \_\_\_\_\_.  
a) Demat account                          b) Zero balance account  
c) fixed deposit Account                d) saving deposit account
- 12) Internet Banking refers to \_\_\_\_\_.  
a) Operation of account through internet  
b) Opening of account through ATM  
c) Both a & b  
d) None of these
- 13) Banking Business in which electronic media is used.  
a) E-Commerce                              b) Core Bank  
c) Green Bank                                d) E-Banking
- 14) N.R. I. Means \_\_\_\_\_.  
a) Non-Rural Persons                      b) Non-Resident Indians  
c) Non-Rural Migrants                    d) None of these
- 15) ATM can be used for \_\_\_\_\_.  
a) Cash withdrawal                        b) Account inquiries  
c) Account details                          d) All of the above
- 16) \_\_\_\_\_ is mirror of the financial condition of the bank.  
a) depositor                                    b) balance Card  
c) check                                         d) Hundi

**Q.2 Write short answers. (Any Four)**

16

- 1) State the features of K.Y.C.
- 2) Explain the balance sheet of a bank.
- 3) Explain the functions of financial system.
- 4) Explain the methods of salvation.
- 5) Explain the functions of financial system.
- 6) Explain the concept of join Account.

**Q.3 Answer the following questions. (Any Two)**

16

- Explain the investment policy of the bank.
- Explain the principles of lending.
- Explain the working system NEFT.
- Explain the functions of commercial banks.

**Q.4 Answer the following questions in detail. (Any One)** **16**

a) Explain the different types of deposits.

**OR**

b) Explain the meaning and importance of green Bank.

**Q.5 Answer the following questions in detail.** **16**

Explain the concept of core bank with merit.



- ७) कोरियोग्राफर का काम ——— होता है।  
 अ) नृत्य निर्देशन                      ब) संगीत निर्देशन  
 क) सेट निर्देशन                        ड) वेशभूषा निर्देशन

८) फिल्म शूटींग का सेट निर्माण कार्य ——— के निर्देशन में होता है।  
 अ) निर्देशक                                  ब) कला निर्देशक  
 क) एक्शन एडीटर                        ड) कैमरामन

९) 'ओ माय गॉड' फिल्म ——— भाषा के नाटक पर आधारित है।  
 अ) मराठी                                      ब) हिंदी  
 क) गुजराती                                  ड) कन्नड़

१०) किसी स्थान को फिल्म में चित्रित करना हो तो उसके शूटींग की अनुमति लेने का दायित्व ——— का होता है।  
 अ) सिनेमेटोग्राफर                      ब) म्यूझिक डायरेक्टर  
 क) फिल्म निर्देशक                        ड) प्रोडक्शन मैनेजर

११) दंगल फिल्म ——— को प्रदर्शित हुई है।  
 अ) २३ जनवरी २०१६                      ब) २३ दिसंबर २०१७  
 क) २३ दिसंबर २०१६                      ड) २३ जनवरी २०१७

१२) 'ओ माय गॉड' फिल्म में वकील हानिफ कुरेशी की भूमिका ——— ने की है।  
 अ) परेश रावल                                  ब) महेश मांजरेकर  
 क) अनुपम खेर                                  ड) ओम पुरी

१३) 'म्हारी छोरियाँ छोरों से कम हैं के' यह संवाद ——— फिल्म का है।  
 अ) ओ माय गॉड                                  ब) तारे जमीन पर  
 क) दंगल    ड) मेरी कॉम

१४) पटियाला में प्रशिक्षण लेने हेतु चयन होने के बाद गीता फोगाट के चरित्र में ——— परिवर्तन आता है।  
 अ) टीवी देखना                                  ब) रस्तेपर मिलनेवाला खाना खाना  
 क) लंबे बाल रखना                        ड) उक्त सभी

१५) तारे जमीन पर फिल्म को सर्वश्रेष्ठ पुरस्कार ——— को प्राप्त हुआ।  
 अ) २००७    ब) २००९  
 क) २०१२    ड) २००८

१६) ——— फिल्म को दिल्ली सरकार द्वारा करमुक्त घोषित किया गया था।  
 अ) तारे जमीन पर                                  ब) दंगल  
 क) ओ माय गॉड                                  ड) दबंग



- प्र.२ निम्नलिखित प्रश्नों के उत्तर लिखिए। (कोई भी चार) १६
- १) प्रोडक्शन मैनेजर का कार्य स्पष्ट कीजिए।
  - २) फिल्म निर्देशक एवं कला निर्देशक का कार्य संक्षेप में लिखिए।
  - ३) पहले सवाक् सिनेमा की संक्षेप में जानकारी दीजिए।
  - ४) तारे जमीन पर फिल्म के मुख्य पात्रों के नाम बताकर उनकी भूमिका पर प्रकाश डालिए।
  - ५) दंगल फिल्म के आधार पर अमीर खान द्वारा अभिनीत पिता की भूमिका पर चर्चा कीजिए।
  - ६) दंगल फिल्म में चित्रित गीता और बबीता फोगाट इन दो बहनों का चरित्र चित्रण कीजिए।
- प्र.३ निम्नलिखित प्रश्नों के उत्तर लिखिए। (कोई भी दो) १६
- अ) समकालिन सिनेमा पर प्रकाश डालिए।
  - ब) 'ओ माय गॉड' फिल्म में अक्षय कुमार द्वारा अभिनीत 'श्रीकृष्ण' भूमिका की विशेषताएँ लिखिए।
  - क) दंगल फिल्म की निर्देशन की दृष्टि से समीक्षा कीजिए।
  - ड) 'ओ माय गॉड' फिल्म में चित्रित पाखंड पर प्रकाश डालिए।
- प्र.४ निम्नलिखित प्रश्न का उत्तर लिखिए। (कोई भी एक) १६
- अ) 'तारे जमीन पर' फिल्म की कथावस्तु लिखिए।  
अथवा
  - ब) सिनेमा का कला पक्ष विस्तार से स्पष्ट कीजिए।
- प्र.५ दंगल फिल्म का कथानक विस्तार से लिखिए। १६

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**M.A. (English) (Semester - III) (CBCS) Examination: March/April – 2025**  
**21<sup>st</sup> Century Skills (MA06308)**

Day & Date: Sunday, 01-06-2025  
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

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

**Q.1 Rewrite the following by choosing the correct alternative from given below. 16**

- 1) Communication, collaboration, critical thinking, and creativity are known as \_\_\_\_\_.
  - a) Soft Skills
  - b) 21<sup>st</sup> Century Skills
  - c) Global Skills
  - d) Personal Skills
- 2) The 21<sup>st</sup> century skills are the \_\_\_\_\_ that today's students need to succeed in their career.
  - a) Talents
  - b) Skills
  - c) Capabilities
  - d) Abilities
- 3) Having the knowledge and skills to resolve issues that sustain ecological, economic, and social stability is known as \_\_\_\_\_.
  - a) Environmental Literacy
  - b) Ecological Literacy
  - c) Economic Literacy
  - d) Social Literacy
- 4) The knowledge/ skills of staying informed about government processes, exercising rights and obligations of citizenship is known as \_\_\_\_\_.
  - a) Government Literacy
  - b) Information Literacy
  - c) Civic Literacy
  - d) Social Literacy
- 5) \_\_\_\_\_ learning is an essential practice of 21<sup>st</sup> century skills.
  - a) Student Centered
  - b) Theoretical
  - c) Practical
  - d) Classroom
- 6) \_\_\_\_\_ can improve teacher efficiency.
  - a) Communication
  - b) Science
  - c) Technology
  - d) Development
- 7) \_\_\_\_\_ are the upgraded qualities needed for a 21<sup>st</sup> century teacher.
  - a) Collaboration and Cooperation
  - b) Collateral and Critical Thinking
  - c) Good Digital and Go Global
  - d) Team work and Leadership skills

