SLR-JX-1

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Electronics Science
FUNDAMENTALS OF ELECTRONICS

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) What is the state of an ideal diode in the region of nonconduction?
   a) An open circuit b) A short circuit
   c) Unpredictable d) Undefined

2) Why does the Superposition theorem not applicable to power?
   a) Because it is proportional to square of current and current is a non-linear function
   b) Because it is proportional to square of voltage and voltage is a non-linear function
   c) Both a and b
   d) None of above

3) When transistors are used in digital circuits they usually operate in the _____.
   a) active region b) breakdown region
   c) saturation and cutoff regions d) linear region

4) Norton's theorem is _____ form of an equivalent circuit.
   a) voltage b) current
   c) both voltage and current d) none of the above

5) While calculating Rth, constant -current sources in the circuit are _____.
   a) replaced by "opens"
   b) replaced by "shorts"
   c) treated in parallel with other voltage sources
   d) converted into equivalent voltage sources

6) What is the resistor value of an ideal diode in the region of conduction?
   a) 0 b) 5 K
   c) Undefined d) Infinity

7) In a C-E configuration, an emitter resistor is used for _____.
   a) stabilization b) ac signal bypass
   c) collector bias d) higher gain

8) n-channel FETs are superior to p-channel FETs because _____.
   a) They have high switching time
   b) Mobility of electrons is greater than that of holes
   c) They consume less power
   d) Mobility of electrons is smaller than that of holes

9) If gate to source voltage in an n-channel depletion MOSFET is made more negative, drain current _____.
   a) will increase b) will decrease
   c) become zero d) become infinite

10) Under the conditions of maximum power transfer, the efficiency is _____.
a) 75% b) 100%
c) 50% d) 25%

11) A FET is a _____ controlled device whereas a bipolar transistor is a _____ controlled device.
a) Current, voltage b) Drain, gate
c) Gate, drain d) Voltage, current

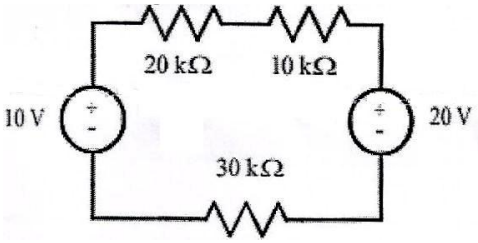
12) The discharging time T2, for astable multivibrator is _____.
a) 0.7C RB b) 0.7C (RA + RB)
c) 0.7C (RA + 2 RB) d) None of them

13) The ratio between differential gain and common-mode gain is called _____.
a) amplitude b) differential-mode rejection
c) common-mode rejection d) phase

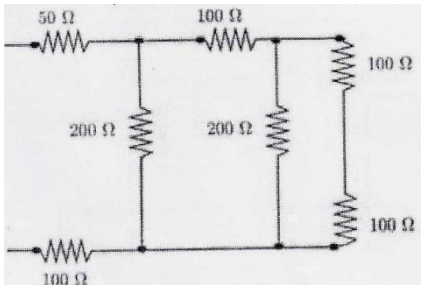
14) The 7812 regulator IC provides _____.
a) 5 V b) -5 V
c) 12 V d) -12 V

Q.2 A) Answer the following questions. (Any Four) **08**

1) Draw Ideal diode Vl characteristics.
2) State Maximum power transfer theorem.
3) Calculate voltage across each resistor.



4) Give formulas for Ton and Toff for IC555 based Astable multivibrator.
5) Calculate R equivalent for the circuit shown below.



B) Write notes. (Any Two) **06**

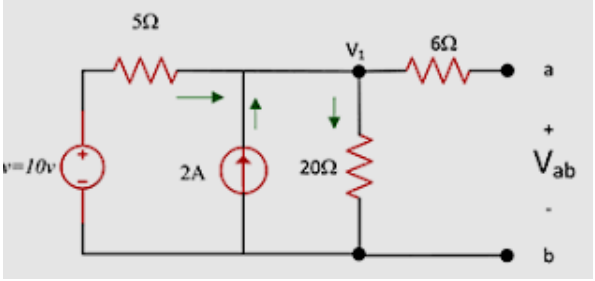
1) Photodiode
2) I to V convertor
3) Precision rectifier

Q.3 A) Answer the following questions. (Any Two) **08**

1) Compare between FET and BJT.
2) Discuss output characteristics of Common Emitter NPN transistor.
3) Draw and explain block diagram of typical OPAMP.

B) Answer the following questions. (Any One) **06**

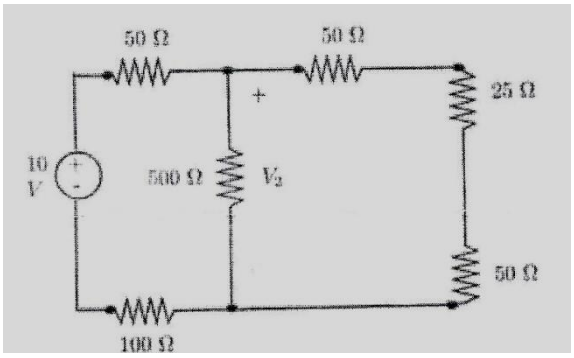
1) Find the thevenins equivalent circuit.



2) Explain operation of OPAMP for generation of triangular wave.

Q.4 A) Answer the following questions. (Any Two) **10**

1) Explain OPAMP operation as summing amplifier.
2) Draw ideal frequency response for different types of filters.
3) Calculate V2

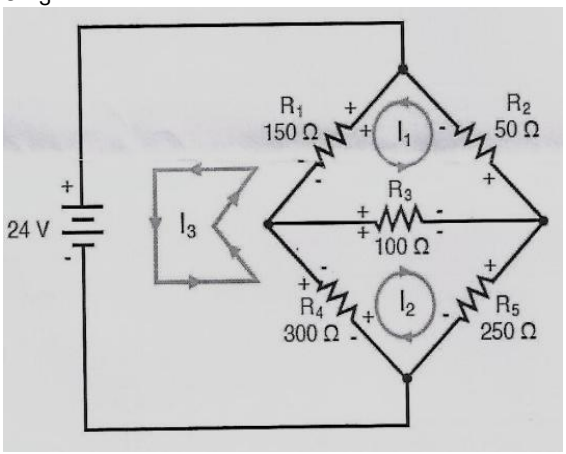


B) Answer the following questions. (Any One) **04**

1) How solar cell operates? Explain in brief.
2) Explain first order active filters.

Q.5 Answer the following questions. (Any Two) **14**

a) Determine I_1, I_2 and I_3



b) Why Schmitt trigger circuit is called as square wave convertor? Discuss its operation for sine wave input. What is LTP and UTP?

c) Draw and Explain with the waveforms operation of Monostable multivibrator using IC 555. Give the formulas for Tp.

SLR-JX-11

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Mathematics
FUNDAMENTALS IN MATHEMATICS

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) Transpose of a column matrix is _____.
   a) Zero matrix b) Diagonal matrix
   c) Column matrix d) Row matrix

2) Solution of simultaneous equations, 4x - 5y = 17 and x - 5y = 8,
   a) x = 3, y = -1 b) x = 2, y = 3
   c) x = 4, y = 1 d) x = 5, y = 4

3) Let T: $R^2 \rightarrow R^2$ be the transformation $T(x_1, x_2) - (x_1, 0)$.The null space N(T) of T is _____.
   a) $(0, x_1)$ b) $(0, x_2)$
   c) (0, 1) d) $(x_2, 0)$

4) If A is a symmetric matrix, then A^T = _____.
   a) |A| b) Zero
   c) A d) Diagonal matrix

5) Superset of linearly dependent set is _____.
   a) Linearly dependent b) Linearly independent
   c) May be d) None of these

6) T: V → W is linear map and V is finite dimensional then Rank (T) = _____.
   a) Dim V + N(T) b) dim V - N(T)
   c) N(T) - dim V d) N(T)

7) Intersection of two linearly independent sets is _____.
   a) Linearly dependent b) Linearly independent
   c) May be d) None of these

8) If $A = \begin{pmatrix} a_{11} & \cdots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{m1} & \cdots & a_{mn} \end{pmatrix}$ then sub matrix of A is _____.
   a) $\begin{bmatrix} a_{11} & a_{13} \\ a_{21} & a_{23} \end{bmatrix}$ b) $\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$
   c) $\begin{bmatrix} a_{22} & a_{24} \\ a_{42} & a_{44} \end{bmatrix}$ d) None of these

9) If no. of equations equal to no. of unknowns then _____ solution exists for Non-Homogeneous system of equation.
   a) Unique b) Infinite
   c) No solution d) Finite

10) Let z = x + i y then conjugate of z is _____.
   a) x-y b) x-iy
   c) -x+iy d) None of these

11) The rank of n x n matrix is _____.
   a) At least n b) At most n
   c) Equal to n d) None of these

12) Two matrices A and B are multiplied to get AB if _____.
   a) Both are rectangular
   b) Both have same order
   c) Number of rows of A is equal to number of columns of B
   d) No of columns of A is equal to columns of B

13) Solve for value of x and y if 5x - y = 5 and 3x + 2y = 29.
   a) x = 12, y = 3 b) x = 1, y = 4
   c) x = -3, y = 24 d) x = 3, y = 10

14) (1,0,0),(0,1,0),(0,0,1) is linearly independent set in _____.
   a) R b) R^3
   c) R^2 d) R^4

Q.2 A) Answer the following questions. (Any Four) **08**

1) Find the Rank of the matrix $A = \begin{matrix} 2 & 1 \\ 3 & 4 \end{matrix}$
2) Verify { (1,1), (1,0) }is linearly independent.
3) Find determinant of matrix $A = \begin{matrix} 1 & 2 \\ 6 & -4 \end{matrix}$
4) Define Linear transformation.
5) $A = \begin{matrix} 5 & -2 \\ 1 & 6 \end{matrix}$ and $B = \begin{matrix} 2 & 3 \\ -1 & 5 \end{matrix}$ find A+B, A-B

B) Write notes. (Any Two) **06**

1) Rational number, Irrational number
2) Vector Space
3) Linear transformation

Q.3 A) Answer the following questions. (Any two) **08**

1) Define subspace and give example.
2) If $A = \begin{bmatrix} 1 & 2 \\ -5 & 3 \end{bmatrix} B = \begin{bmatrix} 2 & 3 \\ -8 & 1 \end{bmatrix}$ find AB.
3) Show that {(1,2,1), (2,1,4),(4,5,0) } are linearly independent.

B) Answer the following questions. (Any One) **06**

1) If T be mapping on R^2(R) defined by T(x, y) = (x - 2y, 2x + y) then prove that T is linear.
2) Find inverse of matrix $A = \begin{matrix} 1 & 2 & 1 \\ 4 & 2 & -1 \\ 2 & 3 & 1 \end{matrix}$

Q.4 A) Answer the following questions. (Any Two) **10**

1) Determine whether the subspace U = {(x_1, x_2, x_3): $x_1 + x_2 + x_3 = 0$} is subspace of R^3.
2) Show that T: $R^2 \rightarrow R^3$ defined by T(x_1, x_2) = ($x_1 + x_2$, $2x_1 - x_2$) is linear transformation.
3) Find nullity of $A = \begin{matrix} 1 & -2 & 3 \\ 0 & 5 & 2 \\ 2 & 1 & 2 \end{matrix}$

B) Answer the following questions. (Any One) **04**

1) Verify {(1,1,2), (1,2,5), (5,3,4)} is linearly independent.
2) Write types of matrices.

Q.5 Answer the following questions. (Any Two) **14**

a) Find solution of $x - y + z = 2$

$3x - y + 2z = -6$

$3x + y + z = -18$

b) Find determination of $A = \begin{matrix} 2 & 0 & 0 & 1 \\ 0 & 1 & 3 & -3 \\ -2 & -3 & -5 & 2 \\ 4 & -4 & 4 & -6 \end{matrix}$

c) Show that $2x^3 + x^2 + x + 1$, $x^3 + 3x^2 + x - 2$, $x^3 + 2x^2 - x + 3$ are linearly independent over R.

SLR-JX-13

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Statistics
STATISTICAL METHODS

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) If the arithmetic mean of two observations is 6.5 and geometric mean is 6 then two observations are _____.
   a) 9, 6 b) 8, 5
   c) 7, 6 d) 4, 9

2) If X follows binomial distribution with parameters n and p then _____.
   a) mean = variance b) mean > variance
   c) mean < variance d) None of these

3) If a constant value 22 is subtracted from each observation of a set, then arithmetic mean of set is _____.
   a) non affected b) decreased by 22
   c) increased by 22 d) Both b) and c)

4) The range of Uniform(0,1) is _____.
   a) +1 to -1 b) -1 to 0
   c) 0 to 1 d) None of above

5) If two regression coefficients are 1.2 and 0.3, then the correlation coefficient is _____.
   a) -0.36 b) 0.36
   c) 0.06 d) 0.6

6) If ranks in each pair are equal then Spearman's rank correlation coefficient is _____.
   a) 0 b) 1
   c) -1 d) None of these

7) When the correlation coefficient r = ±1 then the two regression lines are _____.
   a) perpendicular to each other b) parallel to each other
   c) coincide d) Does not exist

8) Geometric mean of two numbers $\frac{1}{49}$ and $\frac{4}{16}$ is _____.
   a) $\frac{1}{7}$ b) $\frac{1}{49}$
   c) 49 d) $\frac{1}{14}$

9) The mean of Bernoulli distribution with parameters p is _____.
   a) np b) p
   c) $\sqrt{npq}$ d) None of these

10) Correlation coefficient is the _____ of two regression coefficients.
   a) Arithmetic mean b) Geometric mean
   c) Harmonic mean d) All the above

11) Run test is used for _____.
   a) testing randomness given set of observations
   b) Independence of attribute
   c) Checking the normality assumption
   d) None of these

12) Which of the following is the first kind error in testing of hypothesis?
   a) Accept H_0 b) Reject H_0
   c) Accept H_0 when it is false d) Accept H_0 when it is true

13) If correlation coefficient between X and Y is 0.9 then correlation coefficient between Y and X is _____.
   a) -0.3 b) 0.03
   c) 0.09 d) 0.9

14) If 25% of the items are less than 30 and 25% items are more than 70, then quartile deviation is _____.
   a) 20 b) 30
   c) 40 d) 50

Q.2 A) Answer the following questions. (Any Four) **08**

1) Define Mode and Geometric Mean.
2) Define Bernoulli distribution.
3) Explain Alternative hypothesis with an example.
4) Define Coefficient of variation and quartile deviation.
5) Define type-I and type-II error.

