SLR-JY-11

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Mathematics
NUMERICAL TECHNIQUES

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) Newton Raphson method has _____ order convergence.
   a) first b) second
   c) third d) none

2) In false position method, we choose two points x_0 and x_1 such that $f(x_0)$ and $f(x_1)$ are of _____.
   a) opposite signs b) same signs
   c) constant d) none

3) The second forward difference $\Delta^2 y_0$ is _____.
   a) $\Delta y_2 - \Delta y_1$ b) $y_2 - y_0$
   c) $\Delta y_1 - \Delta y_0$ d) none

4) If i) $E^{-1}\nabla = \nabla - \nabla^2$
   ii) $\Delta\nabla = \delta^2$ then _____.
   a) Both (i) and (ii) true b) Both (i) and (ii) false
   c) (i) false and (ii) true d) (i) true and (ii) false

5) The central difference operator $\delta_{3/2}$ is defined by the relation _____.
   a) $\delta_{3/2} = y_2 - y_1$ b) $\delta_{3/2} = y_3 - y_2$
   c) $\delta_{3/2} = y_1 - y_0$ d) none

6) Householders method is used to obtain eigen values of _____ matrices.
   a) upper triangular b) lower triangular
   c) symmetric d) none of these

7) Lagranges interpolating formula is given by _____.
   a) $p(x) = \sum_{i=0}^{n} l_i(x) f(x_i)$ b) $p(x) = \sum_{i=0}^{\infty} l_i(x) f(x_i)$
   c) $p(x) = \sum_{i=0}^{n} l_i(x) f(x)$ d) None

8) If A is upper triangular than A^{-1} is _____.
   a) lower triangular b) upper triangular
   c) constant d) none

9) The effect of error _____ with the order of the differences.
   a) constant b) decreases
   c) increases d) none

10) Which of the following is correct?
   a) $\nabla - \Delta = \Delta\nabla$ b) $\nabla - \Delta = -\Delta\nabla$
   c) $\nabla + \Delta = -\Delta\nabla$ d) $\nabla + \Delta = \Delta\nabla$

11) The process of computing the values of the function inside the given range is called _____.
   a) interpolation b) extrapolation
   c) decomposition d) none

12) While applying Simpsons 1/3 rule the number of subintervals should be _____.
   a) multiples of 5 b) odd
   c) even d) none

13) An approximate value of π is $x_1 = 3.1428571$ and its true value is $x = 3.1415926$, then the absolute error E_A is _____.
   a) 0.0012645 b) -0.000402
   c) -0.00012645 d) None of these

14) Backward difference operator is $\nabla^2 y_2$ is _____.
   a) $\nabla y_2 - \nabla y_1$ b) $y_2 - 2y_1 + y_0$
   c) both a and b d) none

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

1) Show that $\delta = \nabla(1-\nabla)^{-1/2}$
2) Define absolute and relative and errors.
3) Define eigen values and eigen vectors.
4) Write Newton's backward difference interpolation formula.
5) What is general error formula?

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

1) Define Δ, ∇ and δ
2) Explain bisection method.
3) What is error in series approximation?

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

1) If $y_1 = 4, y_3 = 12, y_4 = 19, y_x = 7$ find x.
2) Explain Secant method.
3) The function $y = \sin x$ is tabulated as

X	0	$\pi/4$	$\pi/2$
$Y = \sin x$	0	0.70711	1.0

Using Lagrange's interpolation formula ,find the value of $\sin\left(\frac{\pi}{6}\right)$

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

1) Derive Newton's forward difference interpolation formula.
2) Form a table of differences for $f(x) = x^3 + 5x + 7$ for $x = -1, 0, 1, 2, 3, 4, 5$. Continue the table to obtain $f(6)$.

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

1) Derive Lagrange's interpolation formula.
2) Find the cubic polynomial which takes the following values $y(0) = 1$, $y(1) = 0, y(2) = 1$ and $y(3) = 10$ also obtain $y(4)$.
3) Find the area bounded by the curve and the x-axis from x=7.47 to x=7.52 using following table.