- 8) Technology allows \_\_\_\_\_ between teachers and students.
  - a) Collaboration
  - b) Collection
  - c) Cooperation
  - d) Creativity
- 9) \_\_\_\_\_ are the two vital qualities needed for a 21<sup>st</sup> century student.
  - a) Self-Awareness & Self-Management
  - b) Being Optimistic and prosperous
  - c) Productivity and Civic Responsibility
  - d) None of the above
- 10) Having the skill needed to use devices and applications securely, safely and effectively is known as \_\_\_\_\_.
  - a) Go Digital
  - b) Smart Digital
  - c) Use Digital
  - d) Skill Digital
- 11) The ability to find, evaluate, organize, use, and communicate information is known as \_\_\_\_\_.
  - a) Social Literacy
  - b) Community Literacy
  - c) Civic Literacy
  - d) Information Literacy
- 12) \_\_\_\_\_ is a set of interdisciplinary, transferable competencies that help individuals to determine and diminish knowledge gaps.
  - a) Spirit of Inquiry
  - b) Spirit of Inquisitiveness
  - c) Spirit of Learning
  - d) Research Literacy
- 13) \_\_\_\_\_ is an example of social skills.
  - a) Relation Building
  - b) Family Program
  - c) Forging Relationship
  - d) Friendship
- 14) \_\_\_\_\_ is an example of initiative skills.
  - a) Passing Resolution
  - b) Conflict Resolution
  - c) Passive participation
  - d) None of the above
- 15) One of the characteristic features of 21<sup>st</sup> century literature is that it reflects \_\_\_\_\_.
  - a) Obscure Culture
  - b) Obscene Culture
  - c) Global Culture
  - d) Technological Culture
- 16) A form of digital poetry that uses links using hypertext markup is known as \_\_\_\_\_.
  - a) Hyper Poetry
  - b) Hyperbole
  - c) Hypertensive
  - d) Hyper Text

**Q.2 Answer the following. (Any Four)**

16

- 1) Mention a few of the 21<sup>st</sup> century skills.
- 2) Explain what is meant by Scientific Literacy and Reasoning.
- 3) What is Civic and Ethical Literacy?
- 4) What is meant by Health and Wellness Literacy?
- 5) What do you understand by the term Environmental and Conservation Literacy?
- 6) Explain in brief what Multicultural Literacy means.

**Q.3 Answer the following question. 16**

What are some of the 21st Century Skills that a teacher needs to upgrade with?

**Q.4 Answer the following questions. (Any One) 16**

**a)** What are the different ways to teach 21<sup>st</sup> Century Skills and Knowledge?

**OR**

**b)** What 21<sup>st</sup> Century Skills should a student possess?

**Q.5 Answer the following questions. 16**

What is meant by 21<sup>st</sup> Century Literature? Mention a few features.

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**M.A. (English) (Semester – III) (CBCS) Examination: March/April – 2025**  
**Introduction to Film Studies (MA05306)**

Day & Date: Sunday, 01-06-2025  
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

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

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

16

- 1) \_\_\_\_\_ devised early motion picture camera and projector called 'Cinematograph'.

a) Right brothers	b) Lumiere brothers
c) Jhonson brothers	d) James brothers
- 2) Who among the following is responsible to manage all the expenses in film making?

a) Producer	b) Director
c) Distributor	d) Art director
- 3) Film editing is part of the creative \_\_\_\_\_ process of filmmaking.

a) pre-production	b) production
c) post-production	d) All of the above
- 4) Chronological Editing that follows \_\_\_\_\_.

a) The logic of a chrono logical narrative.
b) Time and space are logically and unproblematically represented.
c) Time and space are illogically and problematically represented.
d) Both a and b
- 5) \_\_\_\_\_ a film genre in which the protagonist is thrust into a series of events that typically involve violence and physical feats.

a) Action film	b) Horror film
c) Documentary film	d) Historical film
- 6) Which of the following statement correctly defines the concept of Avant-garde film?

a) A film genre that seeks to elicit fear or disgust in its audience for entertainment purpose.
b) An experimental, abstract, or highly independent film that is often the forerunner of a new artistic genre or art form.
c) A film crafted to amuse, entertainment, and provoke enjoyment.
d) All of the above

- 7) \_\_\_\_\_ a film genre primarily made for the purposes of instruction, education or maintaining a historical record.
- |                    |                     |
|--------------------|---------------------|
| a) Thriller film   | b) Horror film      |
| c) Scientific film | d) Documentary film |
- 8) Who among the following is the director of the film *Kaagaz ke Phool*?
- |                     |               |
|---------------------|---------------|
| a) Raj Kapoor       | b) Guru Dutta |
| c) Dadasaheb Phalke | d) Bimal Roy  |
- 9) Which of the following film is directed by Bimal Roy?
- |                         |                     |
|-------------------------|---------------------|
| a) Do Bigha Zamin       | b) Pyaasa           |
| c) Sahib Bibi Aur Gulam | d) All of the above |
- 10) The film *Ghajini* is a \_\_\_\_\_.
- |                   |                    |
|-------------------|--------------------|
| a) Musical Comedy | b) Revenge Tragedy |
| c) Action film    | d) Historical film |
- 11) Which of the following statement correctly defines the concept of Multiplex theatre?
- |  |
|--|
| a) Multiplex is a movie theatre with just one screen   |
| b) Multiplex is movie theatre complex with multiple screens or auditorium within single complex. |
| c) Multiplex theatres are having right to publish just regional cinemas.                         |
| d) All of the above  |
- 12) Which among the following film industry is known as largest and most popular branch of Indian Cinema?
- |              |               |
|--------------|---------------|
| a) Tollywood | b) Pollywood  |
| c) Bollywood | d) Sandalwood |
- 13) Which of the following is most important component of film?
- |                |                     |
|----------------|---------------------|
| a) Sound       | b) Background       |
| c) Stage craft | d) All of the above |
- 14) \_\_\_\_\_ is responsible for the designing the sets, overseeing construction workers and other artists and playing a part in figuring out the overall aesthetic of a movie production.
- |             |                 |
|-------------|-----------------|
| a) Producer | b) Art Director |
| c) Designer | d) Spot boy     |
- 15) \_\_\_\_\_ play the role of angry young man in the film *Zanjeer*.
- |                     |                 |
|---------------------|-----------------|
| a) Devanand         | b) Rajesh Khana |
| c) Amitabh Bachchan | d) Vinod Khana  |
- 16) \_\_\_\_\_ is responsible for the marketing of a film.
- |                  |                     |
|------------------|---------------------|
| a) Film Producer | b) Film distributor |
| c) Art Director  | d) All of the above |

- Q.2 Answer the following in brief. (Any Four)** **16**
- 1) Define the concept of film in brief.
  - 2) Write a brief note on history of film.
  - 3) Explain the components of film language.
  - 4) Comment on role of digital technology in film making.
  - 5) Discuss film as a best medium of entertainment.
  - 6) Explain the concept of semiotics.
- Q.3 Answer the following. (Any Two)** **16**
- a) Define the concept of multiplex theatre.
  - b) Write a note on rise and development of Indian cinema.
  - c) Define the concept of Angry Young Man.
  - d) Comment on Guru Dutta's contribution to the development of Indian film industry.
- Q.4 Answer the following. (Any One)** **16**
- a) Define the concept of Avant-garde Film with suitable examples.
- OR**
- b) Define and discuss the various types of film genres.
- Q.5 Comment on importance of film editing in the process of film making.** **16**