B) Write notes. (Any Two) **06**

1) Karl Pearson's coefficient of correlation
2) Critical region
3) Probability density function

Q.3 A) Answer the following questions. (Any Two) **08**

1) If X has Poisson distribution such that P(X=1) = 2P (X=2). Find P(X=0), mean and variance.
2) Explain addition and multiplication rules of probability.
3) Explain the Signed-rank test.

B) Answer the following questions. (Any One) **06**

1) What is Central tendency?
   Define
   i) Arithmetic Mean
   ii) Harmonic mean
2) Define Probability Mass function. Explain Binomial and Poisson Distributions.

Q.4 A) Answer the following questions. (Any Two) **10**

1) The marks of 20 students are given below

Marks	0-10	10-20	20-30	30-40	40-50
students	2	5	8	----	2

Calculate the missing frequency and hence obtain the values of mean, median.

2) Following data gives price and demand of a commodity in 10 days.

Price	5	2	4	7	10	9	6	7	4	2
Demand	8	6	7	4	2	3	5	3	2	10

Find the Karl Pearson's coefficient of correlation between price and demand and interpret the result.

3) What do you mean by testing of hypothesis? State simple and composite hypothesis. Explain the term Test Statistic.

B) Answer the following questions (Any One) **04**

1) Define uniform distribution over (a, b). If X follows U(0,1.5), then find
   i) P (X > 0.6) ii) P (X < 0.3)
2) Define
   i) Classical definition of Probability
   ii) Random experiment
   iii) Sample space
   iv) Trial

Q.5 Answer the following questions. (Any Two) **14**

a) How do you test hypothesis H_0: P = P_0 against H_1 : P ≠ $P_0$for a large sample at $\alpha\%$ level of significance? In a sample of 500 people in a village 280 are tea drinkers and rests are coffee drinkers. Can we assume that both coffee and tea are equally popular in this state at 1% level of significance?

b) Define Poisson distribution with parameter λ. Give a real life situation where Poisson distribution can be applied. Let X be a Poisson variate with λ = 2, find P (2 < X < 4), also find its mean and variance.

c) Explain
1) Chi-square test for independence of attributes
2) Nonparametric run test

SLR-JX-14

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Statistics
MATHEMATICAL STATISTICS

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) The number of accidents at a particular place follows _____.
   a) Normal distribution b) Bernoulli distribution
   c) Poisson distribution d) exponential distribution

2) E [Y | X = x] is the _____.
   a) function of x alone b) function of y alone
   c) both (a) and (b) d) none of these

3) For exponential distribution with parameter 1, the m.g.f. is _____.
   a) $(1-t)^{-1}$ b) $(1-t)^{+1}$
   c) $(1+t)$ d) None of these

4) With usual notations $E\,[(X - E\,(X))\,(Y - E\,(Y))]$ is called _____.
   a) Variance of X b) Cov(X, Y)
   c) Variance of Y d) all of these

5) If A and B are two subsets of Ω, then $P(AUB)$ _____.
   a) $= P(A) - P(B)$ b) $< P(A) + P(B)$
   c) $> P(A) + P(B)$ d) None of these

6) The normal distribution with mean μ and variance σ^2 is called standard normal distribution, if _____.
   a) $\mu = 1$ and $\sigma^2 = 1$ b) $\mu = 0$ and $\sigma^2 = 1$
   c) $\mu = 0$ and $\sigma^2 = 2.58$ d) $\mu = 1.64$ and $\sigma^2 = 1.96$

7) The total number of parameters for Poisson distribution is/are _____.
   a) 1 b) 2
   c) 3 d) 4

8) If the variables X and Y are changing in same direction, then cov(X, Y) is _____.
   a) Zero b) Positive
   c) Negative d) all of these

9) If X ~ U (5, 11) then the distribution function of X at 5 i.e. F (7) is _____.
   a) 1/3 b) 2/7
   c) 2/10 d) 3/11

10) The number of failures before first success is _____ variable.
   a) Binomial b) Poisson
   c) Geometric d) None of these

11) If A and B are independent events, then _____.
   a) A and B^C are independent
   b) A^C and B^C are independent
   c) Above a) & b)
   d) None of the above

12) If X ~ U (- a, a) such that P (|X| > 1) = 6/7 then value of a is _____.
   a) 7
   b) 6
   c) 14
   d) 12

13) The random variable denoting whether a candidate selects in an interview or not is an example of _____ random variable.
   a) Bernoulli
   b) Binomial
   c) Discrete uniform r.v.
   d) Geometric

14) A r.v. X has m.g.f. $M_X(t) = (1 - 2t)^{-1}$; $t < 1/2$ then the mean of X is _____.
   a) 2
   b) 1/2
   c) 4
   d) 1

Q.2 A) Answer the following questions. (Any Four) **08**

1) Define sample space.
2) Define expectation of a discrete random variable.
3) State Markov inequality.
4) Define Covariance.
5) Define characteristic function of a random variable.

B) Write notes. (Any Two) **06**

1) Probability generating function
2) Conditional probability mass function
3) Bivariate normal distribution

Q.3 A) Answer the following questions. (Any Two) **08**

1) State Minkowski inequality. Also give its application.
2) Define
   i) Exponential distribution
   ii) Gamma distribution
3) Write a note on expectation as well as moments of a random variable.

B) Answer the following questions. (Any One) **06**

1) Explain the term probability. Also give axioms of probability theory.
2) Define moment generating function. Also state its properties.

Q.4 A) Answer the following questions. (Any Two) **10**

1) Define Poisson distribution. Also find its mean and variance.
2) Define distribution function of a bivariate discrete random variable (X, Y) and state its important properties.
3) Explain how the mean and variance can be obtained using p.g.f. of a discrete random variable.

B) Answer the following questions. (Any One) **04**

1) Write a note on normal distribution.
2) State Bayes's theorem. Illustrate with an example.

Q.5 Answer the following questions. (Any Two) **14**

a) A random variable X has the distribution as given below.

X	0	1	2	3	4
P(X=x)	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{8}$	k	$\frac{3}{8}$

Find

1) the value of k
2) Mean of X
3) Variance of X

b) Find M.G.F. of Exponential distribution. Also find r^{th} raw moment using it.

c) Consider the following bivariate probability distribution:

Y / X	-1	0	2
0	2/17	1/17	3/17
1	1/17	1/17	2/17
2	3/17	3/17	1/17

Obtain:

i) Marginal distribution of X
ii) Marginal distribution of Y
iii) Conditional distribution of X given Y=2

SLR-JX-15

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Geoinformatics
CLIMATOLOGY

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Question 1 is compulsory and should be answered in the question paper.
3) Draw neat and labeled diagrams wherever necessary.

Q.1 Fill in the blank by choosing correct alternatives given below. 14

1) Katrina is the name given to _____.
   a) Satellite b) Star
   c) Heat wave d) Hurricane

2) The vertical movement of air is termed as _____.
   a) Wind b) Air current
   c) Air turbulence d) Air mobility

3) Global warming is expected to result in _____.
   a) Increase in level of sea b) Change in crop pattern
   c) Change in coastline d) All of the above

4) Imaginary lines joining places with same temperature are called _____.
   a) Isobar b) Isotherms
   c) Isohalines d) Isohyets

5) 'Flash floods' are associated with _____.
   a) Thunderstorms b) Tsunami
   c) Cyclonic storms d) Tornado

6) The layer of the atmosphere in which Radio Waves are reflected back is called _____.
   a) Ionosphere b) Troposphere
   c) Stratosphere d) Exosphere

7) 95% of the Earth's water is stored in its _____.
   a) Rivers b) Oceans
   c) Glaciers d) Underground aquifers

8) When water turns to vapor and rises into the atmosphere its called _____.
   a) Evaporation b) Transpiration
   c) Sublimation d) Precipitation

9) When water vapor cools into a liquid, it's called _____.
   a) Condensation b) Transpiration
   c) Sublimation d) Precipitation

10) The water cycle is driven by the _____.
   a) Sun b) Moon
   c) Clouds d) Oceans

11) A part of hurricane which bears warm and low pressure is the _____.
   a) Eye b) Eye wall
   c) Band d) Updraft

12) Strongest part of hurricane is its _____.
a) Eye b) Eye wall
c) Band d) Updraft

13) What is a storm spinning counter clockwise with winds >74 mph?
a) Tropical wave b) Tropical storm
c) Tropical depression d) Category 1 hurricane

14) What is the fuel or the engine that keeps a hurricane alive?
a) Land b) Cold water
c) Wind d) Warm water

Q.2 A) Answer the following questions. (Any Four) **08**
1) Define weather.
2) What is climate?
3) What is sublimation?
4) Define evaporation.
5) Define moisture.

B) Write short notes. (Any Two) **06**
1) Humidity
2) Mesosphere
3) Evapotranspiration

Q.3 A) Answer the following questions. (Any Two) **08**
1) Write short note on potential evapotranspiration.
2) Give a detail account on absolute humidity.
3) Briefly explain troposphere and stratosphere.

B) Answer the following questions. (Any One) **06**
1) Briefly explain factors affecting rate of evaporation.
2) What is condensation? Explain different forms of condensation.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Give a detail account on scale of atmospheric motion.
2) Briefly explain factors favouring thunderstorm development.
3) Briefly explain process of cooling for producing condensation.

B) Answer the following questions. (Any One) **04**
1) Write short note on tri cellular theory of atmospheric circulation.
2) Briefly explain three stages of water.

Q.5 Answer the following questions. (Any Two) **14**
a) Give a detail account on tornadoes.
b) Explain environment impact on severe weather.
c) Briefly explain different classes of thunderstorms.

SLR-JX-18

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Applied Geology
WATERSHED MANAGEMENT

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) According to Bali (1980), Size of micro - watershed is between _____.
   a) 100-500 sq.km b) 10 to 100sq.km
   c) 1 to 10sq.km d) less than 1 sq.km

2) The water that is entrapped in sedimentary rock during their formation is called?
   a) connate water b) vadose water
   c) meteoric water d) juvenile water

3) A dense mass of water drops on smokes or dust particle in the lower atmospheric layers constitute?
   a) Fog b) Mist
   c) Frost d) Blizzard

4) An _____ is a geologic formation that can store and transmit groundwater in useable quantities, that is, in volumes that can be extracted economically.
   a) Aquifer b) Aquiclude
   c) Aquitard d) Aquifuge

5) Managing watershed in forest area is / are :
   a) Practices for soil protection and flood control
   b) Practices for increasing water yield
   c) Both (a) & (b)
   d) None of these

6) Tillage Method: A farmer ploughs for purposes:
   a) Preparation of seed beds for established of plants
   b) To eliminate weed competition
   c) To replace soil layer by fresh layer soil
   d) All of the above

7) Estimate of the ability of soils to resist erosion, based on the physical characteristics of each soil is known as _____.
   a) Soil erodibility b) Soil erosion
   c) Soil potentiality d) Soil neutrality

8) Soils in _____ have little or no erosion hazard but have other limitations impractical to remove that limit their use largely to pasture, range, woodland, or wildlife food and cover.
   a) class V b) class IV
   c) class III d) class VI

9) Which one of the following causes rainfall during winters in north-western part of India?
   a) Cyclonic depression
   b) Western disturbances
   c) Retreating monsoon
   d) South-West monsoon

10) The length of standard USLE plot is _____ m.
   a) 22.13 m
   b) 20 m
   c) 21.5 m
   d) 22.5m

11) The biggest driver of deforestation is _____.
   a) Agriculture
   b) Forest fire
   c) Volcanic activities
   d) Soil erosion

12) Which gauge gives the permanent record of rainfall?
   a) Recording gauge
   b) Non-recoding gauge
   c) Copper daily gauge
   d) Plastic gauge

13) In which of the following rain gauging methods are the values of rainfalls of all stations added?
   a) Arithmetic mean method
   b) Thiesson method
   c) Iso-hyetol method
   d) Recording type

14) Artificial drainage by ditch or buried pipe _____.
   a) removes excess water but has no effect on the water table
   b) lowers the water table by speeding the flow of water out of the soil profile
   c) raises the water table by speeding the movement of water through the soil to the water table
   d) all of these

Q.2 A) Answer the following questions. (Any Four) **08**

1) The Isohyetal Method
2) What are the basic objectives of watershed management?
3) Define watershed?
4) Advantages of the underground dam
5) What is gabion structure?

B) Write Notes. (Any Two) **06**

1) Contour Trenching
2) Roof top rain water harvesting
3) Cooks method of runoff measurement

Q.3 A) Answer the following questions. (Any Two) **08**

1) What Are the Common Treatment Methods for Watershed Deterioration?
2) Explain in detail about recording rain gauge?
3) Formation of precipitation

B) Answer the following questions. (Any One) **06**

1) Explain the Different characteristics of watershed?
2) Explain the format for preparation of artificial recharge project

Q.4 A) Answer the following questions. (Any Two) **10**

1) What is watershed management Approach?
2) Important aspects of Percolation Tanks
3) Land capability classification

B) Answer the following questions. (Any One) **04**

1) What are the Site characteristic and design guidelines for selecting a site for Check Dams/Nala?
2) Limitations of USLE

Q.5 Answer the following questions. (Any Two) **14**

1) Describe eight agronomic measures for soil and water conservation?
2) What is soil erosion and describe its types?
3) Explain the vertical distribution of groundwater with the help of diagram?