X	7.47	7.48	7.49	7.50	7.51	7.52
$F(x)$	1.93	1.95	1.98	2.01	2.03	2.06

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

1) Prove that $[x_0, x_1, x_2 \ldots x_r] = \frac{(-1)^r}{x_0, x_1, x_2 \ldots x_r}$ if $f(x) = \frac{1}{x}$

2) Solve $\int_0^1 \frac{1}{1+x} dx$ correct to three decimal places by Trapezoidal rule with $h = 0.5$.

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

a) Derive Newton's general interpolation formula with divided differences.

b) Solve the system $2x + y + z = 10,\ 3x + 2y + 3z = 18,\ x + 4y + 9z = 16$ using Gauss elimination method.

c) Reduce the matrix

$$\begin{bmatrix} 1 & 3 & 4 \\ 3 & 2 & -1 \\ 4 & -1 & 1 \end{bmatrix}$$ to tridiagonal form using Householder's method.

SLR-JY-13

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Statistics
APPLIED STATISTICS

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) A fire in a factory delaying production for some weeks is _____.
   a) Seasonal Variation b) Cyclic Variation
   c) Secular Trend d) Irregular Variation

2) Sample is subset of _____.
   a) Data b) Group
   c) Population d) Itself

3) A sample consists of _____.
   a) All units of the population b) 50% units of the population
   c) 5% of the population d) Any fraction of the population

4) The weights used in Paasche's formula belong to _____.
   a) The base period b) The given period
   c) To any arbitrary chosen period d) None of the above

5) An index number is aid to satisfy time reversal test if _____.
   a) P01×P01 = P210 b) P01 = P10
   c) P01× P10 = 1 d) P01× Q10 = 1

6) The control chart for proportion of defectives in the sample is _____.
   a) p-chart b) R-chart
   c) c-chart d) X-bar-chart

7) Points falling above UCL is indication of _____.
   a) Increase in variation
   b) Increase in Mean
   c) Presence of some assignable causes
   d) Presence of chance causes

8) If the manufacturing process is under statistical control then _____.
   a) It meets specification
   b) It may not meet specification
   c) It produces zero defective items or units
   d) It meets specification if the process standard deviation is very small

9) Variation due to assignable causes in the production process occurs due to _____.
   a) Faulty process b) Carelessness
   c) Poor quality of raw material d) All of the above

10) If NRR=1 then, we say that _____.
   a) Population will be decreasing b) Population will be increasing
   c) Population will remain constant d) No conclusion can be drawn

11) Specific death rate may be calculated according to _____.
a) Age b) Gender
c) Region or locality d) All of the above

12) Weighted average of SDR is _____.
a) CDR b) GFR
c) STDR d) CBR

13) Mortality or health condition of persons in two cities are efficiently compare by using _____.
a) CDR b) SDR
c) STDR d) None of the above

14) Vital statistics is a branch of biometry which deals with data and laws of _____.
a) Marriages b) Birth
c) Death d) All of the above

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

1) What is simple random sampling?
2) Define progressive average method.
3) What are the problems in construction of index numbers?
4) What is Specific Death rate?
5) What is the need of Statistical Quality Control?

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

1) Factor reversal test
2) Assignable causes of variation
3) Non-sampling error

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

1) Define
   i) Crude Death Rate
   ii) Crude Birth Rate
2) What are the tests for Index number? Explain Time reversal test.
3) What is the meaning of cost of living index number?

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

1) The following table gives the number of defects observed in 8 woolen carpets passing as satisfactory. Construct the control chart for number of defects.

Sr. No. of carpets	1	2	3	4	5	6	7	8
No. of defects	2	5	5	6	1	5	1	7

2) Define sampling and non-sampling errors.