- Page 1 of 3



- ८) भाषेच्या मानाने बोली चे भौगोलिक परिक्षेत्र ——— असते.  
 अ) विस्तृत ब) मर्यादित  
 क) विपुल ड) या पैकी नाही
- ९) आहिराणी बोलीचे प्रदेश वाचक नाव काय आहे?  
 अ) डांगी ब) नागपूरी  
 क) माणदेशी ड) खानदेशी
- १०) दान पावलं, दान पावलं असे गीत खालील पैकी कोणत्या उपासकांच्या तोंडी असते?  
 अ) पिंगळा ब) वासूदेव  
 क) पोतजार ड) गुरव
- ११) वन्हाडी बोलीचे किती उपभाग पडतात?  
 अ) चार ब) तीन  
 क) दोन ड) एक
- १२) भाषा ही ——— संस्था आहे.  
 अ) आर्थिक ब) सामाजिक  
 क) धार्मिक ड) या पैकी नाही
- १३) लोककथांची मूळ जन्मभूमि भारत आहे असे सर्वप्रथम मत कोणी मांडले?  
 अ) मॅक्समुल्लर ब) थिओडोर बेनफे  
 क) अलेक्झांडर क्राप ड) ग्रियर्सन
- १४) 'पंचतंत्र' या प्राचीन कथा ग्रंथाचा कर्ता कोण आहे?  
 अ) गुणाढ्य ब) भरतमुनी  
 क) आनंदवर्धन ड) विष्णु शर्मा
- १५) 'मराठी चे भाषाशास्त्र' या ग्रंथाचे लेखन कोण आहे?  
 अ) डॉ. महेंद्र कदम ब) श्री.न.गजेंद्रगडकर  
 क) कृ.पा.कुलकर्णी ड) ना.गो.कालेलकर
- १६) 'folklore' या इंग्रजीतील शब्दासाठी मराठीत कोणती संज्ञा वापरली जाते?  
 अ) लोकगीत ब) लोकसंस्कृती  
 क) लोकसाहित्य ड) लोककथा

- प्र.२ खालील प्रश्नांची थोडक्यात उत्तरे लिहा. (कोणतेही चार) १६
- १) खानदेशी या बोली भाषेची ओळख करून द्या.
  - २) मराठीतील लोकनाट्यचे वेगळेपण लिहा.
  - ३) बोली म्हणजे काय?
  - ४) लोकगीतांचे महत्व विशद करा.
  - ५) भाषेचे कार्य थोडक्यात लिहा.
  - ६) डांगी बोलीचे विशद लिहा.
- प्र.३ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन) १६
- १) लोकसाहित्यातील 'साहित्य' पदाचा अर्थ स्पष्ट करा.
  - २) लांग व परोल या भाषिक संकल्पना स्पष्ट करा.
  - ३) लोकनाट्याचे स्वरूप विशद करा.
  - ४) लोककथा संकल्पनात कोणी काळजी घ्यावी ते लिहा.
- प्र.४ खालील प्रश्नांची सविस्तर उत्तरे लिहा. (कोणताही एक) १६
- १) लोकगीत म्हणजे काय सांगून लोकगीताचे प्रकार सविस्तर लिहा.
  - २) प्रमाण भाषा व बोली भाषा यांच्यातील सहसंबंध सविस्तर स्पष्ट करा.
- प्र.५ खालील प्रश्नाचे सविस्तर उत्तर लिहा. १६
- लोकसाहित्य संकल्पना स्पष्ट करून लोकसाहित्याचे स्वरूप स्पष्ट करा.



- ७) दृक-श्राव्य माध्यमाचे उद्दिष्ट्य कोणते?  
 अ) बातमीपत्र प्रक्षेपण                      ब) शिक्षण प्रसार-प्रचार  
 क) मनोरंजन                                      ड) यापैकी सर्व
- ८) 'प्रसारमाध्यमे आणि मराठी भाषा' या ग्रंथाचे संपादक कोण आहे?  
 अ) भास्कर शेळके                              ब) नंदकुमार मोरे  
 क) श्रीपाद जोशी                              ड) सदाशिव देव
- ९) खालीलपैकी कोणते पारंपरिक प्रसारमाध्यम आहे?  
 अ) लोकनाट्य                                      ब) वर्तमानपत्र  
 क) नभोवाणी                                      ड) दूरचित्रवाणी
- १०) छापखाण्याचा शोध कोणी लावला?  
 अ) एडिसन                                      ब) गटेनबर्ग  
 क) जॉन बेअर्ड                                      ड) मार्कोनी
- ११) 'मराठी वृत्तपत्रांचा इतिहास' हा ग्रंथ कोणाचा आहे?  
 अ) श्रीपाद जोशी                              ब) रमा गोळवलकर  
 क) विश्राम ढोले                                      ड) रा. के. लेले
- १२) भारतातील पहिले वृत्तपत्र कोणते?  
 अ) बेंगाल गॅझेट                              ब) केसरी  
 क) संवाद कौमुदी                                      ड) दर्पण
- १३) भारतीय वृत्तपत्रांचे जनक कोणास म्हटले जाते?  
 अ) बाळशास्त्री जांभेकर                      ब) लोकमान्य टिळक  
 क) राजा राममोहन राय                      ड) डॉ. बाबासाहेब आंबेडकर
- १४) मराठी भाषेतील कोणते दैनिक सर्वप्रथम इंटरनेटवर आले?  
 अ) दर्पण                                      ब) केसरी  
 क) मराठा                                      ड) सकाळ
- १५) 'बहुजन हिताय, बहुजन सुखाय' हे कोणत्या प्रसारमाध्यमाचे ब्रीद आहे?  
 अ) आकाशवाणी                              ब) दूरदर्शन  
 क) वर्तमानपत्र                                      ड) यापैकी नाही
- १६) फेसबुक समाजमाध्यमाचा प्रारंभ कोणी केला?  
 अ) मार्क झुकेरबर्ग                              ब) जेन कुम  
 क) गटेनबर्ग                                      ड) मार्कोनी

- प्र.२ खालील प्रश्नांची थोडक्यात उत्तरे लिहा. (कोणतेही चार) १६
- १) आकाशवाणीवरून प्रसारित होणारे विविध कार्यक्रम कोणते?
  - २) उद्घोषणा म्हणजे काय? आदर्श उद्घोषकाचे गुण सांगा.
  - ३) दूरचित्रवाणी प्रसारमाध्यमाचे भाषा स्वरूप स्पष्ट करा.
  - ४) प्रसारमाध्यमाचे स्वरूप स्पष्ट करा.
  - ५) मुद्रित माध्यमाची वैशिष्ट्ये लिहा.
  - ६) बातमी म्हणजे काय? बातमीचे स्त्रोत स्पष्ट करा.
- प्र.३ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन) १६
- अ) प्रसारमाध्यमाचे पारंपरिक व आधुनिक प्रकार कोणते ते लिहा?
  - ब) श्राव्य माध्यमाचे सामर्थ्य आणि मर्यादा स्पष्ट करा?
  - क) भाषा उपयोजनाची विविध क्षेत्रे स्पष्ट करा.
  - ड) बातमीचे घटक स्पष्ट करा?
- प्र.४ खालील प्रश्नांची सविस्तर उत्तरे लिहा. (कोणताही एक) १६
- अ) दृकश्राव्य माध्यमाची उद्दिष्ट्ये सांगून, स्वरूप स्पष्ट करा.  
किंवा
  - ब) मुद्रित माध्यमाचे स्वरूप स्पष्ट करून भाषा विशेष लिहा.
- प्र.५ खालील प्रश्नाचे सविस्तर उत्तर लिहा. १६
- समाजमाध्यमाचे महत्त्व सांगून विविध समाज माध्यमांचा परिचय करून द्या.