SLR-JX-19

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Computer Science
OFFICE AUTOMATION

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Draw neat and labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) A feature of MS-office that saves the document automatically after certain interval is called _____.
   a) Save b) Save as
   c) Auto save d) Back up

2) The options portrait and landscape comes under _____.
   a) Paper size b) Page orientation
   c) Page layout d) Page rotation

3) Which key combination is used to insert a page break in MS-word?
   a) Shift + Enter b) Alt + Enter
   c) Ctrl + Enter d) Space + Enter

4) Which key is used for help in MS-excel?
   a) F1 b) F2
   c) F3 d) None of these

5) Formula palette is used to?
   a) Format cells containing numbers
   b) Create and edit formulas containing functions
   c) Entered assumptions data
   d) Copy all cells

6) A Spreadsheet contains?
   a) Columns b) Rows
   c) Rows and Columns d) None of the above

7) Powerpoint presentation are widely used as _____.
   a) Note outlines for teachers
   b) Project presentations by students
   c) Communication of planning
   d) All of the above

8) In which menu can you find features like slide design, slide layout etc?
   a) Insert menu b) Format menu
   c) Tools menu d) Slide show menu

9) Which short cut key inserts a new slide in current presentation?
   a) Ctrl + N b) Ctrl +M
   c) Ctrl + S d) All of the above

10) To start slide show of a presentation
   a) Hit F5 key
   b) From slide show menu choose view menu
   c) From slide show menu choose view Rehearse timing
   d) Both a and b

11) The columns in a microsoft access table are also called _____.
   a) Rows b) Records
   c) Fields d) Columns

12) Which of the following is not a field type in microsoft access?
   a) Memo b) Hyperlink
   c) OLE object d) Lookup wizard

13) Microsoft access is a _____ kind of application?
   a) RDBMS b) OODBMS
   c) Network database model d) None of the above

14) This data type allows alphanumeric characters and special symbols
   a) Text b) Memo
   c) Auto number d) None of the above

Q.2 A) Answer the following questions. (Any Four) **08**

1) Describe how a document is opened in MS-Excel? State different open options.
2) Explain status bar in Excel.
3) How will you create a table in MS-Word?
4) How to check spelling and grammar mistake in MS-Word?
5) What is a folder? How we can make a folder?

B) Write notes. (Any Two) **06**

1) Recycle Bin
2) Features of MS-Powerpoint
3) Database management system

Q.3 A) Answer the following questions. (Any two) **08**

1) What are the major features of Windows?
2) Discuss the steps for creating a presentation in MS- Powerpoint.
3) Explain different options in view menu of word.

B) Answer the following questions. (Any one) **06**

1) Explain various data types in MS-Access.
2) Enlist the tools of Microsoft word.

Q.4 A) Answer the following questions. (Any Two) **10**

1) How to apply formulas across sheets / workbooks?
2) What is mail merge and how you can mail merge a document?
3) What is Query? What are the different types of queries available in MS-access?

B) Answer the following questions. (Any One) **04**

1) How to create flowcharts in powerpoint?
2) Explain various functions used in MS-excel.

Q.5 Answer the following questions. (Any Two) **14**

1) Explain different formatting options available in MS-word.
2) Explain different options in view menu of excel.
3) What do you mean by macro? What are its uses?

SLR-JX-20

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Computer Science
LINUX OPERATING SYSTEM

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) Which command is used to close the Vi- editor?
   a) q b) wq
   c) both a and b d) None of the above

2) The logout built in command is used to _____.
   a) shutdown the computer b) logoff of the computer
   c) logout the current user d) to exit the current shell

3) Which command removes a directory from directory stack?
   a) dirs b) popd
   c) pushed d) rm

4) Which command puts a script to sleep until a signal is received?
   a) sleep b) suspend
   c) disown d) break

5) What hardware architecture are not supported by Red Hat?
   a) SPARC b) IBM-compatible
   c) Alpha d) Macintosh

6) Which service is used to translate domain names to IP addresses?
   a) NFS b) SMB
   c) NIS d) DNS

7) How many primary partitions can exist on one drive?
   a) 16 b) 4
   c) 2 d) 1

8) Which command is used to extract specific column from the file?
   a) grep b) Cut
   c) cat d) Paste

9) Mounting a file system results in the loading of _____.
   a) i-node table b) super block
   c) sub block d) All of the above

10) Core of Linux operating system is _____.
   a) kernel b) Shell
   c) terminal d) Command

11) Process which terminates before the parent process exists is known as _____.
   a) orphan b) zombie
   c) child d) all of these

12) Which combination of keys is used to exit from terminal?
a) Ctrl+t b) Ctrl+z
c) Ctrl+d d) Ctrl+e

13) Which command can force all buffers to disk?
a) save b) sync
c) edbuff d) flush

14) Which of the following is not a part of default Red Hat Linux email system?
a) Pine b) The MTA
c) The MUA d) All of the above

Q.2 A) Answer the following questions. (Any Four) **08**
1) How to identify your home directory in shell command line.
2) What is the difference between Linux file system and windows file system?
3) What is zombie process?
4) Explain any two network related commands.
5) Explain syntax and purpose of free command.

B) Write notes. (Any Two) **06**
1) Kernel
2) RAID
3) Samba

Q.3 A) Answer the following questions. (Any Two) **08**
1) Write steps involved in booting of Linux loader.
2) Compare the features of Unix and Linux system.
3) What are various package groups provided in Linux.

B) Answer the following questions. (Any One) **06**
1) How can you run X-Client on a remote machine?
2) Explain the redirection, filter and pipes in Linux with suitable examples.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Elaborate bind and listen functions in TCP sockets.
2) Write a program to illustrate msgsnds () and msgrcv () system calls.
3) What is CUPS? Explain in detail.

B) Answer the following questions. (Any One) **04**
1) How do you execute the shell script? Explain with example.
2) What is Vi-editor? Explain various modes of Vi-editor.

Q.5 Answer the following questions. (Any Two) **14**
a) What is DHCP? Explain with an example.
b) How Red Hat package manager is used to install and update package? Describe it.
c) Write command for installing and updating packages using RPM.

SLR-JX-21

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Zoology
COMPUTATIONAL BIOLOGY

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) The difference between third quartile and first quartile is _____.
   a) Quartile deviation b) Mean deviation
   c) Standard deviation d) Median

2) The correlation coefficient always lies between _____.
   a) -0 to -1 b) -1 to +1
   c) -1 to 0 d) +5 to -5

3) Hb% of an animal was recorded as 6,7,4,5,5,3,4 gm/100ml, then the median Hb% is _____.
   a) 4gm/100ml b) 5gm/100ml
   c) 6gm/100ml d) 7.5gm/100ml

4) An empirical relation among mean, median and mode is _____.
   a) Mean - Mode = 3(Mean- Median) b) Mode + 2Median = 3Mean
   c) Mean + 2Mode = 3Median d) 2Mode + 5Mean = 6Mean

5) Quantitative classification is done according to _____.
   a) state and city wise
   b) year and month wise
   c) sex and literacy wise
   d) measure of height, weight and age

6) Median of the following discrete frequency distribution is _____.

No. of accidents	0	1	2	3	4
No. of shifts	2	9	8	4	1

   a) 1 b) 2
   c) 3 d) 4

7) Arithmetic mean of 12,18,28,16 & 15 is _____.
   a) 17 b) 18
   c) 19 d) 17.5

8) The equation used for prediction or estimation is _____.
   a) Correlation b) Mean deviation
   c) Regression d) Histogram

9) The table giving the frequencies of different class interval is known as _____.
   a) Mean b) Frequency table
   c) Median d) Bivariate table

10) Arrangement of data in rows and columns is called as _____.
   a) Tabulation b) Classification
   c) Frequency distribution d) Correlation

11) _____ is positional average.
   a) Mean b) Median
   c) Mode d) Standard deviation

12) Highly +ve correlation can be determined if value of r is _____.
   a) 0.98 b) 0.68
   c) 0.42 d) 0.52

13) If two coins are tossed simultaneously, then the probability of getting two heads is _____.
   a) 1/2 b) 1
   c) 1/3 d) 1/4

14) Head note is the part of _____.
   a) Tabulation b) Classification
   c) Frequency distribution d) Correlation

Q.2 A) Answer the following questions. (Any Four) **08**

1) Calculate mean from the following data :
   55,56,45,46,61,58,57,55,47,51,55,51.
2) What is +ve correlation?
3) What is geographical classification?
4) Define median.
5) Give merits of average.

B) Write notes. (Any Two) **06**

1) Describe Karl-Pearson Coefficient of correlation.
2) Give requisites of good measures of dispersion.
3) What are the objectives of classification?

Q.3 A) Answer the following questions. (Any Two) **08**

1) Calculate Median of the following :
   51, 53, 52, 51, 54, 53, 50, 54, 55, 53, 54, 55, 56, 54
2) Describe measures of central tendency.
3) Define null hypothesis.

B) Answer the following questions. (Any One) **06**

1) Write a note on scatter diagram. State types of correlation.
2) Chi square test

Q.4 A) Answer the following questions. (Any Two) **10**

1) Define Binomial distribution and state its mean and variance.
2) Explain standard deviation.
3) Explain various methods of studying coefficient of correlation.

B) Answer the following questions, (Any One) **04**

1) Write a note on Histogram.
2) Describe Range and its coefficient.

Q.5 Answer the following questions. (Any Two) **14**

1) Probability
2) Hypothesis testing
3) State formula for finding A.M, Median and mode for Continuous frequency distribution.

SLR-JX-22

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Zoology
RESEARCH METHODOLOGY AND 4 INTELLECTUAL PROPERTY RIGHT

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) When a hypothesis is stated negatively it is called _____
   a) Relational Hypothesis b) Situational Hypothesis
   c) Null Hypothesis d) Casual Hypothesis

2) A comprehensive full Report of the research process is called _____.
   a) Thesis b) Summary Report
   c) Abstract d) Article

3) A singer wishes to assign the rights to reproduce a video she has made of her concert by _____.
   a) Copy rights b) Trade mark
   c) Patent d) Industrial designs

4) A methods of collecting primary data in which a number of individuals with a common interest interact is called _____.
   a) Telephone Interview b) Clinical Interview
   c) Focused Interview d) Group Interview

5) The horizontal headings and sub heading of the row are called row captions and the space where these rows headings are written is called the _____.
   a) box head b) Stub
   c) body d) Title

6) Centre is an autonomous Inter-University Centre of the University Grants Commission serves towards modernization of Libraries _____.
   a) PubMed b) Inflibnet
   c) Medline d) Scopus

7) Junior Research fellowship to young researcher who have qualified BET exam is provided by _____ funding agency.
   a) UGC b) DST
   c) DBT d) CSIR

8) To compare the mean of more than two population the _____ is used as a test of significance.
   a) chi-square test b) standard deviation
   c) t-test d) ANOVA

9) To generate a frequency table by using the drop-down menus in SPSS is _____.
   a) Open the Output Viewer and click: Save As; Pie Chart
   b) Click on: Analyze; Descriptive Statistics; Frequencies
   c) Click on: Graphs; Frequencies; Pearson
   d) Open the Variable Viewer and recode the value labels

10) In traditional report writing normally _____ font with size 12 and double line spacing is used.
a) Times New Roman b) Bookman Old Style
c) Arial d) Monotype Corsiva

11) _____ is the first step of Research process.
a) Formulation of a problem b) Collection of Data
c) Editing and Coding d) Selection of a problem

12) In _____ journals the reviewers don't know the identity of authors, and vice versa.
a) Scholarly b) single blind peer-reviewed
c) double blind peer-reviewed d) open peer-reviewed

13) The ISSN number has generally _____ digit numbers.
a) 4 b) 6
c) 8 d) 10

14) The patent for _____ was first filed by W. R. Grace and the Department of Agriculture, USA in European Patent Office later it was revoked.
a) Turmeric b) Neem
c) Basmati d) Alphanso mango

Q.2 A) Answer the following questions. (Any Four) **08**
1) Give any one method of quoting reference in thesis with example.
2) What is trade mark?
3) Enlist any four international journals.
4) What are the types of data according to its source?
5) What is the DST? Give its role.

B) Write notes. (Any Two) **06**
1) Agricola
2) Hypothesis testing
3) Explain the strategy for journal selection.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Explain in detail how to write the review of literature in thesis.
2) Explain any one case study of patenting biological material.
3) Write a note on National digital library of India.

B) Answer the following questions. (Any One) **06**
1) Discuss the graphical and diagrammatic method of result presentation.
2) Explain in brief the different components of thesis.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Write a note on paper presentation in conference.
2) Explain in detail the standard format of table and its components used for data analysis.
3) Illustrate in detail the review article.

B) Answer the following questions. (Any One) **04**
1) What is impact factor? Give its importance.
2) Explain in detail use of SPSS.

Q.5 Answer the following questions. (Any Two) **14**
a) What is intellectual property right? Explain in detail the trade secrets and patents.
b) Write in detail about manuscript preparation for journals.
c) Discuss the methods of data collection.

SLR-JX-23

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Genetics
PLANT BREEDING AND TISSUE CULTURE

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) Self pollinate crops evolved from an ancestor that was _____ of the following.
   a) Usually self pollinated b) Cross pollinated
   c) Never cross pollinated d) Self pollinated

2) Whether a population is at equilibrium or not, can be easily determined using _____ of the following.
   a) t-test b) z-test
   c) x^2-test d) F-test

3) _____ of the following shows moderate degree of inbreeding depression.
   a) Maize b) Onion
   c) Sunflower d) Rye

4) Resistance of host to the particular race of a pathogen is called _____ resistance.
   a) Perpendicular b) Parallel
   c) Vertical d) Horizontal

5) Amino acids which cannot be synthesized in human body are _____ amino acids.
   a) limiting b) neutral
   c) non essential d) essential

6) Drought tolerance is associated with _____.
   a) small, waxy and thick leaves
   b) deep root system
   c) sunken, small and less no. of stomata
   d) all of these

7) Callus refers to the mass of _____.
   a) Cells b) organs
   c) unorganized cells d) organized cells

8) The term protoplast was coined by _____.
   a) Hanstein b) Maheshwari
   c) Barski d) Gamberg

9) Ovule culture is used for _____.
   a) embryo immobilization b) embryo fusion
   c) embryo rescue d) embryo fertilization

10) Delay of fruit ripening is the _____ of plant.
   a) nutritional quality improvement
   b) post harvest quality improvement
   c) pest resistance quality improvement
   d) abiotic quality improvement

11) Catechin, plant secondary metabolite comes under _____ group.
   a) carotenoids b) sapogenins
   c) anthocynins d) tannins

12) Essential nutrients can be easily supplied whenever needed in _____ culture.
   a) Batch b) Continuous
   c) Solid d) Static

13) For the synthesis of edible vaccine _____ is not that much feasible.
   a) potato b) banana
   c) apple d) tomato

14) Essential metabolites produced by organism for growth and development are known as _____.
   a) primary metabolites b) secondary metabolites
   c) substrate d) enzyme

Q.2 A) Answer the following questions. (Any Four) 08
1) Origin of crop plant
2) Plant resistance to frost
3) Diploid
4) Secondary metabolite
5) Abiotic stress

B) Write notes. (Any Two) 06
1) Virus-free plants by meristem culture
2) Vertical disease resistance
3) Plant germ plasm

Q.3 A) Answer the following questions. (Any Two) 08
1) Explain law of homologous variation.
2) Describe genetic basis and breeding for resistance to diseases of plants.
3) Write on endosperm culture.