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

1) What is the need of Vital Statistics? Define GRR and NRR.
2) Define control chart for number of defects per unit (c-chart).
3) What is meaning of trend in time series analysis? Shortly give an idea of measurement of trend by moving average.

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

1) For the following data, calculate TFR.

Age group of mother	15-19	20-24	25-29	30-34	35-39	40-44
Women	52 013	54 307	46 990	40 211	30 401	23 496
Births	1884	6371	5362	2901	1170	268

2) Define Laspeyre's price index number and Paasche's price index number.

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

a) Calculate Laspeyre's and Fisher price index number for the following and interpret it.

Commodity		**A**	**B**	**C**	**Commodity**		**A**	**B**	**C**
2005	P_0	40	30	80	2009	P_1	60	20	40
	Q_0	20	50	20		Q_1	30	10	60

b) Construct cost of living index number by using family budget method for year 1993 with1990 as base year from the following data.

Items	Weights	Prince in	
		1990	1993
Food	35	150	140
Rent	20	75	90
Clothing	10	25	30
Fuel and lighting	15	50	60
Miscellaneous	20	60	80

c) Draw $\bar{X}$ bar and R chart for following data (n = 5, $A_2 = 0.58$, $D_3 = 0$, $D_4 = 2.11$).

Sample	1	2	3	4	5	6	7	8	9	10
Mean	12.8	13.1	13.5	12.9	13.2	14.1	12.1	15.5	13.9	14.2
Range	2.1	3.1	3.9	2.1	1.9	3	2.5	2.8	2.5	2

SLR-JY-16

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Geoinformatics
URBAN GEOGRAPHY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Use of map and stencil is allowed.

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

1) The maximum distance people are willing to travel for a service _____.
   a) range b) hearth
   c) hinterland d) redlineing

2) The central city and its surrounding suburbs is known as _____.
   a) Megalopolis b) Zoning Laws
   c) Urban Morphology d) Urban Area

3) A model of the internal structure of cities in which social groups are spatially arranged in a series of rings _____.
   a) Concentric Zone Model
   b) Griffen-Ford Latin American City Model
   c) Peripheral Model
   d) Sector Model

4) A ring of land maintained by parks, agriculture, or other types of open space to limit the sprawl of an urban area _____.
   a) Greenbelt b) Urban Land
   c) Green Land Usage d) Sprawl Limitation

5) A model of internal structure of cities, created by Harris and Ullman, in which social groups are arranged around in a collection of nodes of activities.
   a) Multiple Nuclei Model b) Concentric Zone Model
   c) Peripheral Model d) Sector Model

6) Annexation is _____.
   a) the process of a city legally adding more land
   b) The Process of wealthy individuals setting into neighbourhoods near the CBD
   c) The process of an unincorporated area legally defining its boundaries
   d) The process of removing underclass residents from inner city neighbourhoods

7) Which of the following settlement types is likely to use the largest percentage of land space for residents?
   a) town b) suburb
   c) hamlet d) physical city

8) Unrestricted low-density development of residential and commercial activities over a large expanse of land is _____.
   a) sprawl b) edge city
   c) new urbanism d) smart growth

9) Squatter settlements in Least Developed Countries (LDCs) cities are usually located _____.
   a) along major highways
   b) on the outskirts of the urban area
   c) in warehouse districts
   d) adjacent to industrial areas

10) Large cities develop many nodes around which different types of people and activities cluster. This describes the _____.
   a) peripheral/galactic
   b) multiple nuclei
   c) Sector
   d) concentric

11) Formulated by Christaller to explain the size and distribution of cities in terms of a competitive supply of goods and services dispersed to populations. Bigger centers have a larger hinterland, while smaller centers have smaller hinterland and less specialty and high-order goods.
   a) Central Place Theory
   b) Christaller's Theory
   c) Christaller's Place Theory
   d) Central Hinterland Theory

12) What geometric pattern is associated with Christaller's Central Place Theory?
   a) square
   b) hexagon
   c) circle
   d) pentagon