- ६) कोणाच्या मते वेबर यांचे नोकरशाही प्रारूप हे लोक प्रशासनाचे नमुना आहे?  
 अ) मायकल क्रोजीअर                      ब) डवाईट वॉल्डो  
 क) हरबर्ट सायमन                      ड) मेरी पार्कर फॉलेट
- ७) लोकप्रशासनातील बाजार प्रारूप यांच्याशी संबंधित आहे:  
 अ) अतिविकेंद्रीकरण प्रारूप              ब) बाजार प्रवण लोकप्रशासन  
 क) शासनाचे राजकोषीय धोरण              ड) बाजार कॅन्टीन प्रारूप
- ८) वुड्रो विल्सनने लोकप्रशासनासाठी प्रस्तुत केलेला आधार म्हणजे ——.  
 अ) सार्वजनिक कायदा                      ब) शैक्षणिक शाखा  
 क) व्यावसायिक विशेषीकरण              ड) सार्वजनिक धोरण
- ९) POSDCORB हा शब्द ——— यांनी पहिल्यांदा वापरला.  
 अ) डिमॉक                                      ब) ल्यूथरगुलिक  
 क) विलोबी                                      ड) मॅक्सवेबर
- १०) ——— लोकप्रशासनाचे जनक मानले जाते.  
 अ) मार्क्स                                      ब) प्लेटो  
 क) वुड्रो विल्सन                              ड) लेनिन
- ११) 'जनरल अँड इंडस्ट्रियल मॅनेजमेंट' हे पुस्तक ——— यांनी लिहिले आहे.  
 अ) हेन्री फेयोल                              ब) मार्क्स  
 क) लेनिन                                      ड) विलोबी
- १२) खालील पैकी कोणत्या व्यवस्थापन कार्याचा समावेश होतो?  
 अ) दिग्दर्शन                                      ब) नियंत्रण  
 क) नियोजन आणि आयोजन              ड) वरील सर्व
- १३) "वैज्ञानिक व्यवस्थापनाचे जनक" म्हणून कोणाला संबोधले जाते?  
 अ) हेन्री फेयोल                              ब) रॉबर्ट ओवेन  
 क) फ्रेडरिक डब्ल्यू. टेलर                      ड) यापैकी काहीही नाही
- १४) व्यवस्थापन क्षेत्रात वापरल्या जाणाऱ्या POSDCORB या संक्षेपात 'R' म्हणजे ———.  
 अ) प्रतिक्रिया देणे                              ब) प्रतिसाद देणे  
 क) प्रतिनिधित्व करणे                              ड) अहवाल देणे
- १५) प्रशासनाच्या शास्त्रात, सार्वजनिक असो वा खाजगी, मूलभूत चांगले म्हणजे कार्यक्षमता" खालील पैकी कोणी हे विधान केले आहे?  
 अ) ल्यूथरगुलिक                              ब) हेन्री फेयोल  
 क) एफ. डब्ल्यू. रिग्ज                              ड) वुड्रो विल्सन

१६) कोणताही पर्यवेक्षक पाच पेक्षा जास्त किंवा जास्तीत जास्त सहा अधीनस्थांच्या कामावर थेट देखरेख करू शकत नाही ज्यांचे काम एकमेकांशी जुळते. हे विधान यांनी केले होते:

- |           |           |
|-----------|-----------|
| अ) मिलेट  | ब) डिमॉक  |
| क) उर्विक | ड) विल्सन |

प्र.२ खालील प्रश्नांची थोडक्यात उत्तरे लिहा. (कोणतेही चार) १६

- १) वुड्रोविल्सनच्या मते लोकप्रशासनाची व्याप्ती काय आहे?
- २) एफ. डब्ल्यू. टेलर ने मांडलेली मानसिक क्रांती काय आहे?
- ३) ल्युथर गुलिकच्या मते संघटनेचे चार आधारभूत घटक कोणते?
- ४) रिग्जची विकासाची संकल्पना स्पष्ट करा.
- ५) संरचनात्मक कार्यात्मक दृष्टीकोन लिहा.
- ६) प्रशासनाच्या सिद्धांताचे महत्त्व.

प्र.३ लघुत्तरी प्रश्न सोडवा. (कोणतेही दोन) १६

- अ) रिग्जच्या साला मॉडेलची वैशिष्ट्ये लिहा.
- ब) हेन्री फेओलच्या व्यवस्थापनाची पाच कार्ये स्पष्ट करा.
- क) टेलरच्या वैज्ञानिक व्यवस्थापनाची तत्वे स्पष्ट करा.
- ड) प्रशासकीय सिद्धांताची संकल्पना स्पष्ट करा.

प्र.४ दीर्घोत्तरी प्रश्न. (कोणताही एक) १६

- अ) ल्युथर गुलिकचा पोस्टकार्ब सिद्धांत स्पष्ट करा?  
किंवा
- ब) फेओलच्या व्यवस्थापनाची १४ तत्वे सांगा.

प्र.५ प्रशासकीय सिद्धांताचे स्वरूप आणि व्याप्ती स्पष्ट करा. १६



Seat No.	
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Set P
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**M.A. (Political Science) (Semester - III) (CBCS) Examination:  
March/April – 2025  
Administrative Theories (MA02307)**

Day & Date: Sunday, 01-06-2025  
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

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

**Q.1 Select the correct alternative.**

**16**

- 1) According to home 1940 was the year of divide between old and new approaches of public administration?
  - a) Dwight Waldo
  - b) Fred Riggs
  - c) Robert Merton
  - d) Michael Monroe
- 2) The matter of giving order seems very simple appears on the other hand, surrounded by many difficulties, who observed it?
  - a) Peter Drucker
  - b) Chris Argyris
  - c) Chester Bernard
  - d) Mary Parker Follett
- 3) Which one is the most popular approach in comparative public administration which has been procedure considerably by Fred Riggs?
  - a) Structural functional approach
  - b) System approach
  - c) Behavioral approach
  - d) Ecological approach
- 4) Micro level studies on comparative administration focus on:
  - a) Comparison of administrative system of two Nations
  - b) Comparison of local government in different countries
  - c) Comparison of administrative system and its external environment
  - d) Concerns with certain important parts of an administrative system.
- 5) Who is the gospel of the neutral principle of administration?
  - a) Gulick
  - b) Mayo
  - c) Simon
  - d) Riggs
- 6) Who viewed Weber's bureaucratic model as a Paradigm of public administration?
  - a) Michael crozier
  - b) Dwight Waldo
  - c) Herbert Simon
  - d) Meri Parker Follett