B) Answer the following questions. (Any One) 06
1) Explain mutational breeding.
2) Describe organogenesis.

Q.4 A) Answer the following questions. (Any Two) 10
1) Write a note on MARS in stress resistance breeding.
2) Explain Somaclonal and Gametoclonal variation for crop improvement.
3) Describe biotransformation of precursors by cell culturing.

B) Answer the following questions. (Any One) 04
1) Explain biosynthesis using batch culture.
2) Describe transgenic plants as edible vaccines.

Q.5 Answer the following questions. (Any Two) 14
1) Describe GM crops for nutritional quality and quantity.
2) Explain Somatic variation in crop improvement.
3) Write in detail In vitro mutagenesis and mutant selection.

SLR-JX-25

Seat No.		Set	P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Biotechnology
IMMUNOLOGY AND IMMUNO TECHNIQUES

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks bu choosing correct alternatives given below. 14

1) Only antigen-presenting cells present antigen along with _____.
   a) class I MHC b) class II MHC
   c) class III MHC d) class IV MHC

2) _____ microorganisms are classified as intracellular pathogens.
   a) *Neisseria gonorrhoeae* b) *Mycobacteriumtuberculosis*
   c) *Candida albicans* d) All of these

3) _____ are Phagocytic cells of the central nervous system.
   a) Alveolar macrophages b) Histiocytes
   c) Microglial cells d) Osteoclasts

4) Substances that can be recognized by immunoglobulin receptor of B cells, or by the T-cell receptor when complexed with MHC, are called _____.
   a) antigens b) antibodies
   c) adjuvants d) haptens

5) _____ are substances that, when mixed with an antigen and injected with it, enhance the immunogenicity of that antigen.
   a) Haptens b) Steroids
   c) Adjuvants d) Alkaloids

6) _____ plays a major role in mounting immune responses to antigens in the blood stream.
   a) spleen b) local lymph nodes
   c) bone marrow d) Thymus

7) The first evidence that antibodies were contained in particular serum protein fractions came from a classic experiment by _____, in 1939.
   a) Landsteiner b) Tiselius and Kabat
   c) MacKnicoff d) Pastuer and Jenner

8) _____ regions form the antigen binding site of the antibody molecule.
   a) Hypervariable b) Epitopes
   c) Fc d) Fab

9) The mechanism that permits immunoglobulins to be synthesized in either a membrane-bound or secreted form is _____.
   a) allelic exclusion b) codominant expression
   c) class switching d) differential RNA processing

10) The interaction between a, _____ antigen and agglutinating antibody (agglutinin) produces visible clumping, or agglutination.
   a) particulate b) Soluble
   c) colored d) multivalent

11) Definitive diagnosis of _____ is based on the detection of acid-fast bacilli in clinical specimens by microscopy.
   a) diphtheria b) Typhoid
   c) tuberculosis d) hepatitis

12) *Clostridium tetani* produces an oxygen-labile hemolysin toxin that is _____.
   a) tetanospasmin b) tetanolabile
   c) tetanohemin d) tetanolysin

13) HIV-I infection is spread mainly by _____.
   a) sexual contact
   b) passage of blood
   c) from HIV-infected mother to infant
   d) All of the above

14) _____ is an organ specific autoimmune disease.
   a) Hashimoto's Thyroiditis b) Systemic Lupus Erythematosus
   c) Multiple Sclerosis d) Rheumatoid Arthritis

Q.2 A) Answer the following questions. (Any Four) **08**
1) The T_C cell is said to be class I restricted. What does this mean?
2) Discuss roles of macrophages and dendritic cells in immune system.
3) Define Epitopes and Haptens.
4) Describe the causal organism of diphtheria.
5) Discuss the applications of antigen-antibody interaction.

B) Answer the following questions. (Any Two) **06**
1) What are the advantages and disadvantages of using attenuated organisms as vaccines?
2) Briefly describe the three major events in the inflammatory response.
3) Explain the structure of antibody.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Describe the structure of Human Immunodeficiency Virus.
2) Discuss Factors affecting antigenicity.
3) Discuss Gell and Coomb's Classification.

B) Answer the following questions. (Any One) **06**
1) Explain Phenomenon of Phagocytosis, Necrosis and Apoptosis.
2) Describe Immunologic Basis of Graft rejection.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Explain Subunit vaccines with examples.
2) Describe the life cycle of *Plasmodium malaria.*
3) What are complement proteins? Explain the classical pathway of complement activation.

B) Answer the following questions. (Any One) **04**
1) Explain immunodiffussion.
2) Explain the principle of complement fixation test.

Q.5 Answer the following questions. (Any Two) **14**
a) What are cytokines? Discuss properties of cytokines in detail.
b) Discuss seven means of immunoglobulin diversification.
c) Discuss general information, pathogenicity, Laboratory Diagnosis of Bacterial Disease - tuberculosis.

SLR-JX-27

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Bioinformatics
PROGRAMMING IN OBJECT ORIENTED LANGUAGES

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) A Perl _____ is group of statements that together performs a task.
   a) Routine b) Vector
   c) Subroutine d) Array

2) Names used for classes, variables, and methods are called _____.
   a) Block b) Keywords
   c) Identifier d) Applet

3) AWT stands for _____.
   a) Abstract Window Toolkit b) Abstract Window Table
   c) Accept Window Text d) None

4) Perl was created by _____.
   a) Larry Wall b) Dennis Ritchie
   c) Larry Page d) R.Gentlemen

5) _____ contains a single unit of data.
   a) Variable b) Class
   c) Vector d) Scalar

6) Perl stands for _____.
   a) Personal Extraction Lang b) Practical Expert Lang
   c) DBMS d) None

7) _____ defines the methods, a deriving class (subclass) should use.
   a) Method b) Subclass
   c) Interface d) None of the mentioned

8) You construct threads by using the _____ and the Runnable interface.
   a) Thread class b) Vector class
   c) Abstract class d) GUI

9) _____ Project is an international association of users & developers of open source Perl tools for bioinformatics, genomics and life science
   a) Bio java b) Object Oriented Programming
   c) Bioperl d) None of these

10) _____ is the physical as well as logical entity whereas class is the logical entity only.
   a) Vector b) Object
   c) Instance d) Operator

11) A variable that is created inside the class but outside the method is known as _____ variable.
   a) instance b) scaler
   c) identity d) static

12) An object that has no reference is known as _____ object.
   a) Key b) Name
   c) String d) Anonymous

13) _____ must not has return type.
   a) Constructor b) Destructor
   c) Complier d) Debugger

14) JVM stands for _____.
   a) Java Vector Machine b) Java Development Kit
   c) Java Design Kit d) Java View Machine

Q.2 A) Answer the following questions. (Any Four) **08**

1) Define the term Package.
2) What is mean by Threading?
3) Define abstraction.
4) Write features of Perl.
5) What is mean by Polymorphism?

B) Write notes. (Any Two) **06**

1) History of java.
2) Data types in Perl.
3) Applications of Bioperl.

Q.3 A) Answer the following questions. (Any Two) **08**

1) Explain in detail variables in java.
2) Write a note on Method Overloading in Java.
3) Write and explain Perl and DBM.

B) Answer the following questions. (Any One) **06**

1) Write and explain Perl program on hash variable.
2) Explain in details conditional statements in Java.

Q.4 A) Answer the following questions. (Any Two) **10**

1) Write and explain java File Handling.
2) Write brief account on Subroutine in Perl.
3) Write and explain java program on Array.

B) Answer the following questions. (Any One) **04**

1) Explain all methods in Perl.
2) Write a note on Biojava packages.

Q.5 Answer the following questions. (Any two) **14**

1) Write a note on exception handling in Java with example.
2) Write Program to find motifs in a protein sequence by using Perl.
3) Explain a detail account on Concepts of Biojava.

SLR-JX-29

Seat No.		Set	P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Electronics
SIGNALS AND SYSTEMS

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) In Matlab vectors can be generated using the _____ command.
   a) Colon b) Semicolon
   c) Comma d) None of these

2) In the simple 2D plotting loglog command used for _____.
   a) Linear y and logarithmic x axes b) Logarithmic x and y axes
   c) Linear x and logarithmic y axes d) All of these

3) The type of systems which are characterized by input and the output quantized at certain levels are called as _____.
   a) Analog b) Digital
   c) Continuous d) Discrete

4) If $y[n] = x[n-1] + x[n]$ then the system is _____.
   a) Causal b) Anti-Causal
   c) Linear d) Non-linear

5) Level of signal is inversely proportional to the _____.
   a) Bandwidth of a system b) Efficiency of a system
   c) Accuracy of a system d) Reliability of a system

6) The sinc function is mathematically expressed as _____.
   a) $\frac{sin(\pi x)}{\pi x}$ b) $\frac{sin(x)}{\pi x}$
   c) $\frac{sin(\pi x)}{x}$ d) $\frac{sin(\pi)}{x}$

7) The convolution of any sequence with _____ produces the same sequence.
   a) Unit impulse b) Unit ramp
   c) Unit step d) None of these

8) Which one is a linear system?
   a) $y(n) = x(n).x(n-1)$ b) $y(n) = x(n) + x(n-10)$
   c) $y(n) = x^2(n)$ d) None of these

9) The Fourier series expansion of odd periodic function contains only _____ terms.
   a) Cosine b) Sine
   c) Both a and b d) None of these

10) A signal which repeats itself a fixed time period or interval is called _____.
   a) Continuous signal b) Periodic signal
   c) Non periodic signal d) None of these

11) The bounded input produces a unbounded output then this system is ____.
   a) Unstable system b) Stable system
   c) Invariant system d) Variant system

12) Time period (T) increased then the effect on the Amplitude spectrum is ____.
   a) Decreased b) Increased
   c) Changed d) Unchanged

13) $Y(n) = cos\, x(n)$ is _____ system.
   a) Linear b) Non linear
   c) LTI d) Time variant

14) A _____ system means its input output characteristics are not changing with time shifting.
   a) Time invariant b) Time variant
   c) Linear d) Non linear

Q.2 A) Answer the following questions. (Any Four) **08**
1) Find the inverse Fourier transform of $\delta\ (\omega)$.
2) Explain condition of half wave symmetry.
3) Write note on basic structure of matlab.
4) Compare energy signal and power signal.
5) Write a note on standard test signal.

B) Answer the following questions. (Any Two) **06**
1) Find the Fourier transform of $cos\ (\omega_0 t)$
2) Find the inverse Fourier transform of $\delta\ (\omega - \omega_0)$.
3) What do you understand causal and non-causal system.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Write a note on Fourier series.
2) Explain the conjugation property of Fourier transform.
3) Explain the Parsevals Theorem.

B) Answer the following questions. (Any One) **06**
1) Explain the symmetry condition of Fourier series.
2) Define system. Explain linearity property of D.T. systems.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Define Stability property of the system.
2) Define signal. Give typical examples on signals and system?
3) Explain in detail Matlab windows.

B) Answer the following questions. (Any One) **04**
1) What do you mean by periodic function?
2) Write short note on Dirichlet conditions.

Q.5 Answer the following questions. (Any Two) **14**
a) Find whether the following system is linear or not. $y(n) = x(-n+2)$
b) Prove that the LTI system is completely characterized by its impulse response.
c) Prove LTI system is causal if and only if $h(n) = 0$ for $n < 0$

SLR-JX-31

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Botany
ADVANCES IN PLANT PATHOLOGY

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) The literature on the genetics of disease resistance in vegetables has been reviewed by Walker in _____.
   a) 1965 b) 1966
   c) 1967 d) 1968

2) In _____ the disease destroyed the potato crop in Ireland.
   a) 1844 b) 1845
   c) 1888 d) 1945

3) _____ in 1963 has reviewed the control of plant disease by crop rotation.
   a) Walker b) Nanir
   c) Curl d) Singh

4) BMV is the example of _____ disease.
   a) bacterial b) fungal
   c) mycoplasma d) viral

5) _____et. al. in 1989 tried to put up a moderately precise definition of disease.
   a) Singh b) Alexopolous
   c) Verma d) Albert

6) Powdery mildew of grapevines disease was reported from _____ in 1847.
   a) Indian b) England
   c) Japan d) Thailand

7) Club root of crucifier was first described by Woronin in _____.
   a) 1877 b) 1887
   c) 1897 d) 1867

8) Plant pathology is that branch of agricultural _____ science.
   a) Geological b) Botanical
   c) Ecological d) All of these

9) The term _____ is derived from a greek word meaning among the people.
   a) epidemic b) endemic
   c) sporadic d) none of these

10) The event of pathogenesis will be discussed under the heads _____.
   a) prepenetration b) penetration
   c) post penetration d) all of these

11) _____ is the example of viral disease.
   a) TMV b) RMV
   c) SMV d) CMV

12) Causal organism of citrus canker disease is _____.
   a) *Sphacelotheca sorghii* b) *Xanthomonas citri*
   c) *Ustilago scitaminea* d) *Cercospora personata*

13) _____ is the example of algal disease.
   a) White rust b) Green rust
   c) Red rust d) Black rust

14) White rust is the example of _____ disease.
   a) fungal b) viral
   c) bacterial d) mycoplasma

Q.2 A) Answer the following questions. (Any Four) **08**
1) Define plant pathology.
2) Give the two control measures of BMV.
3) What is penetration?
4) Define pathogen.
5) What is epidemology?