13) A primate city is _____.
   a) when the largest city is located on the periphery
   b) the largest city in a region of a country
   c) the most important city in a country
   d) When the largest city in a country is twice the size of the next largest city

14) From largest to smallest the urban hierarchy of the following would go…. City, Town, _____, Hamlet.
   a) Suburb
   b) Mega-City
   c) Village
   d) County

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

1) Give the factors influencing the urban Morphology.
2) Give the names of forces which influences the Urban Morphology.
3) What are the advantages of urbanization?
4) Give the two demographic characteristics of Solapur city.
5) Give the two elements of city plan.

B) Write Notes. (Any Two) 06

1) The Concentric Zone Model
2) Urban Rank Size Rule
3) Population Structure

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

1) "Unprecedented growth of cities is leading to unprecedented environmental degradation "Discuss.
2) Examine the relevance of various models of urban structure in the context of present urban morphology.
3) Correlate the population explosion and urban growth in developing countries.

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

1) Explain the trend of urbanization in India since independence.
2) Write in brief, about National Commission on Urbanization.

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

1) Explain the importance of Urban Morphology in Planning.
2) Describe the Sector theory of urban Morphology.
3) Problems of Urban areas

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

1) Distinguish between Peri-urban and suburbs.
2) State the importance of the study of urban planning under urban Geography.

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

a) What is urbanization? Explain the Nature and Scope of Urban Geography.
b) Critically examine the Multiple Nuclei Model of urban morphology.
c) Explain the functional classification of towns and cities by H. J. Nelson.

SLR-JY-17

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Applied Geology
RESEARCH METHODOLOGY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) Which of the following is the most recent and dependable source of information on a board scientific topic?
   a) Research paper b) Bibliography
   c) Review article d) New textbook

2) A _____ is used to show exact values.
   a) Pie chart b) Table
   c) Bar diagram d) Dot plot

3) A research paper is a brief report of research work based on _____.
   a) Primary Data only
   b) Secondary Data only
   c) Both Primary and Secondary Data
   d) None of the above

4) Which one of the following e-repository is for doctoral research of Indian Universities?
   a) Shodhaganga b) Dnyanganga
   c) Bookganga d) INFLIBNET

5) One of the following is not an open source software for scientific research:
   a) DSpace b) Windows
   c) Green-stone d) Linux

6) Research journal with a high _____ are commonly considered to be more important than those with lower ones.
   a) I/o score b) Eigen Factor
   c) Impact factor d) h-index

7) Research sampling is advantageous as it _____.
   a) Saves time b) Helps in capital-saving
   c) Increases accuracy d) Both (a) and (b)

8) Which of the following is not a “Graphic representation”?
   a) Pie Chart b) Bar Chart
   c) Table d) Histogram

9) Why do you need to review the existing literature?
   a) To make sure you have a long list of references
   b) Because without it, you could never reach the required word-count
   c) To help in your general studying
   d) To find out what is already known about your area of interest

10) A systematic literature review is:
   a) One which starts in your own library, then goes to on-line databases
   b) A replicable, scientific and transparent process
   c) One which gives equal attention to the principal contributors to the area
   d) A responsible, professional process of time-management for research

11) What is self-plagiarism?
   a) An epistemological stance
   b) Taking about yourself too much
   c) Using somebody else's work and passing it off as your own
   d) When a person lifts material that they have previously written and pass it off as their own work

12) Which research paradigm is most concerned about generalizing its findings?
   a) Quantitative research b) Unquantitative research
   c) Mixed-methods research d) None of the above

13) Attributes of objects, events or things which can be measured are called _____.
   a) Qualitative measure b) Data
   c) Variables d) None of the above

14) An example of scientific knowledge is _____.
   a) Authority of the great men
   b) Social traditions and customs
   c) Religious scriptures
   d) Laboratory and field experiments

Q.2 A) Answer the following questions. (Any Four) **08**
1) Define SCOPUS index.
2) Applied research
3) Data collection
4) What is search engine?
5) Research ethics

B) Write Notes. (Any Two) **06**
1) What is abstracts?
2) Define problem of research.
3) Use of internet browsing.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Importance of experimental research.
2) Criteria of good research paper.
3) What is Impact Factor?