- 7) Market model in public administration is related with:
- a) Extreme form of decentralization
  - b) Market oriented public administration
  - c) Fiscal policy of government
  - d) Bazaar canteen model
- 8) Woodrow Wilson provided the rationale for public administration to be \_\_\_\_.
- a) Public law
  - b) An academic discipline
  - c) Professional specialty
  - d) Public policy
- 9) The word POSDCORB used first time by \_\_\_\_.
- a) D'mock
  - b) Luther Gulick
  - c) Wilobee
  - d) Max Weber
- 10) \_\_\_\_ is considered Father of Public Administration.
- a) Marx
  - b) Plato
  - c) Woodrow Wilson
  - d) Lenin
- 11) The Book 'General & Industrial Management' is Written by \_\_\_\_.
- a) Henry Fayol
  - b) Marx
  - c) Lenin
  - d) Wilobee
- 12) Which of the following do management functions include?
- a) Directing
  - b) Controlling
  - c) Planning and organizing
  - d) All of the above
- 13) Who is referred to be the "Father of Scientific Management?"
- a) Henry Fayol
  - b) Robert Owen
  - c) Fredrick W. Taylor
  - d) None of these
- 14) In the acronym POSDCORB used in management field 'R' stands for \_\_\_\_.
- a) Reacting
  - b) Responding
  - c) Representing
  - d) Reporting
- 15) In the science of Administration, whether Public or private the basic good is efficiency" who among the following made this statement.
- a) Luther Gulick
  - b) Henry Fayoll
  - c) F. W. Riggs
  - d) Woodrow Wilson
- 16) No supervisor can supervise directly the work of more than five or at the most, six subordinate whose work interlocks. This statement was made by:
- a) Millet
  - b) Dimock
  - c) Urwick
  - d) Wilson

- Q.2 Write short answers. (Any Four)** **16**
- 1) What is the scope of public administration according to Woodrow Wilson?
  - 2) What is the Mental revolution coined by F.W. Taylor?
  - 3) What are the four basic elements of organization according to Luther Gulick?
  - 4) Explain Riggs's concept of development.
  - 5) Write the structural functional approach.
  - 6) Significance of administration theory.
- Q.3 Short note. (Any Two)** **16**
- a) Write the characteristics of Riggs' Sala model.
  - b) Elucidate Henry Fayol's five functions of management.
  - c) Explain the principle of Taylor's scientific management
  - d) Explain the concept of Administrative theory.
- Q.4 Broad answer question. (Any One)** **16**
- a) Explain the POSDCORB theory by Luther Gulik?
- OR**
- b) States the 14 principles of management by Fayol's.
- Q.5 Explain the nature and scope of administrative theory.** **16**

Set	P
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**एम.ए. (Dramatics) (सत्र – III) (CBCS) परीक्षा: मार्च/एप्रिल – २०२५**  
**Sanskrit Natya Parampara (MA22308)**

वार, दिनांक : रविवार, ०१-०६-२०२५

कमाल गुणः ८०

वेळ: सकाळी ११:०० ते ०२:००

- सूचना :** १) सर्व प्रश्न अनिवार्य आहेत.  
२) उजवीकडील अंक पूर्ण गुण दर्शवितात.

प्र.१ रिक्तान्या जागा भरा.

१३

- १) ——— लिहिलेले अमृत मंथन हे पहिले नाटक होय.  
अ) भरतमुनींनी ब) विशाखादत्तानी  
क) चारुदत्तानी ड) अमृतदासांनी
- २) सारीपुत्र प्रकरण हे ——— लिहिलेले नाटक आहे.  
अ) केसरीपुत्राने ब) वासुकीपुत्राने  
क) रामपुत्राने ड) अश्वघोषाने
- ३) भरतमुनींच्या ——— ग्रंथाप्रमाणे नाटक शोकांत असू नये.  
अ) सुखांतशास्त्र ब) नाट्यशास्त्र  
क) विनोदशास्त्र ड) मिश्रशास्त्र
- ४) संस्कृत ——— सादरीकरणाचे तंत्र विशुद्ध होते.  
अ) लिखाणाच्या ब) नृत्याच्या  
क) नाटकाच्या ड) गीतांच्या
- ५) अभिज्ञानशाकुंतल ही कोणाची कलाकृती आहे.  
अ) कलिदास ब) भवभूती  
क) शुद्रक ड) विशाखदत्त
- ६) विकृष्ट हा ——— प्रकार आहे.  
अ) अभिनय ब) रंगमंच  
क) वेशभूषा ड) रंगभूषा
- ७) ——— म्हणजे चौकोनी रंगमंच.  
अ) त्रयस्त्र ब) आयात  
क) मध्यम ड) चतुरस्त्र

- ८) दूतघटोत्कच हे नाटक ——— वर आधारीत आहे.  
अ) रामायण ब) आधुनिक कथेवर  
क) महाभारत ड) भागवत
- ९) उरुभंग हे ——— नाटक आहे.  
अ) भासाचे ब) कालिदासाचे  
क) विशाखदत्ताचे ड) तेंडुलकरांचे
- १०) भास हे त्यांच्या ——— ओळखले जातात.  
अ) कथेसाठी ब) प्रयत्नासाठी  
क) आधुनिकीकरणासाठी ड) औद्योगिकीकरणासाठी
- ११) विशाखदत्ताचे ——— हे नाटक महत्वाचे आहे.  
अ) छोटा राक्षस ब) मोठा राक्षस  
क) मुद्रा राक्षस ड) कपटी राक्षस
- १२) संस्कृत रंगभूमी ——— म्हणून ओळखली जाते.  
अ) तांत्रिक ब) संस्कृत  
क) यांत्रिक ड) प्राचीन
- १३) नाट्यशास्त्रामध्ये अभिनयाचे एकुण ——— प्रकार सांगितले आहेत.  
अ) २ ब) ४  
क) ६ ड) ८
- १४) भरत प्रणीत रंगमंचाचे प्रकार ——— आहेत.  
अ) १ ब) २  
क) ३ ड) ४
- १५) वेशभूषा ——— अभिनयाचा भाग आहे.  
अ) आंगिक ब) वाचिक  
क) आहार्य ड) सात्वीक
- १६) पौराणीक कथा संस्कृत रंगभूमीच्या ——— होत्या.  
अ) गीत ब) आवड  
क) रंग ड) आत्मा

- प्र.२ टीपा लिहा. (कोणत्याही चार) १६
- १) मृच्छकटीकम्
  - २) कालीदास
  - ३) उत्तररामचरीत
  - ४) दूतघटोत्कच
  - ५) स्वप्नवासवदत्ता
  - ६) कालीदासां
- प्र.३ खालील प्रश्नांची उत्तरे लिहा. (कोणतेही दोन) १६
- अ) भरत प्रणीत नाट्यगृहांची रचना मांडा.
  - ब) वृत्ती म्हणजे काय हे सांगून त्यांचे प्रकार कोणते ते लिहा.
  - क) भवभूतीची नाट्यसृष्टी यावर सविस्तर लिहा.
  - ड) शुद्रकाबद्दल माहिती लिहा.
- प्र.४ दीर्घोत्तरी प्रश्न. (कोणताही एक) १६
- अ) संस्कृत नाट्य परंपरेचा सविस्तर आढावा घ्या.  
किंवा
  - ब) भारतीय पारंपारीक रंगभूमीच्या ऱ्हासाची कारणे सांगा.
- प्र.५ संस्कृत रंगभूमीच्या सुवर्णकाळाचे वर्णन करा. १६

Seat No.	
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Set **P**

**M.Com. (Semester - III) (CBCS) Examination: March/April – 2025**  
**Entrepreneurship Development (4063-13)**

Day & Date: Sunday, 01-06-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

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

**Q.1 A) Multiple Choice Questions. 10**

- 1) The term 'Entrepreneur' is referring to the \_\_\_\_\_ function of establishing a new venture.
 

a) Managerial	b) risk-taking
c) Production	d) value creation
- 2) MUDRA loans based on \_\_\_\_\_ categories of parameters.
 