B) Write notes. (Any Two) **06**
1) Endemic disease
2) Colonization
3) Protection

Q.3 A) Answer the following questions. (Any Two) **08**
1) Explain the symptoms and control measures of GSD.
2) Describe the seed borne pathogen.
3) Give the classification of plant diseases based on crops.

B) Answer the following questions. (Any One) **06**
1) Describe the symptoms, causal organism and control measures of Root Knot of Vegetables.
2) Explain the importance of plant diseases.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Explain the slow and rapid epiphytotics
2) Describe the chemical control studied by you.
3) Give the genetical defense mechanism against pathogen.

B) Answer the following questions. (Any One) **04**
1) Describe the symptoms and control measures of root parasites.
2) Explain the colonization mechanism of infection.

Q.5 Answer the following questions. (Any Two) **14**
a) Explain the methods of diagnosis of plant diseases.
b) Describe the symptoms, causal organism, disease cycle and control measures of Downy mildew disease.
c) Explain the symptoms, causal organism, disease cycle and control measures of Blight disease.

SLR-JX-33

Seat No.		Set	P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Agrochemicals and Pest Management
BIOTECHNOLOGICAL ASPECTS IN PLANT PROTECTION – I

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) Breeder seed is the progeny of _____.
   a) Nucleus seed b) Registered seed
   c) Foundation seed d) Certified seed

2) How does the moisture stress affect the cell _____.
   a) Affect cell division b) Affect cell expansion
   c) Cell mortality rate is affected d) No effect on cell

3) Seed coat is derived from _____.
   a) Testa b) Embryo
   c) Endosperm d) Nucellus

4) The Rabi crops sown in which months?
   a) March-April b) June-July
   c) October-November d) January-February

5) Which one of the following sequence is correct in the context of three largest wheat producing states in India?
   a) Punjab, Uttar Pradesh and Haryana
   b) Uttar Pradesh, Haryana and Punjab
   c) Uttar Pradesh, Punjab and Haryana
   d) Punjab, Haryana and Uttar Pradesh

6) Consider the following:
   i. Wheat is sown in mid-October-mid-November and harvested in March.
   ii. Wheat is grows well in cool, moist climate and ripens in a warm, dry climate.

   Which of the above statement (s) is/are correct about climatic conditions for Growing Wheat?
   a) Only I b) Only II
   c) Both I and II d) Neither I nor II

7) The concept of invitro cell culture was developed by _____.
   a) Kotte and Robins b) Haberlandt
   c) Hanning d) Knop

8) Argemone mexicana is an objectional weed in: _____.
   a) Wheat b) Barley
   c) Rapeseed/Mustard d) Chick pea

9) Certification is not required for: _____.
   a) Foundation seed b) Registered seed
   c) Nucleus seed d) Certified seed

10) Initial seed of an improved variety is called _____.
   a) Nucleus seed b) Registered seed
   c) Foundation seed d) Certified seed

11) Seed certification requires _____.
   a) Improved variety b) Genetic Purity
   c) Physical purity d) All of the above

12) Seed technology involves activities such as _____.
   a) seed processing b) seed storage
   c) Seed certification d) All of the above

13) Freedom from inert matter and defective seeds _____.
   a) Genetic purity b) Physical purity
   c) germination purity d) disease free purity

14) Good soil for groundnut crop is _____.
   a) Black cotton b) Sandy loam
   c) Red soil d) Crush sand

Q.2 A) Answer the following question. (Any Four) **08**

1) What is totipotiency?
2) What is hybridization?
3) Seed rate of Tomato.
4) Define infection.
5) Define recombinant DNA technology.

B) Write notes on (Any Two) **06**

1) Vertical resistance.
2) Fertilizer requirements for cauliflower.
3) Climatic condition required for Tobacco.

Q.3 A) Answer the following question. (Any Two) **08**

1) What is mean by biochemical defence in plants?
2) Comment up on soil and climatic conditions of coconut
3) Write brief account of meristem culture.

B) Answer the following question. (Any One) **06**

1) Explain in brief escape method of breeding.
2) Write in brief about cultivation practice of Soybean.

Q.4 A) Answer the following question. (Any Two) **10**

1) Comment up on pesticide degradation.
2) Write in brief about seed marketing.
3) Write in brief about cultivation practices of Paddy.

B) Answer the following questions. (Any One) **04**

1) Comment up on glyphosate resistance gene.
2) Write in brief about virus free stock culture.

Q.5 Answer the following question. (Any Two) **14**

1) Define seed technology? Explain seed processing.
2) Define tissue culture and explain its technique.
3) Explain transgenic technique.

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Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Nanotechnology
GREEN MANUFACTURING TECHNOLOGY

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) The goal of green manufacturing technology is to reduce waste to _____.
   a) Zero b) Positive
   c) Negative d) Infinity

2) Highest percentage of air consists of _____.
   a) Oxygen b) Carbon dioxide
   c) Nitrogen d) Argon

3) The Taj Mahal is being affected by _____.
   a) Noise pollution b) Air pollution
   c) Water pollution d) Sound pollution

4) Air pollution causes _____.
   a) Global warming b) Respiratory problems
   c) Soil erosion d) Traffic Issues

5) Green House gas is _____.
   a) Nitrogen b) Oxygen
   c) Methane d) Carbon dioxide

6) The main cause of pollution is _____.
   a) Human activities b) Trees
   c) Birds d) Microorganisms

7) _____ converts kinetic energy to mechanical energy.
   a) Wind Turbines b) Submarines
   c) Mobile Technology d) GPS

8) The percentage of nitrogen is _____.
   a) 21% b) 78%
   c) 12% d) 87%

9) Compressed natural Gas (CNG) is a _____.
   a) Polluted fuel b) Clean fuel
   c) Harmful fuel d) Nuclear fuel

10) Chlorofluorocarbon is used in _____.
   a) Refrigerators b) Transducers
   c) Chips d) Nanomaterials

11) Ozone layer absorbs _____.
   a) X-rays b) Gamma rays
   c) Infrared rays d) Ultraviolet rays

12) Today, the world's number one problem is _____.
   a) Pollution b) Population explosion
   c) Food production d) Water conservation

13) Plants are green because of the presence of a pigment called _____.
   a) Glucose b) Nitrogen
   c) Chlorophyll d) Oxygen

14) The depletion in the Ozone layer is caused by _____.
   a) nitrous oxide b) carbon dioxide
   c) chlorofluorocarbons d) methane

Q.2 A) Answer the following questions. (Any Four) **08**

1) What is Green manufacturing?
2) Give examples for fossil fuels.
3) What are wastes?
4) What is sustainability?
5) Give examples of renewable sources.

B) Write notes. (Any Two) **06**

1) Write a note on green supply chain management.
2) Explain briefly about ISO and its mission.
3) Write a note on Alternative energy resources.

Q.3 A) Answer the following questions. (Any Two) **08**

1) Explain green plastics manufacturing.
2) What is an environmental management system?
3) Write different nanotechnology applications for green manufacturing.

B) Answer the following questions. (Any One) **06**

1) Write a note on waste management.
2) Write the advantages and disadvantages of green technology.

Q.4 A) Answer the following questions. (Any Two) **10**

1) Explain briefly waste water management and its treatment.
2) Explain in detail Sustainable Manufacturing.
3) Write a note on industrial ecology.

B) Answer the following questions. (Any One) **04**

1) Explain different types of environmental issues.
2) Explain government motivations for green manufacturing process.

Q.5 Answer the following questions. (Any Two) **14**

1) Explain different classification of Wastes.
2) Explain biodegradability and its process of economics of using natural materials.
3) Explain in detail scope and goals of green manufacturing technology.

SLR-JX-37

Seat No.		Set	P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Microbiology
BIOINFORMATICS & BIOSTASTASTICS

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) _____ is the study of the association between genomic data and drug response patterns.
   a) Chemoinformatics b) Pharmacogenomics
   c) Functional genomics d) Proteomics

2) ClustaI was developed by _____ and _____ in 1988 which performs a global multiple sequence alignment by a stepwise process.
   a) Heuristic and John's b) Needlemon and lunch
   c) Higgins and sharp d) Fitch and margoliash

3) _____ is the universal repository for protein structural data obtained by X-Ray Crystallography.
   a) PDI b) Swiss PROT
   c) PERL d) PDB

4) The database covered by entries for literature citations is _____.
   a) PubMED b) LITB
   c) MEDLINE d) PubMED central

5) _____ a dendogram in which each node has two branches representing evolutionary history as speciation by bifurcation of the evolutionary lineage.
   a) Dudogram b) Cladogram
   c) Tetragram d) Syndogram

6) _____ is a genomic database for drosophila melanogaster.
   a) MGD b) MelanD
   c) Fluybase d) OMIM

7) The database covered by Entrez for probe set is _____.
   a) swis PROT b) pubMED
   c) DBCET d) gene expression omnibus

8) Gen Bank has _____ divisions.
   a) 17 b) 11
   c) 4 d) 13

9) In a phylogenetic tree Root represents _____.
   a) Taxa b) Common ancestor
   c) Branching d) Species

10) Swiss-Prot is a _____.
   a) Nucleic acid sequence database b) Structure database
   c) Protein sequence database d) Composite database

11) _____ is an online data retrieval tool developed by the institute for chemical research and the human genome centre in Japan.
a) DDBJ b) DDCS
c) DRC d) DBGET

12) Probability always lies between _____.
a) 0 to 2 b) 0 to1
c) -1 to 1 d) 0 to infinity

13) By using histogram we find _____.
a) Median b) Mean
c) Mode d) Average

14) Which of the following distribution used for goodness of fit _____.
a) Binomial b) Norma
c) Poisson d) Chi-square

Q.2 A) Define and explain any four of the following questions. 08
1) Probability
2) Bar diagrams
3) Chemoinformatics
4) Protein arrays
5) Homology Modeling

Q.2 B) Write short notes on any two of the following questions. 06
1) Explain correlation methods.
2) Explain measures of central tendency.
3) Discuss skewness and kurtosis.

Q.3 A) Answer any two of the following questions. 08
1) Give a detailed account on nucleic acid databases.
2) Explain in detail stratified & cluster sampling.
3) Explain in detail Correlation and Regression.

Q.3 B) Answer any one of the following questions. 06
1) What is Bioinformatics? Discuss applications of Bioinformatics in various fields.
2) Explain in detail Microarray with example.

Q.4 A) Answer any two of the following questions. 10
1) Explain bioinformatics-based tools for analysis of proteomics data.
2) Explain Nucleic acid sequence databases.
3) Describe Hypothesis and its testing.

Q.4 B) Answer any one of the following questions. 04
1) Briefly describe analysis of Variance (ANOVA)
2) Comment on “Functional genomics”

Q.5 Answer any two of the following questions. 14
a) What is Biostatistics? Discuss applications of Biostatistics in various biological fields.
b) What is ExPASy? Discuss various tools available at ExPASy.
c) What is Phylogeny? Discuss various algorithms used in phylogenetic analysis.

SLR-JX-39

Seat No.	

Set P

M.A. / M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Geography
REGIONAL GEOGRAPHY OF INDIA

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

सूचना : 1) सर्व प्रश्न अनिवार्य आहेत.
2) उजवीकडील अंक पुर्ण गुण दर्शवितात.
3) नकाशा स्टेन्सिल वापरण्यास परवानगी आहे.
4) आवश्यक तेथे सुबक आकृत्या व नकाशे काढा.

प्र.1 खालीलपैकी योग्य पर्याय निवडून गाळलेल्या जागा भरा. **14**

1) ———— पर्वताची उत्पत्ती भूमंच वहन हालचाल (plate tectonic) सिद्धांताचे उदाहरण आहे.
अ) सहयाद्री ब) हिमालय
क) आरवली ड) विंदय

2) ——— हा प्रमुख वृक्ष उष्णकटीबंध आर्द्र पानझडी अरण्यात आढळतो.
अ) शिसम ब) निंब
क) महोगनी ड) बांम्बू

3) सहयाद्री पर्वत हा ———— नावानेही ओळखला जातो.
अ) पश्चिम घाट ब) निलगिरी पर्वत
क) आरवली पर्वत ड) सातपुडा पर्वत

4) भारतातील ———— खाणीमधून सर्वाधिक लोहखनिजाचे उत्पादन घेतले जाते.
अ) हाजीरा ब) बोकारो
क) रानीगंज ड) सिंघभूम

5) भारतातील ———— राज्यामधे सर्वाधिक मंगलधातूचे उत्पादन घेतले जाते.
अ) महाराष्ट्र ब) गुजरात
क) मध्यप्रदेश ड) केरळ

6) खनिज तेल ———— खोऱ्यात सापडत नाही.
अ) अंदमान व निकोबार किनारवर्त्ती ब) दामोदर नदी
क) प. बंगाल ड) प. हिमालय

7) ———— राज्यामध्ये तलाव जलसिंचनाखालील क्षेत्र जास्त आहे.
अ) हिमाचल प्रदेश ब) मध्य प्रदेश
क) उत्तर प्रदेश ड) आंध्र प्रदेश

8) ——— विभाग प्रादेशिक नियोजनाचा सर्वात लहान विभाग आहे.
अ) सुक्ष्म ब) विशाल
क) मध्यम ड) यापैकी नाही

9) रांची ही ——— राज्याची राजधानी आहे.
अ) झारखंड ब) उत्तरांचल
क) बिहार ड) छत्तीसगड

10) लोकसंख्या वैशिष्टयानुसार वर्णतीत केलेल्या विभागास ––– असे संबोधतात.
अ) ऐतिहासिक ब) लोकसंख्या शास्त्रिय
क) प्राकृतिक ड) यापैकी नाही

11) टाटा लोह पोलाद उदयोग ––– येथे स्थापन झाला आहे.
अ) जमशेदपूर ब) दुर्गापूर
क) रूरकेला ड) बोकारो

12) ––––– शहर भारताचे मॅचेस्टर म्हणून ओळखले जाते?
अ) मुंबई ब) अहमदाबाद
क) सुरत ड) मधुराई

13) कोणत्या राज्यात कापसाचे सर्वाधिक उत्पादन घेतले जाते.
अ) महाराष्ट्र ब) मध्यप्रदेश
क) आंध्रप्रदेश ड) उत्तर प्रदेश

14) भारतामधे उच्च प्रतीचा कोळसा ––––– खाणिमधून मिळतो.
अ) बोकारो ब) झारीया
क) रानीगंज ड) सिंगरूली.

प्र.2 अ) खालीलपैकी कोणत्याही चार प्रश्नांची थोडक्यात उत्तरे लिहा. **08**
1) भारतातील सर्वाधिक कालवा जलसिंचनाखाली क्षेत्र असलेली राज्ये सांगा.
2) कापूस उत्पादक प्रमुख राज्ये सांगा.
3) उत्तर पश्चिम पर्वतीय कृषी हवामान विभागातील शेतीच्या दोन समस्या सांगा.
4) भारताचा अक्षवृत्तीय व रेखावृतीय विस्तार सांगा.
5) दगडी कोळश्याचे प्रकार सांगा.

ब) खालीलपैकी कोणत्याही दोन टिपा लिहा. **06**
1) गोदावरी नदी
2) महाराष्ट्रातील कापूस उत्पादक प्रदेश
3) आसाम खनिज तेल विभाग

प्र.3 अ) खालीलपैकी कोणत्याही दोन प्रश्नांची उत्तरे लिहा. **08**
1) पूर्व किनारपट्टी कृषी हवामान विभागाचे वर्णन करा.
2) अहमदाबाद – बरोदा औद्योगिक विभागाचे वर्णन करा.
3) झारखंडमधील खनिज साधन संपत्तीचे वर्णन करा.

ब) खालीलपैकी कोणत्याही एका प्रश्नांचे उत्तरे लिहा.
1) दख्खनच्या पठारावरील पश्चिम वाहीनी नदया
2) भारतातील गहू उत्पादक क्षेत्राची चर्चा करा.

प्र.4 अ) खालीलपैकी कोणत्याही दोन प्रश्नांची उत्तरे लिहा. **10**
1) उत्तर भारतातील दगडी कोळसा वितरणाचा थोडक्यात वृतांत द्या.
2) महाराष्ट्र–कोकण विभागाचा वृतांत द्या.
3) भारतातील तलाव जलसिंचनाचा वृतांत द्या.

ब) खालीलपैकी कोणत्याही एका टिप लिहा. **04**
1) उत्तरांचल राज्यातील खनिज साधन
2) कापसाची काळी मृदा

प्र.5 खालीलपैकी कोणत्याही दोन प्रश्नांची उत्तरे लिहा. **14**
1) उत्तर भारतातील सुतीवस्त्र उद्योगाचा थोडक्यात वृतांत द्या.
2) भारतातील मंगल धातू वितरणावर थोडक्यात चर्चा करा.
3) भारतातील कोपेनचे हवामान वर्गीकरणावर चर्चा करा.

Seat No.	

Set **P**

M.A. / M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Geography
REGIONAL GEOGRAPHY OF INDIA

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Draw neat diagram wherever necessary.
4) Use of map stencil is allowed.

Q.1 Fill in the blanks by choosing the correct alternatives given below: **14**

1) The origin of _____ mountain can best be explained by theory of plate tectonic.
a) Sahyadri b) Himalaya
c) Arawari d) Vindya

2) _____ is the main tree found in the tropical wet deciduous forest.
a) Shisam b) Nimb
c) Mahogany d) Bamboos

3) The Sahyadri mountain is known as the _____.
a) Western Ghat b) Nilagiri Mountain
c) Arawali Mountain d) Satapuda Mountain

4) Most of the iron products are produced in _____ mine of India.
a) Hajira b) Bokaro
c) Raniganj d) Singhbhum

5) _____ state is the leading producer of manganese in India.
a) Maharashtra b) Gujarat
c) Madhya Pradesh d) Kerala

6) Petroleum are not found in _____ basin.
a) Andaman & Nicobar coastal b) Damodar river
c) Western Bangal d) Western Himalayan

7) The area under the lake irrigation is much higher in _____ state.
a) Himachal Pradesh b) Madhya Pradesh
c) Uttar Pradesh d) Andra Pradesh

8) _____ regions an smallest of the planning region.
a) Micro b) Macro
c) Meso d) None of these

9) Ranchi is the capital of _____.
a) Jharkhand b) Uttaranchal
c) Bihar d) Chhatisgarh

10) The region delineated on the basis of population features are known _____ region.
a) Historical b) Demographic
c) Physical d) None of these

11) Tata Iron Steel Plant is located at _____.
   a) Jamshetpur b) Durgapur
   c) Rurakela d) Bocaro

12) _____ city known as Manchester of India.
   a) Mumbai b) Ahmadabad
   c) Surat d) Madhurai

13) Which is the largest cotton growing state in India?
   a) Maharashtra b) Madhya Pradesh
   c) Andra Pradesh d) Uttar Pradesh

14) The best quality coal in India is found in _____ mines.
   a) Bokaro b) Jharia
   c) Raniganj d) Singrauli

Q.2 A) Write short answers of the following questions. (Any Four) **08**

1) Write the name of the most prominent state under canal irrigation.
2) Tell us the major state of cotton production.
3) State the two Agricultural problem of North-Western Mountanious agro-climatic region.
4) State the latituditional and longitutional extension of India.
5) State the types of coal.

B) Write short notes. (Any Two) **06**

1) Godavari river
2) Cotton production area in Maharashtra
3) Assam region oil field

Q.3 A) Write short answers of the following questions. (Any Two) **08**

1) Describe the Eastern cost Agro-climatic region.
2) Explain the Ahmadabad-Baroda industrial region.
3) Describe the mineral resource in Jharkhand.

B) Write answers of the following questions. (Any One) **06**

1) Discuss the west flowing river of the peninsula.
2) Discuss the wheat production area in India.

Q.4 A) Write answers of the following questions. (Any Two) **10**

1) Give a brief account of coal distribution in North India.
2) Give a account of the Maharashtra Konkar region.
3) Give a account tank irrigation in India.

B) Write short notes. (Any One) **04**

1) Mineral resource in Uttaranchal
2) Black Cotton Soil

Q.5 Answer the following questions. (Any Two) **14**

a) Give a brief account of cotton textile industry in North India.
b) Give a brief account of Manganese distribution in India.
c) Give a brief account of Koppen's climatic classification of India.

SLR-JX-4

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Physics (Applied Electronics)
ELECTRONIC INSTRUMENTATION

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) Torque is directly proportional to _____.
   a) force b) length
   c) speed d) both a and b

2) _____ transducers are digital transducers.
   a) Piezoelectric b) Optical
   c) Dielectric gauge d) None

3) Maxwell's bridge is used for _____ measurement.
   a) resistance b) capacitance
   c) both a and c d) Inductance

4) C block is _____ of the controller.
   a) feed forward block b) disturbance
   c) feedback block d) measurement noise

5) Upper temperature type-M thermocouple is limited to $1400^{o}C$.
   a) $5000^{o}C$ b) $1400^{o}C$
   c) $1800^{o}C$ d) $200^{0}C$

6) _____ type of isolation amplifier has modulator and demodulator circuits.
   a) capacitive b) inductive
   c) feedback d) optical

7) DC amplifiers are used in _____ circuits.
   a) TV receivers b) computers
   c) regulator d) all of the above

8) The ideal common-mode gain of an instrumentation amplifier is _____.
   a) greater than one b) infinite
   c) one d) zero

9) Q factor is high if resistance is _____.
   a) high b) infinite
   c) low d) None of the above

10) In phase sensitive detector, applied voltage is zero and reference voltage is negative, tendency for the meter is to _____.
   a) deflect to the right b) deflect to the left
   c) no deflection d) deflect to zero

11) Resistances can be measured with the help of a _____.
   a) Wattmeter b) voltmeter
   c) ohmmeter and resistance bridge d) ammeter

12) A potentiometer may be used for _____.
   a) measurement of resistance b) measurement of current
   c) calibration of ammeter d) all of the above

13) _____ flip-flop is used in digital phase meter.
   a) R-S flip-flop b) J-K flip-flop
   c) D flip-flop d) T flip-flop

14) To increase Q-factor of coil, the wire should be _____.
   a) long b) thin
   c) thick d) long and thin

Q.2 A) Answer the following questions. (Any Four) **08**
1) Explain thermocouple.
2) Define velocity.
3) Explain optical isolation amplifier.
4) What is Inverse transducer?
5) Explain Rossette wire gauge.

Q.2 B) Write notes on. (Any Two) **06**
1) Explain Gang of six in feedback fundamentals.
2) Explain inductive transducer.
3) Draw and explain F to V converter.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Explain D.C. amplifiers.
2) Explain resistance position transducer
3) Give brief explanation on RMS converter.

Q.3 B) Answer the following questions. (Any One) **06**
1) Discuss classification of transducer.
2) Draw and explain absolute value circuit.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Discuss tachogenerator.
2) Distinguish between V to I and I to V converter.
3) Explain LVDT.

Q.4 B) Answer the following question. (Any One) **04**
1) Draw and explain log amplifier circuit.
2) Write a note on capacitance Measurement Bridge.

Q.5 Answer the following question. (Any Two) **14**
1) Explain Hall Effect.
2) What is a digital multimeter? Explain different types of digital multimeters.
3) Explain instrumentation amplifier with block diagram.

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Seat No.	

Set P

M.A. (Semester - II) (CBCS) Examination Oct/Nov-2019
Economics (Campus)
INDIAN ECONOMY

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) Indian economy is _____ kind of economy.
   a) Socialistic b) Gandhian Economy
   c) Mixed economy d) Free economy

2) The second five year plan was stressed on _____.
   a) Industrial sector b) Agriculture sector
   c) Self-reliance d) Poverty

3) SEBI was established in _____.
   a) 1998 b) 1988
   c) 1968 d) 1978

4) Planning commission was replaced by _____.
   a) NITI aayog b) Economic planning
   c) Plan India d) Finance commission

5) In which year first five year plan started?
   a) 1950 b) 1951
   c) 1952 d) 1953

6) In which five year plan government launched green revolution?
   a) 5^{th} b) 4^{th}
   c) 2^{nd} d) 3^{rd}

7) Which plan marked the beginning of economic liberalization?
   a) 5^{th} b) 4^{th}
   c) 2^{nd} d) 6^{th}

8) Which sector is backbone of the Indian economy?
   a) Agriculture sector b) Industrial sector
   c) Service sector d) None of these

9) Who recommends the MSP and Issue prices?
   a) Ministry of agriculture
   b) Planning commission
   c) Commission for agriculture costs and prices
   d) None of these

10) _____ refers to relaxation of produce government restriction usually in areas of social and economic policies.
   a) Privatization b) Globalization
   c) Disinvestment d) Liberalization

11) FDI stands _____.
   a) Forex Direct Investment
   b) Foreign Deregulated Investment
   c) Foreign Direct Investment
   d) Forex Deregulated Investment

12) Disinvestment means selling of a public investment to a _____.
   a) Private Enterprises
   b) Public Enterprises
   c) Capital Market
   d) Departmental Enterprises

13) Privatization can be achieved by _____.
   a) Leasing
   b) Franchising
   c) Contracting
   d) All the above

14) Which one of the following in the task of the planning commission?
   a) Preparation of the plan
   b) Implementation of the plan
   c) Financing of the plan
   d) None of these

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

a) Indian economy
b) Meaning of Economic planning
c) Blue revolution
d) Public distribution system
e) Privatization
f) Objectives of industrial policy

Q.3 Write Short Answers. (Any Two) **12**

a) Explain the objectives of economic planning.
b) What is agricultural price policy?
c) What is the role of agriculture finance in development of the agriculture sector?
d) What are the major problems in industrial sector in India?

Q.4 Answer the following questions. (Any One) **14**

What is agriculture marketing? Gives the valuable suggestions for development of agriculture marketing system in India.

OR

What is monetary policy? Explain the important objectives of monetary policy related to present situation in India.

Q.5 What is SEBI? Explain the role and importance of the SEBI in India. **14**

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Seat No.	

Set P

M.A. (Semester - II) (CBCS) Examination Oct/Nov-2019
History and Archaeology
INDIAN TOURISM

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) Tourist place Karle is famous for _____.
   a) Decorative Chaitya b) Vihar
   c) Inscription d) Pillar

2) I.T.D.C. is working on _____ level.
   a) State b) National
   c) International d) Local

3) Ellora caves are situated in _____ district of Maharashtra.
   a) Beed b) Jalgaon
   c) Dhule d) Aurangabad

4) _____ Tourist place is declared as world Heritage Monument.
   a) Sinhagad fort b) Nashik caves
   c) Karle caves d) Ellora caves

5) _____ caves are famous for Buddhist paintings.
   a) Bhaje b) Karle
   c) Ellora d) Ajanta

6) The world famous Khajuraho sculptures are located in _____ state.
   a) Madhya Pradesh b) Odisha
   c) Gujarat d) Rajasthan

7) Buddhist, Hindu and Jain caves together situated at _____ caves.
   a) Ajanta b) Ellora
   c) Bhaje d) Karle

8) The famous sculpture of Trimurti Shiva is located in _____ cave.
   a) Elephanta b) Bhaje
   c) Karle d) Ajanta

9) Sun temple konark is situated in _____ state.
   a) Gujarat b) Madhya Pradesh
   c) Odisha d) Bihar

10) _____ factor play major role at tourist place.
   a) Lodging-boarding b) Food-water
   c) Environment d) Tourist guide

11) Aihole temples are situated in _____ state.
   a) Tamil Nadu b) Andhra Pradesh
   c) Karnataka d) Kerala

12) The world tourism day is celebrated on _____.
   a) 5 June b) 22 August
   c) 27 September d) 10 October

13) Brihadeshwar temple at Tanjavur was built by _____ dynasty.
   a) Chola b) Chalukya
   c) Pallav d) Pandya

14) Ajanta caves are related to _____ religion.
   a) Hindu b) Jain
   c) Bauddha d) Vedic

Q.2 Write short answers. (Any Four) **16**

a) Explain the place of tourism in modern life.
b) Describe the new trends in Tourism.
c) State the nature of I.T.D.C. department.
d) Highlight the tourism aspect of Bhaje and Karle caves.
e) Explain the importance of cultural tourism.
f) Describe the contribution of Indian temples to develop the Indian tourism.