a) 3	b) 4
c) 6	d) 5
- 3) \_\_\_\_\_ have played a crucial role in the development of manufacturing & export sector.
 

a) MCED	b) MSME
c) DIC	d) Small Scale Industry
- 4) Theory of need for achievement is classified by \_\_\_\_\_.
 

a) Knight	b) Peter Drucker
c) Henry Fayol	d) McClelland
- 5) \_\_\_\_\_ scheme aims at promoting entrepreneurship among women & SC/ST.
 

a) Startup	b) Stand up
c) Make in India	d) Made in India
- 6) \_\_\_\_\_ loan sanctioned under PMMY in the range of Rs. 500001 to Rs. 10 lakhs.
 

a) Tarun	b) Shishu
c) Kishor	d) None of these
- 7) \_\_\_\_\_ is a training institute for common people, who always dream to become an entrepreneur.
 

a) MIDC	b) Incubation Centre
c) MCED	d) SIDBI

- 8) Loan is provided only to new projects, which are known as \_\_\_\_ projects.
- |                         |                             |
|-------------------------|-----------------------------|
| a) Green field Projects | b) Government Projects      |
| c) Industrial Projects  | d) Entrepreneurial Projects |
- 9) \_\_\_\_ is a 'Be Indian and Made Indian' type of Swadeshi movement.
- |                  |                  |
|------------------|------------------|
| a) Make in India | b) Startup       |
| c) Standup       | d) Made in India |
- 10) PMMY stands for \_\_\_\_.
- |                                    |
|------------------------------------|
| a) Primary Method of Mudra Yojana  |
| b) Pradhan Mantri Mudra Yojana     |
| c) Pradhan Mantri Marketing Yojana |
| d) Prime Minister Mudra Yojana     |

**B) Fill in the blanks.****06**

- 1) In BIS, 'B' stands for \_\_\_\_.
- 2) \_\_\_\_ is initially based on four pillars.
- 3) MUDRA was registered as a company in \_\_\_\_.
- 4) The Maharashtra shops & Establishment Act, \_\_\_\_.
- 5) FDI stands for \_\_\_\_.
- 6) The Unique Identification Number is provided along with a \_\_\_\_.

**Q.2 Answer the following.****16**

- a) Give the theory of need for achievement.
- b) Explain DIC.
- c) Give the features of standup India scheme.
- d) Explain objectives of Entrepreneurship Development.

**Q.3 Attempt the following.****16**

- a) Explain in detail startup India.
- b) What is Entrepreneurship Development? Give the characteristics of it.

**Q.4 Attempt the following. (Any One)****16**

- a) Describe MSME.

**OR**

- b) What is Project Management? Give the stages of it.

**Q.5 Attempt the following. (Any One)****16**

- a) Describe EDII and SIDBI in detail.

**OR**

- b) Describe the term Entrepreneur in detail. Give the process of Entrepreneurship Development.





- 8) The \_\_\_\_\_ method is used to convert the first character of each word in a string to uppercase.
- a) wordupper()                      b) ucwords()  
c) uppercase()                      d) upper()
- 9) Which of the following is a correct way to define a constant in PHP?
- a) Define ('CONST\_NAME', 'Value');  
b) const CONST\_NAME = 'Value';  
c) Both a and b  
d) None of these
- 10) The filesize () function returns the file size in \_\_\_\_\_.  
a) Bits                                  b) Bytes  
c) Kilobytes                          d) Gigabytes

**B) Fill in the blanks.****06**

- 1) PHP stands for \_\_\_\_\_.  
2) Variable name in PHP starts with \_\_\_\_\_.  
3) \_\_\_\_\_ is known as the father of PHP.  
4) \_\_\_\_\_ is the default file extension of PHP.  
5) \_\_\_\_\_ is used for concatenation in PHP.  
6) \_\_\_\_\_ function is used to set cookie in PHP.

**Q.2 Answer the following questions.****16**

- a) Difference between Server-side Scripting and Client-side Scripting.  
b) Define Variables in PHP and explain its rules with example.  
c) Explain PHP file reading functions?  
d) What is associative array? Explain with example

**Q.3 Answer the following questions.**

- a) What are different ways to create arrays? Write script to read and display multidimensional array. **10**  
b) What are the advantages and disadvantages of PHP language? **06**

**Q.4 Answer the following question.**

- a) Explain data types in php with example. **10**  
b) Explain any 3 type of String function with example. **06**

**Q.5 Answer the following question.**

- a) What is inheritance and its types? Explain in detail types with example. **10**  
b) Explain different operators used in PHP. **06**

**Q.6 Answer the following question.**

- a) What are different parameter passing techniques used in PHP? Explain with example. **10**  
b) Explain any 3 PHP functions used with MySQL connections with example. **06**

**Q.7 Answer the following.**

- |           |   |           |
|-----------|---|-----------|
| <b>a)</b> | Explain different Branching statements in PHP with example          | <b>10</b> |
| <b>b)</b> | Explain various file functions in PHP related with write operation. | <b>06</b> |



- ६) शरीरातील मुख्य तणाव संप्रेरक ——— आहे, जो तणावाच्या प्रतिसादात सोडला जातो.

अ) डोपामाइन	ब) सेरोटोनिन
क) एंडोर्फिन	ड) कोर्टिसोल

७) तणाव व्यवस्थापनाचे प्राथमिक उद्दिष्ट ——— आहे.

  - एखाद्याच्या जीवनातील तणावाचे सर्व स्त्रोत काढून टाकणे
  - तणावाचा सामना करण्यासाठी आणि कमी करण्यासाठी धोरणे विकसित करणे
  - तणाव आणि त्याचे परिणाम दुर्लक्षित करण्यास प्रोत्साहित करणे
  - लवचिकता निर्माण करण्यासाठी अधिक ताण वाढवणे

८) रागाशी संबंधित शारीरिक प्रतिक्रिया ——— आहे.

  - हृदय गती आणि रक्तदाब कमी होणे
  - शांत आणि शांत भावना
  - हृदय गती वाढणे आणि एड्रेनालाईन सोडणे
  - बोधनिक कार्यात वृद्धी

९) ——— राग व्यक्त करण्याचा आणि नियंत्रित करण्याचा निरोगी मार्ग नाही.

  - ते दाबणे आणि समस्येकडे लक्ष न देणे
  - तुमचा विश्वास असलेल्या एखाद्या व्यक्तीशी रागाच्या स्त्रोताबद्दल बोलणे
  - तणाव मुक्त करण्यासाठी शारीरिक हालचालींमध्ये गुंतणे
  - विश्रांती तंत्राचा सराव करणे

१०) राग व्यवस्थापन तंत्राचे प्राथमिक उद्दिष्ट ——— आहे.

  - एखाद्याच्या भावनिक संचातून राग पूर्णपणे काढून टाकणे
  - संघर्ष टाळण्यासाठी राग दाबणे आणि लपवणे
  - निरोगी आणि रचनात्मक पद्धतीने राग ओळखणे, समजून घेणे आणि नियंत्रित करणे
  - काही वेळा चूक झाल्यास आक्रमकपणे राग व्यक्त करणे

११) ——— व्यसनाचे सामान्य वैशिष्ट्य आहे.