Q.3 Write short notes. (Any Two) **12**

a) Purpose and scope of Indian Tourism
b) Qualities and qualification of good guide
c) Kandariya Mahadeo Temple, Khajuraho
d) Sun Temple, Konark

Q.4 Answer the following questions. (Any One) **14**

Explain the role of Tourism agencies to develop the Indian Tourism.

OR

Narrate the importance of Ajanta and Ellora caves as the places of Tourist interest.

Q.5 Write a report on the Archaeological or historical tourist place you visited. **14**

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Seat No.	

Set P

M.A. (Semester - II) (CBCS) Examination Oct/Nov-2019
Rural Development
SOCIAL MARKETING

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing the correct alternatives given below: **14**

1) Market segmentation includes _____.
   a) Field allocation
   b) Market gap
   c) Market place
   d) Dividing the target group as per their needs

2) In social marketing _____ is considered as a long-term strategy.
   a) Education b) SWOT analysis
   c) Training d) Participative action

3) STP means _____.
   a) Segmentation, Target Audience, Positioning
   b) Segmentation, Target Audience, Processing
   c) Segmentation, Tentative Audience, Positioning
   d) Sequence, Target Audience, Positioning

4) _____ is not considered part of marketing communication mix.
   a) Advertising b) Sales promotion
   c) Personal selling d) Pricing policy

5) Which of the following element does not include in SWOT analysis?
   a) Strength b) Weakness
   c) Opportunity d) Technique

6) State is one of _____ agencies of Social Marketing.
   a) Government b) None-Government
   c) International d) Corporate

7) BAIF, Pune is a _____.
   a) State b) NGO's
   c) International agencies d) Corporate agencies

8) The information collected through observation method is a part of _____ data.
   a) Secondary b) Quantitative
   c) Market d) Primary

9) Social marketing is mainly concerned with _____.
   a) Changing social status b) Influencing behavior
   c) Profit d) None of these

10) _____ is most useful tool to analyze the overall performance of any product or campaign.
   a) Segmentation b) Target audience
   c) SWOT d) Audit

11) Dividing the target group as per the need is a part of _____.
   a) Field allocation b) Segmentation
   c) Positioning d) packaging

12) _____ is the second step of marketing research process.
   a) Develop research plan b) define the problem
   c) Make the decision d) Report writing

13) Providing small gifts to the beneficiaries during immunization campaigns in villages is a part of _____.
   a) Publicity b) Promotion
   c) Marketing d) All the above

14) _____ does not include in four 'Ps' of Marketing.
   a) Product b) Purpose
   c) Price d) Promotion

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

a) Meaning of social marketing
b) Social status
c) Types of communication
d) Social Stratification
e) Market: A social institution
f) Ethnic packaging

Q.3 Answer the following questions. (Any Two) **12**

a) What are the five concepts of social marketing planning?
b) What are the social policies of marketing?
c) What are the functions of International donor agencies?
d) What is the role of NGOs in social marketing?

Q.4 Answer the following questions. (Any One) **14**

What is the importance of packaging in social marketing?

OR

Explain the elements of 4 C's of social marketing with examples.

Q.5 Explain the SWOT analysis in detail. **14**

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Seat No.	

Set P

M.A. (Semester - II) (CBCS) Examination Oct/Nov-2019
Mass Communication
WRITING AND COMMUNICATION SKILLS

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

सूचना : 1) सर्व प्रश्न अनिवार्य आहेत.
2) उजवीकडील अंक पूर्ण गुण दर्शवितात.

प्र.1 खालील दिलेले योग्य पर्याय निवडून गाळलेल्या जागा भरा. **14**

1) ––– हे संवाद प्रक्रियेतील घटक नाही.
अ) प्रेषक ब) ग्राहक
क) माध्यम ड) यापैकी नाही

2) ––– हा शब्दाचा प्रकार आहे.
अ) नाम ब) विशेषण
क) क्रिया विशेषण ड) यापैकी सर्व

3) ––– हे संवादाचा प्रकार आहे.
अ) शाब्दिक ब) गट
क) दोन्ही अ) आणि ब) ड) यापैकी नाही

4) ––– संवाद प्रक्रियेतील स्त्रोत आहे.
अ) व्यक्ती ब) अहवाल
क) दोन्ही अ) आणि ब) ड) यापैकी नाही

5) सी. व्ही. मध्ये ––– चा समावेश होत नाही.
अ) राष्ट्रीयत्व ब) लिंग
क) व्यावसायिक पात्रता ड) यापैकी नाही

6) ई–मेल मध्ये ––– समावेश होतो.
अ) विषय ब) संलग्नक
क) दोन्ही अ) आणि ब) ड) यापैकी नाही

7) माजी विद्यार्थी मेळावा हा ––– संवादाचा प्रकार आहे.
अ) औपचारिक ब) अनौपचारिक
क) आंतरिक ड) यापैकी नाही

8) वृत्तपत्र हे ––– चे उदाहरण आहे.
अ) प्रेषक ब) ग्राहक
क) माध्यम ड) यापैकी नाही

9) स्टायलस हे ––– कौशल्याशी संबंधित आहे.
अ) लेखन ब) ऐकणे
क) बोलणे ड) यापैकी नाही

10) ––– हे संवाद प्रक्रियेतील प्रेषक आहे.
अ) व्यक्ती ब) इंटरनेट
क) दोन्ही अ) आणि ब) ड) यापैकी नाही

11) ––––– हे पत्रकारांना माहिती देण्यासाठी वापरण्यात येते.
अ) प्रसिद्धीपत्रक ब) मेमो
क) अजेंडा ड) यापैकी नाही

12) इंटरनेट ––– यावर्षी सुरू झाले.
अ) 1951 ब) 1970
क) 1980 ड) यापैकी नाही

13) मिनिट्स हा ––– चा भाग आहे.
अ) मिटिंग ब) अजेंडा
क) दोन्ही अ) आणि ब) ड) यापैकी नाही

14) ––– हा संवाद प्रक्रियेतील घटक आहे.
अ) प्रतिक्रिया ब) अडथळा
क) माध्यम ड) यापैकी सर्व

प्र.2 खालील चार प्रश्नांची उत्तरे लिहा. **16**

1) मुलाखतीवरती संक्षिप्त टिप लिहा.
2) वाचनाचे प्रकार कोणते आहेत?
3) सकारात्मक बोलणे यावरती लिहा.
4) अजेंडा म्हणजे काय?
5) पॉवर पॉइंट प्रेसेंटेशन याविषयी लिहा.
6) भाषांतर म्हणजे काय आणि त्याचे महत्त्व स्पष्ट करा.

प्र.3 खालील दोन प्रश्नांची उत्तरे लिहा. **12**

1) लेखन कौशल्याचा महत्त्वावर चर्चा करा.
2) आत्मविश्वास संकल्पना स्पष्ट करा.
3) संवाद प्रक्रियेचे घटक कोणते आहेत?
4) श्रवण क्षमता ही संकल्पना स्पष्ट करा.

प्र.4 खालीलपैकी एका प्रश्नाचे उत्तर लिहा. **14**

तणावाचे प्रकार कोणते आहेत? ताण–तणाव व्यवस्थापन कसे करावे?

किंवा

संवाद म्हणजे काय? संवादाचे प्रकार स्पष्ट करा.

प्र.5 संवादामध्ये येणाऱ्या विविध अडथळयांचा तपशील द्या. **14**

SLR-JX-48

Seat No.	

Set P

M.A. (Semester - II) (CBCS) Examination Oct/Nov-2019
Mass Communication
WRITING AND COMMUNICATION SKILLS

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing the correct alternatives given below: **14**

1) _____ is not component of the communication process.
   a) Sender b) Receiver
   c) Medium d) None of these

2) _____ is the type of word.
   a) Noun b) Adjective
   c) Adverb d) All of these

3) _____ is a type of communication.
   a) Verbal b) Group
   c) Both a) and b) d) None of these

4) _____ is the sources in communication process.
   a) Person b) Report
   c) Both a) and b) d) None of these

5) CV does not includes _____.
   a) Nationality b) Gender
   c) Professional Qualification d) None of these

6) E-mail includes _____.
   a) Subject b) Attachments
   c) Both a) and b) d) None of these

7) Alumni Meet is _____ type of communication.
   a) Formal b) Informal
   c) Internal d) None of these

8) News Paper is example of _____.
   a) Sender b) Receiver
   c) Medium d) None of these

9) Stylus is related to _____skill.
   a) Writing b) Listening
   c) Speaking d) None of these

10) _____ is the sender in communication process.
   a) Person b) Internet
   c) Both a) and b) d) None of these

11) _____ is used for giving the information to the journalist.
   a) Press Release b) Memo
   c) Agenda d) None of these

12) Internet Started in year _____.
   a) 1951 b) 1970
   c) 1980 d) None of these

13) Minutes is a part of _____.
   a) Meeting b) Agenda
   c) Both a) and b) d) None of these

14) _____ is the component of the communication process.
   a) Feedback b) Noise
   c) Medium d) All of these

Q.2 Answer any four of the following questions. **16**

a) Write short note on 'Interview'?
b) What are the types of reading?
c) Write on positive speaking.
d) What is agenda?
e) Write about Power Point Presentation.
f) What is the translation and state its importance?

Q.3 Answer any two of the following questions. **12**

a) Discuss the importance of writing skills.
b) Explain the concept of confidence.
c) What are the components of communication process?
d) Explain the concept of listening ability.

Q.4 Answer any one of the following questions. **14**

What are the types of Stress? How to do a Stress Management?

OR

What is Communication? Explain the types of Communication.

Q.5 Give details of barriers to Communication. **14**

SLR-JX-52

Seat No.	

Set P

M.C.A (Semester - II) (CBCS) Examination Oct/Nov-2019
Science
OFFICE AUTOMATION

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Draw neat and labeled diagrams wherever necessary.

Q.1 Fill in the blanks by choosing correct alternatives given below. 14

1) A feature of MS-office that saves the document automatically after certain interval is called _____.
   a) Save b) Save as
   c) Auto save d) Back up

2) The options portrait and landscape comes under _____.
   a) Paper size b) Page orientation
   c) Page layout d) Page rotation

3) Which key combination is used to insert a page break in MS-word?
   a) Shift + Enter b) Alt + Enter
   c) Ctrl + Enter d) Space + Enter

4) Which key is used for help in MS-excel?
   a) F1 b) F2
   c) F3 d) None of these

5) Formula palette is used to?
   a) Format cells containing numbers
   b) Create and edit formulas containing functions
   c) Entered assumptions data
   d) Copy all cells

6) A Spreadsheet contains?
   a) Columns b) Rows
   c) Rows and Columns d) None of the above

7) Powerpoint presentation are widely used as _____.
   a) Note outlines for teachers
   b) Project presentations by students
   c) Communication of planning
   d) All of the above

8) In which menu can you find features like slide design, slide layout etc?
   a) Insert menu b) Format menu
   c) Tools menu d) Slide show menu

9) Which short cut key inserts a new slide in current presentation?
   a) Ctrl + N b) Ctrl +M
   c) Ctrl + S d) All of the above

10) To start slide show of a presentation
   a) Hit F5 key
   b) From slide show menu choose view menu
   c) From slide show menu choose view Rehearse timing
   d) Both a and b

11) The columns in a microsoft access table are also called _____.
   a) Rows b) Records
   c) Fields d) Columns

12) Which of the following is not a field type in microsoft access?
   a) Memo b) Hyperlink
   c) OLE object d) Lookup wizard

13) Microsoft access is a _____ kind of application?
   a) RDBMS b) OODBMS
   c) Network database model d) None of the above

14) This data type allows alphanumeric characters and special symbols
   a) Text b) Memo
   c) Auto number d) None of the above

Q.2 A) Answer the following questions. (Any Four) **08**

1) Describe how a document is opened in MS-Excel? State different open options.
2) Explain status bar in Excel.
3) How will you create a table in MS-Word?
4) How to check spelling and grammar mistake in MS-Word?
5) What is a folder? How we can make a folder?

B) Write notes. (Any Two) **06**

1) Recycle Bin
2) Features of MS-Powerpoint
3) Database management system

Q.3 A) Answer the following questions. (Any two) **08**

1) What are the major features of Windows?
2) Discuss the steps for creating a presentation in MS- Powerpoint.
3) Explain different options in view menu of word.

B) Answer the following questions. (Any one) **06**

1) Explain various data types in MS-Access.
2) Enlist the tools of Microsoft word.

Q.4 A) Answer the following questions. (Any Two) **10**

1) How to apply formulas across sheets / workbooks?
2) What is mail merge and how you can mail merge a document?
3) What is Query? What are the different types of queries available in MS-access?

B) Answer the following questions. (Any One) **04**

1) How to create flowcharts in powerpoint?
2) Explain various functions used in MS-excel.

Q.5 Answer the following questions. (Any Two) **14**

1) Explain different formatting options available in MS-word.
2) Explain different options in view menu of excel.
3) What do you mean by macro? What are its uses?

SLR-JX-56

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Nano Physic
FUNDAMENTS OF SEMICONDUCTOR AND NANOPHYSICS

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) Q. No (1) and Q. No (2) are compulsory.
2) Attempt any three from Q. No (3) to Q. No. (7).
3) Use of Non programmable calculator is allowed.
4) All questions carry equal marks.

Q.1 A) Fill in the blanks by choosing correct alternatives given below. **06**

1) Zener effect is operative at _____ voltage.
   a) Low b) High
   c) Zero d) Medium

2) _____ is an example of rock-salt type crystal structure.
   a) ZnO b) NaCl
   c) TiO_2 d) La_2O_3

3) Photolithographic technique uses _____ to obtain the desired image.
   a) electron b) light
   c) sound d) gravity

4) In pure semiconductor there is negligible absorption of photons with ___.
   a) $h\upsilon < E_g$ b) $h\upsilon > E_g$
   c) $h\upsilon = 0$ d) $h\upsilon = E_g$

5) A reverse biased P-N junction exhibits a _____ voltage-independent saturation current.
   a) large b) small
   c) medium d) zero

6) The potential energy of an electron is _____ in the crystal when compared with the potential energy of the electron in an atom.
   a) less b) high
   c) medium d) zero

B) State True or False: **08**

1) Sputtering type of material synthesis is lithographic technique.
2) A hydrogen bond is a special type of attractive interaction which exists between an electronegative atom and a hydrogen atom bonded to another electronegative atom.
3) Haynes-Shockley experiment is used to measure the majority carrier mobility.
4) Diffusion process is the natural result of the random motion of the individual Molecules.
5) Lithography technique is top-down type of material synthesis.
6) An ionized gas system is plasma.
7) If the breakdown occurs at lower voltages then the mechanism is called avalanche breakdown.
8) Very shallow and well defined doping layers can be achieved by ion-implantation method.

Q.2	**Write short notes.**		**14**
	a)	Definition of Nanoscience and Nanotechnology	05
	b)	Energy bands	05
	c)	Diffusion process	04
Q.3	**a)**	Explain Direct and Indirect Recombination of electrons and holes.	**10**
	b)	Give a brief account of the applications of Nanotechnology.	**04**
Q.4	**a)**	Give a brief account of classification of crystals by symmetry. Explain in detail the structure of rocksalt with example.	**08**
	b)	Discuss the role of minority and majority carriers in junctions.	**06**
Q.5	**a)**	Explain the process of Avalanche breakdown at semiconductor junctions.	**08**
	b)	What is crystal bonding? Explain the ionic bond in detail.	**06**
Q.6	**a)**	Give an account of Lithographic process and its limitations.	**10**
	b)	Explain in brief the contact potential.	**04**
Q.7	**a)**	Give an account of density of states at low-dimensional structures.	**08**
	b)	Write a note on the Chemical Vapour Deposition technique.	**06**

SLR-JX-6

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Physics (Material Sciences)
CONVENTIONAL & NON CONVENTIONAL ENERGY

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

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

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) Semiconductor materials have _____ bonds.
   a) Ionic b) Covalent
   c) Mutual d) Metallic

2) Energy from gravitational field is energy obtained from _____.
   a) Wind b) Biomass
   c) Coal d) Tides

3) One light year is equal to _____.
   a) 3.156×10^{12} km b) 3.156×10^{11} km
   c) 9.46×10^{12} km d) 9.46×10^{11} km

4) Once a zener diode goes into breakdown, its _____ does not change much.
   a) Voltage b) Current
   c) Dynamic impedance d) Capacitance

5) _____ deposits are formed from vegetables and animal fossils buried under pressure and temperature by slow decomposition.
   a) Petroleum and natural gas b) Hydro resources
   c) Renewable d) Slurry

6) In FM, amplitude of modulating signal determines _____.
   a) Rate of frequency variation b) Amplitude of frequency shift
   c) Total balance of transmission d) Distance of broadcast

7) The rotational period of an earth satellite close to the surface of earth is 83 minutes. The period of a satellite in an orbit at a distance of three times earth radius from its surface will be _____.
   a) 83 minutes b) $83 \times \sqrt{8}$ minutes
   c) 664 minutes d) 249 minutes

8) An object dropped from a satellite which is in a circular orbit round the earth. The object will _____.
   a) fall directly to the earth
   b) strike the earth behind the satellite at the time of impact
   c) strike the earth under the satellite at the time of impact
   d) continues in the same orbit

9) The current amplification factor alpha dc (α_{dc}) is given by _____.
   a) I_C/I_E b) I_C/I_B
   c) I_B/I_E d) I_B/I_C

10) The nearest star to the sun is _____.
   a) Proxima century b) Mercury
   c) Dhruva d) Andromeda

11) The nature of graph of variation of displacement versus time plot of an object under free fall is _____.
   a) straight line parallel to time axis
   b) a parabola
   c) an ellipse
   d) straight line passing through origin

12) The launch vehicle used for Chandrayan-1 was _____.
   a) PSLV-C11 b) PSLV-C25
   c) GSLV-F11 d) GSLV Mk II D-2

13) The number 1000_2 is equivalent to decimal number _____.
   a) One thousand b) Eight
   c) Four d) Sixteen

14) 1 parsec is equal to _____.
   a) 3.26 light years b) 1 light years
   c) 3.26 km d) 1 km

Q.2 A) Answer the following questions. (Any Four) **08**
1) Draw characteristic of CE amplifier.
2) What is Geosynchronous satellite?
3) Draw energy band diagram of p-n junction diode.
4) Define light year, calculate light year in kilometer.
5) What is carbon dating?

Q.2 B) Answer the following questions. (Any Two) **06**
1) Why are ICs more reliable than discrete assembly? Explain.
2) What is critical velocity of a satellite and obtain an expression for it. On what factors does it depend?
3) State and write mathematical expression of Hubble's law.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Explain construction of BJT.
2) Describe characteristics of any two planets in solar system.
3) State different steps in coal production and processing.

Q.3 B) Answer the following questions. (Any One) **06**
1) Give an account on sun.
2) Explain fixed dome type biogas plant.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Give construction and working of Cathode Ray Oscilloscope.
2) Define the Binding energy of a satellite. Obtain an expression for the binding energy of a satellite revolving around the earth at a certain altitude.
3) Give account on coal mining.

Q.4 B) Answer the following questions. (Any One) **04**
1) Give an account on ethanol as fuel.
2) Explain objectives of mission Mangalyan?

Q.5 Answer the following questions. (Any Two) **14**
1) Explain frequency modulation.
2) Draw & explain characteristics of planets of our solar system.
3) Describe the Chandrayan-1 Mission.

SLR-JX-7

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Chemistry 7 Branch same paper
INSTRUMENTAL METHODS OF ANALYSIS

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) Attempt in all five questions.
2) Draw neat and labeled diagram and give equations wherever necessary.
3) All questions carry equal marks.
4) Figures to the right indicate full marks.
5) Use of log tables and calculators is allowed.

Q.1 Fill in the blanks by choosing correct alternative given below. **14**

1) Which of the following is not a source used in Mid Infrared Spectrophotometer?
   a) Nernst glower b) High pressure mercury arc lamp
   c) Globar d) Nichrome wire

2) Which of the following is the wave number of near infrared spectrometer?
   a) 4000 - 200 cm^{-1} b) 200 - 10 cm^{-1}
   c) 12500 - 4000 cm^{-1} d) 50 - 1000 cm^{-1}

3) What is the relation between restoring force, f to the displacement q in Hooke's law?
   a) $f = -kq$ b) $f = kq$
   c) $f = kq^2$ d) $f = -kq^2$

4) Which of the following is the function of atomizer in the emission system of Atomic Absorption Spectroscopy?
   a) To split the beam into two
   b) To break the steady light into pulsating light
   c) To break large mass of liquid into small drops
   d) To reduce the sample into atomic state

5) Background in atomic absorption spectrum is _____.
   a) bright b) dark
   c) brown d) purple

6) Which of the following is not a fuel used in flame photometry?
   a) Acetylene b) Propane
   c) Hydrogen d) Camphor oil

7) What is the wavelength range for UV spectrum of light?
   a) 400 nm to 700 nm b) 700 nm to 1 mm
   c) 0.01 nm to 10 nm d) 10 nm to 400 nm

8) What is the correct order of λmax for n -> σ* transition?
   a) R-OH > R-NH_2 > R-SH b) R-OH < R-NH_2 < R-SH
   c) R-OH > R-SH > R-NH_2 d) R-OH < R-SH < R-NH_2

9) What is the correct order of λmax for n —> π* transition for the R-CN, R-NO_2, and R-N=N-R?
   a) R-CN < R-NO_2 < R-N=N-R b) R-CN = R-NO_2 = R-N=N-R
   c) R-CN > R-NO_2 > R-N=N-R d) R-CN > R-NO_2 < R-N=N-R

10) Which list below gives only NMR inactive nuclei?
   a) C^{12} b) C^{13}
   c) H^{1} d) F^{19}

11) What do you expect to observe in the ^{1}H NMR spectrum of chloroethane CH_3CH_2Cl?
   a) A doublet and a triplet b) A triplet and a quartet
   c) A doublet of doublet d) A doublet and a singlate

12) Vicinal coupling is _____.
   a) coupling between ^{1}H nuclei attached to adjacent C atoms
   b) coupling between ^{1}H nuclei attached to the same C atom
   c) coupling between ^{1}H nuclei separated by three C-C bonds
   d) coupling between ^{12}C nuclei attached to the same C atom

13) Mass spectrometer is used to determine which of the following?
   a) Composition in sample
   b) Concentration of elements in sample
   c) Relative mass of atoms
   d) Properties of sample

14) Who invented mass spectrometers?
   a) J. J Thompson b) Goldstein
   c) Nikola Tesla d) Aston

Q.2 A) Answer the following questions. (Any Four) **08**

1) What is the effect on n- π^* transition when a more polar solvent is used?
2) What is the function of nebulizer in ICP?
3) What is the characteristic feature of mass spectra of compound containing one bromine atom?
4) How many different types of protons are present in alkyl bromide molecule?
5) How will you confirm the aromaticity of compound by IR techniques?

B) Write notes. (Any Two) **06**

1) McLafferty rearrangements.
2) Larmor frequency.
3) Advantages of AAS over FES.

Q.3 A) Answer the following questions. (Any Two) **08**

1) Explain the factors affecting the vibrational frequencies.
2) Give important features of fragmentation of alcohol.
3) Give and brief account of spin- spin coupling.

B) Answer the following questions. (Any One) **06**

1) Explain the instrumentation of ICP.
2) Give a brief account of interferences in AAS spectroscopy.

Q.4 A) Answer the following questions. (Any Two) **10**

1) Give an account of applications of mass spectrometer.
2) Predict the number of NMR spectral lines for following compounds
   i) n-propanol
   ii) propionamide
3) Give applications of ICP-AES.

B) Answer the following questions. (Any One) **04**

1) Discuss the applications of IR-spectroscopy.
2) Explain different types of ions formed during fragmentation of compounds.

Q.5 Answer the following questions. (Any Two) **14**

1) What is the basic principle of Mass Spectrometer? Discuss the instrumentation of Mass spectrometer.

2) Define the term chemical shift. Explain the shielding and deshielding effect.

3) Discuss the principle & instrumentation of UV-Visible spectroscopy.

SLR-JX-9

Seat No.	

Set P

M.Sc. (Semester - II) (CBCS) Examination Oct/Nov-2019
Environmental Sciences
ANALYTICAL TECHNIQUES AND INSTRUMENTATION

Day & Date: Friday, 15-11-2019 Max. Marks: 70
Time: 11:30 AM To 02:00 PM

Instructions: 1) All questions are compulsory.
2) Draw neat and labeled diagrams wherever necessary.
3) Scientific calculator is allowed for calculations.

Q.1 Fill in the blanks by choosing correct alternatives given below. **14**

1) In flame photometry, the flame temperature is attained by _____.
   a) Acetylene b) Hydrogen
   c) Propane d) All

2) Which among the following is not a emission spectroscopy?
   a) Fluorimetry b) Fluorescence
   c) Phosphorescence d) Infra-red

3) Which among the following produces changes in rotational, vibrational and electronic energy of the molecule?
   a) IR region b) UV region
   c) NMR region d) Microwave region

4) In conductometric titrations, one of the following is evaluated by calibration with 0.1 M potassium chloride.
   a) Distance between electrodes b) Cell constant
   c) Area of each electrode d) Wire of electrode

5) No two substances produce same fragmentation patterns under controlled conditions is a unique feature of _____.
   a) TLC b) Mass spectrometry
   c) UV spectrometry d) EMR

6) The reference material used in NMR Spectroscopy is _____.
   a) Trimethyl silane b) Tetramethyl silane
   c) Tetramethyl benzidine d) All of these

7) X-ray diffraction can only be applied to _____.
   a) Gas or vapours
   b) Crystalline and solid materials
   c) Water soluble compounds
   d) Oils

8) Chromatography is especially useful for _____.
   a) Foods b) Drugs
   c) Water d) None of Above

9) In gravimetric analysis, the ideal product should be _____.
   a) Pure, soluble, and should possess a known composition
   b) Pure, insoluble, easily filterable, and should possess a known composition
   c) Pure, insoluble, easily filterable, and should possess an unknown composition
   d) Pure, soluble and should possess known chemical agents

10) Turbidity in a liquid is caused by the presence of _____.
   a) Finely divided suspended particles
   b) Inorganics materials
   c) Coloured compounds
   d) Organic complexes

11) Mass spectrometry is an analytical chemistry technique that helps identify
   a) Amount and type of chemicals b) Functional group
   c) Quantity of chemicals d) Dissolved contents

12) Incineration of waste materials converts the wastes into:
   a) Usable for electricity generation b) Less hazardous solid wastes
   c) Ash, flue gas and heat d) Suitable for landfills

13) Turbidity in a liquid is caused by the presence of _____.
   a) Finely divided suspended particles b) Inorganics materials
   b) Coloured compounds d) Organic complexes

14) One of these detectors is not used in gas chromatography.
   a) Flame Ionization b) Thermal conductivity
   c) Golay d) Electron transfer

Q.2 A) Answer the following questions. (Any Four) **08**
1) Write applications of scrubber?
2) What are solids? Give its types?
3) What is High volume sampler?
4) What is pH metry?
5) What is gravimetric estimation?

B) Write notes. (Any Two) **06**
1) What are electrochemical methods? Explain any one of them in detail.
2) Working, principle and applications of Bag filter?
3) Working, principle and applications of Ion Selective Electrodes?

Q.3 A) Answer the following questions. (Any Two) **08**
1) Write a note on nephalometry and turbidometry?
2) Explain in short UV - spectrophotometry?
3) Explain working and applications of Atomic Absorption Spectromery?

B) Answer the following questions. (Any One) **06**
1) Explain working, principle and applications of XRD?
2) Explain working and applications of flame photometry?

Q.4 A) Answer the following questions. (Any Two) **10**
1) What is chromatography? Explain in brief principle, working and applications of ICP?
2) Write in short principle, working and applications of ATOMFS?
3) Write a note on GC-MS?

B) Answer the following questions. (Any One) **04**
1) Explain in brief principle, working and applications of HPLC?
2) Write in short sample preparations for HPLC?

Q.5 Answer the following questions. (Any Two) **14**
1) What is microscopy? Discuss any one of them and give its importance in environmental studies.
2) What is Electrophoresis? With suitable diagram discuss principle and applications of Electrophoresis?
3) What is micrometry? Discuss in detail histological and histochemical staining?