  - उत्तेजनार्थ पदार्थ किंवा वर्तनाचा अधूनमधून आणि नियंत्रित वापर
  - तीव्र ईच्छा किंवा व्यसन सोडल्याचा लक्षणांचा पूर्ण अभाव
  - नियंत्रण गमावणे आणि नकारात्मक परिणाम असूनही सतत वापर
  - कधीही सोडण्याची मजबूत क्षमता

- १२) व्यसनाच्या विकासामध्ये योगदान देणारा एक सामान्य घटक ——— आहे.  
 अ) मजबूत इच्छाशक्ती आणि आत्म-नियंत्रण  
 ब) व्यसनाधीन पदार्थ किंवा वर्तणुकीशी संपर्काचा अभाव  
 क) अनुवांशिक, पर्यावरणीय आणि मानसिक घटक  
 ड) समवयस्कांचा दबाव
- १३) ——— मानसशास्त्राचे क्षेत्र अंतर्गत मानसिक प्रक्रियांचा अभ्यास करते, जसे की समस्या सोडवणे, स्मरणशक्ती, शिकणे आणि भाषा.  
 अ) चिकित्सक मानसशास्त्र                      ब) आरोग्य मानसशास्त्र  
 क) बोधनिक मानसशास्त्र                      ड) विकासात्मक मानसशास्त्र
- १४) तुमचे वर्तन, विचार आणि भावनांचे उत्पादनक्षम मार्गाने नियमन करण्याची क्षमता ———.  
 अ) स्व-व्यवस्थापन                      ब) स्व-प्रेरणा  
 क) आत्म-जागरूकता                      ड) आत्म-आत्मविश्वास
- १५) ——— हा रागाचा प्रकार नाही.  
 अ) निष्क्रिय राग                      ब) भीतीवर आधारित राग  
 क) अस्थिर राग                      ड) अभ्यासाचा राग
- १६) मद्यपानामध्ये ——— हे सामान्य लक्षण आहे.  
 अ) दारूची लालसा                      ब) दारूची भीती  
 क) दारू टाळणे                      ड) अधूनमधून दारू पिणे

**प्र.२ खालील प्रश्नांची थोडक्यात उत्तरे लिहा. (कोणतेही चार)**

१६

- १) रागाची व्याख्या करा आणि रागाचे परिणाम स्पष्ट करा.
- २) तणाव काय आहे आणि त्याची सामान्य लक्षणे स्पष्ट करा.
- ३) स्व: व्यवस्थापन चे महत्त्व स्पष्ट करा.
- ४) मानसशास्त्राच्या कोणत्याही दोन शाखा स्पष्ट करा.
- ५) मानसशास्त्राचा मानवतावादी दृष्टिकोन स्पष्ट करा.
- ६) मानसशास्त्राची उत्पत्ती स्पष्ट करा.

**प्र.३ खालील प्रश्नांची थोडक्यात उत्तरे/टीपा लिहा. (कोणतेही दोन)**

१६

- अ) तणावाचे प्रकार स्पष्ट करा.
- ब) तणावाचे स्रोत स्पष्ट करा.
- क) WHO चे ताण व्यवस्थापन कौशल्य स्पष्ट करा.
- ड) राग म्हणजे काय? रागाचे प्रकार स्पष्ट करा.

- प्र.४ खालील प्रश्नाचे तपशीलवार उत्तर द्या. (कोणताही एक) १६  
अ) तणाव व्यवस्थापनाचे मानसशास्त्रीय तंत्र स्पष्ट करा.  
किंवा  
ब) राग व्यवस्थापनाचे तंत्र स्पष्ट करा.
- प्र.५ खालील प्रश्नाचे तपशीलवार उत्तर द्या. १६  
मद्यपान व्यसनाधीनता म्हणजे काय? मद्यपानाची कारणे आणि उपचार स्पष्ट करा.

Seat No.	
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Set **P**

**M.A. (Applied psychology) (Semester - III) (CBCS) Examination:  
March/April – 2025  
Psychology in Everyday Life (MAAP01308)**

Day & Date: Sunday, 01-06-2025  
Time: 11:00 AM To 02:00 PM

Max. Marks: 80

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

**Q.1 Choose the correct alternative.****16**

- 1) In \_\_\_\_\_ century psychology as a formal discipline begin.
  - a) 18<sup>th</sup> century
  - b) 21<sup>st</sup> century
  - c) 20<sup>th</sup> century
  - d) 19<sup>th</sup> century
- 2) \_\_\_\_\_ is the primary focus of psychology's origin.
  - a) Studying the brain's anatomy
  - b) Understanding behavior and mental processes
  - c) Analyzing chemical reactions in the brain
  - d) Investigating social interactions
- 3) \_\_\_\_\_ branch of psychology is concerned with understanding the psychological factors that influence physical health and illness.
  - a) Clinical psychology
  - b) Health psychology
  - c) Forensic psychology
  - d) Developmental psychology
- 4) \_\_\_\_\_ is the primary goal of self-management techniques?
  - a) Managing others efficiently
  - b) Avoiding all stress
  - c) Managing oneself effectively
  - d) Procrastination
- 5) \_\_\_\_\_ type of stress is often considered "good" stress that can motivate and enhance performance.
  - a) Eustress
  - b) Chorionic stress
  - c) Acute stress
  - d) Distress
- 6) \_\_\_\_\_ is the body's main stress hormone, released in response to stressors.
  - a) Dopamine
  - b) Serotonin
  - c) Endorphin
  - d) Cortisol
- 7) \_\_\_\_\_ is the primary goal of stress management.
  - a) To eliminate all sources of stress in one's life
  - b) To develop strategies to cope with and reduce the impact of stress
  - c) To encourage ignoring stress and its effects
  - d) To promote more stress to build resilience



- 8) \_\_\_\_\_ are the physiological responses associated with anger.
- a) Decreased heart rate and blood pressure
  - b) Calm and peaceful feelings
  - c) Increased heart rate and adrenaline release
  - d) Enhanced cognitive function
- 9) \_\_\_\_\_ is NOT a healthy way to express and manage anger.
- a) Suppressing it and not addressing the issue
  - b) Talking about the source of anger with someone you trust
  - c) Engaging in physical activity to release tension
  - d) Practicing relaxation techniques
- 10) \_\_\_\_\_ is the primary goal of anger management techniques.
- a) To eliminate anger entirely from one's emotional repertoire.
  - b) To suppress and hide anger to avoid conflicts.
  - c) To recognize, understand, and control anger in a healthy and constructive manner.
  - d) To express anger aggressively at some time if a mistake is made.
- 11) \_\_\_\_\_ is a common characteristic of addiction.
- a) Occasional and controlled use of a substance or behavior
  - b) A complete lack of cravings or withdrawal symptoms
  - c) Loss of control and continued use despite negative consequences
  - d) A strong ability to quit at any time
- 12) \_\_\_\_\_ is one common factor contributing to the development of addiction.
- a) Strong willpower and self-control
  - b) A lack of exposure to addictive substances or behaviors
  - c) Genetic, environmental, and psychological factors
  - d) Peer pressure
- 13) \_\_\_\_\_ field of psychology study the internal mental processes, such as problem solving, memory, learning, and language.
- a) Clinical Psychology
  - b) Health Psychology
  - c) Cognitive psychology
  - d) Developmental Psychology
- 14) \_\_\_\_\_ ability to regulate your behaviors, thoughts, and emotions in a productive way.
- a) Self-Management
  - b) Self-Motivation
  - c) Self-Awareness
  - d) Self – Confidence
- 15) \_\_\_\_\_ is not a type of Anger.
- a) Passive Anger
  - b) Fear based Anger
  - c) Volatile Anger
  - d) Anger of Study
- 16) In Alcoholism \_\_\_\_\_ is common symptom.
- a) Craving of Alcohol
  - b) Fear of Alcohol
  - c) Avoidance of alcohol
  - d) Occasionally drinking alcohol

- Q.2 Write short answers. (Any Four)** **16**
- 1) Define anger and explain the effects of anger.
  - 2) Explain what is stress and its general signs.
  - 3) Explain the need of self - Management.
  - 4) Explain any two branches of Psychology.
  - 5) Explain Humanistic approach of Psychology.
  - 6) Explain the origin of Psychology.
- Q.3 Short Answers / Short Notes (Any 2)** **16**
- a) Explain the types of stress.
  - b) Explain the sources of Stress.
  - c) Explain stress management skills by WHO.
  - d) What is anger? Explain the types of anger.
- Q.4 Broad Descriptive Question. (Any One)** **16**
- a) Explain the psychological techniques of stress Management.
- OR**
- b) Explain the techniques of anger management.
- Q.5 Answer the following questions in detail.** **16**
- What is Alcoholism? Explain the causes and treatments of Alcoholism.

Seat No.	
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**M.B.A. (Semester - III) (CBCS) Examination: March/April – 2025**  
**Entrepreneurship Development (20407303)**

Day & Date: Sunday, 01-06-2025  
 Time: 11:00 AM To 02:00 PM

Max. Marks: 80

**Instructions:** 1) All questions are compulsory.  
 2) All questions carry equal marks.

**Q.1 Multiple choice question.**

**16**

- 1) The \_\_\_\_\_ process of entrepreneurship is the first step.
  - a) Germination
  - b) Preparation
  - c) Incubation
  - d) Idea generation
- 2) Innovation theory was propounded by \_\_\_\_\_.
  - a) Knight
  - b) Schumpeter
  - c) Maslow
  - d) McClelland
- 3) Entrepreneurship consists \_\_\_\_\_.
  - a) Knowledge-based behaviour
  - b) Universal activity
  - c) Management is the vehicle of entrepreneurship
  - d) All of the above
- 4) The social responsibility towards business includes \_\_\_\_\_.
  - a) Responsibilities of owners towards Entrepreneur
  - b) Responsibilities of consumers towards Entrepreneur
  - c) Responsibilities of employees towards Entrepreneur
  - d) All of the above
- 5) An individual who starts, creates and manages a new business can be called as \_\_\_\_\_.
  - a) A leader
  - b) A manager
  - c) A Professional
  - d) An entrepreneur
- 6) The term 'Entrepreneur' was derived from French word \_\_\_\_\_.
  - a) Enterpurpose
  - b) Enterprise
  - c) Enterprocedure
  - d) Enterprendre
- 7) The idea generation process of entrepreneurship are \_\_\_\_\_.
  - a) Germination
  - b) Preparation
  - c) Incubation
  - d) All of these

- 8) Innovation can best be defined as \_\_\_\_\_.
  - a) the generation of new ideas
  - b) the evolution of new ideas
  - c) the opposite of creativity
  - d) the successful exploitation of new ideas
- 9) Which of the following is alternatively called corporate venturing?
  - a) Intrapreneurship
  - b) Entrepreneurship
  - c) Act of stating a new venture
  - d) Offering new products by an existing company
- 10) Who propounded entrepreneurship as a theory of business?
  - a) Daniel Goleman
  - b) Joseph A. Schumpeter
  - c) Thomas A. Coleman
  - d) Wareen Buffet
- 11) Which is not the type of entrepreneur?
  - a) Economic entrepreneur
  - b) Creative entrepreneur
  - c) Internet entrepreneur
  - d) Digital entrepreneur
- 12) The functions of Entrepreneurship includes \_\_\_\_\_.
  - a) Establishing the enterprise
  - b) Project planning
  - c) Initiation and risk taking
  - d) All of the above
- 13) According to Schumpeter, innovative entrepreneurs would: \_\_\_\_\_.
  - a) Thrive in the market
  - b) Not survive and disappear from the market.
  - c) Get absorbed within larger innovative businesses
  - d) Get absorbed within non-innovative businesses
- 14) \_\_\_\_\_ is also known as corporate venturing?
  - a) Intrapreneurship
  - b) Mergers
  - c) Entrepreneurship
  - d) Acquisition
- 15) Which of the following is an example of a social entrepreneur?
  - a) Software developer
  - b) Fashion designer
  - c) Founder of a non-profit organization addressing social issues
  - d) Stockbroker
- 16) The term "innovation" in entrepreneurship means \_\_\_\_\_.
  - a) Stagnation
  - b) Creativity and novelty
  - c) Tradition
  - d) Repetition

**Q.2 Write short notes on.****16**

- a) Development of product.
- b) Challenges and Remedies to Woman Entrepreneurship.

**Q.3 Write short notes on.****16**

- a) National Small Industries Corporation
- b) Role of innovation in entrepreneurship

**Q.4 Answer the following.****16**

- a) What are the various external factors affecting entrepreneurship development.

**OR**

- b) What are various reasons and remedies for entrepreneurship success and failure.

**Q.5 Attempt the following case.****16**

It is not often acknowledged that Rai Bahadur Mohan Singh Oberoi, 100, chairman, of an empire of 29 hotels spanning most of the world's landmass is also the man who pioneered India as a brand, way back when it was only a bazaar of begging bowls and exotica. At 90, he looked back in something close to awe and said, "I often wonder how I did it". Certainly he did not give much of the credit to luck. True, he stood at the right time at the right place to confront his destiny, but this was just physical happenstance. What he did with the situation was amazing for a man from the boondocks of Bhaun, with little education and really not to the manner born.

Indeed, if anything the Rai Bahadur made his fortune out of calamity. If his father hadn't died of cholera when he was only an infant, his mother would not have returned to the ancestral how which gave Oberoi the connections and contacts that helped him raise money later to buy his first hotel the Clarke's Simla. If he hadn't flunked the interview for his first job as clerk with the government of India, he would never have made his way to the Simla Mall, gazed in wonderment at the glitter of the Cecil and made up his mind that would work there. If a fatal bug in the water supply, hadn't laid low Calcutta's mighty grand hotel. It would never have been up for grabs. Again Oberoi just chanced to hear about it at the Delhi railway station when he was leaving to return to base in Simla. He simply changed his ticket and his direction and went to mint millions out of war-time Calcutta - another catastrophe. Life served his lemons regularly but with even greater regularity did the Rai Bahadur make lemonade. The story of the Rai Bahadur is all the more impressive because there was nothing in his background to suggest that he would be able to create the world-class ambience and sophistication for which the group is now celebrated, that he would be able to foresee India's current positioning in the global market, while doffing a deferential hat to history when it was demanded. For instance, when other hotels were cramming their lobbies with brassbound chests and colonial nostalgia. Oberoi created the first international business hotel, the Oberoi intercontinental in Delhi. However, in the Mena house, Egypt, and the Windsor, Australia, he went extraordinary lengths and expense to produce authenticity to the last detail, including countrywide searches for memories and memorabilia. In order to replicate the flooring in the Windsor, he tracked down the original supplier of the tiles in distant Stoke-on-Trent, England. Celebrating his 100th birthday last week with his mind almost as clear as it was 50 years ago, perhaps the one philosophy responsible might be his dictum. "I never worry. It clutters the brain. The problem may not happen, and even if it does, worrying will only come in the way of a clear-headed solution".

**Questions:**

- i) “Nature and nurture play a key role in entrepreneurship development”.  
Explain with reference to above case study.
- ii) In your opinion, what are the significant determinants in the making of Shri Oberoi’s entrepreneurial career?