B) Answer the following questions. (Any One) **06**
1) Explain Validity and delimitation of research finding problems.
2) Briefly describe the steps involved in thesis writing.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Explain qualitative and quantitative methods of research.
2) Write on a need of research?
3) Enumerate the different methods of collecting data.

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

1) What is research proposal?
2) Write short on research plagiarism.

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

1) What is research journal? Explain how to identify quality of research journals.

2) What is research? Differentiate between basic research and applied research also its significance.

3) Define is MS-Excel. Illuminate various tools usage in research methodology.

SLR-JY-18

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Applied Geology
GEOARCHAEOLOGY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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 hardness of mineral Calcite _____.
   a) 7 b) 10
   c) 3 d) 9

2) Fossils are most common in which rocks?
   a) Plutonic b) Sedimentary
   c) Volcanic d) All the above

3) The _____ type of rock are formed from cooling and solidification of the magma or larva.
   a) Igneous b) Sedimentary
   c) Metamorphic d) Anthropogenic

4) What are different causes changes in sea level?
   a) Eustatic movements of sea level b) Tectonic movements
   c) Atmospheric temperature d) All the above

5) A long narrow ridge, often sinuous, composed of stratified sediment and marking the former location of a glacial tunnel is called as _____.
   a) Eskers b) Kettle holes
   c) Kame d) Drumlins

6) Delta of a river is an example of _____.
   a) Mature stage b) Youth stage
   c) Old stage d) All the above

7) Mica shows _____ of cleavage.
   a) 3 b) 2
   c) 1 d) 4

8) The Petrology deals with _____.
   a) Study of Landforms b) Study of Fossils
   c) Study of rocks d) All the above

9) River helps in _____.
   a) Transporting products of chemical weathering
   b) Transporting products of physical weathering
   c) Transporting products of Biological weathering
   d) All the above

10) What is the luster of Diamond _____.
   a) Vitreous b) Dull
   c) Pearly d) Admentine

11) The earliest tools and weapons used by people were made of minerals _____.
a) Calcite b) Obsidian
c) Talc d) None of the above minerals.

12) As per the latest radiometric dating, what is the age of the Earth?
a) 4.5 Billion years b) 2.5 Billion years
c) 570 Million years d) 265 Million years

13) Which radiometric dating technique is used for the estimation of age of organic matter?
a) C-14 b) K-Sr
c) 'O' isotope d) None of the above

14) _____ refers to the differences in elevations of landscape features.
a) Topography b) Bed
c) Plain d) Relief

Q.2 A) Answer the following questions. (Any Four) **08**
1) Define Volcanic rocks
2) Define Morain
3) Define weathering
4) Draw a neat diagram of Meander and Ox-bow lake
5) Physical properties of Mica

B) Write Notes. (Any Two) **06**
1) Dike and Sill
2) Write short description on Pedology.
3) Exfoliation and Frost action

Q.3 A) Answer the following questions. (Any two) **08**
1) Discuss various forms of minerals
2) Structures of sedimentary rock
3) Plio-pleistocene boundary

B) Answer the following questions. (Any One) **06**
1) Write full note sea level changes.
2) Explain different processes of chemical weathering.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Write a note on Hardness and cleavage of a mineral with suitable examples.
2) Explain in detail Formation of Delta.
3) Explain in short different glacial deposits.

B) Answer the following questions. (Any One) **04**
1) What are different agents of metamorphism?
2) Note on soil mocromorphology and archaeology.

Q.5 Answer the following questions. (Any Two) **14**
1) Write full note on Geological time scale.
2) Significance of volcanic ash beds in Archaeology.
3) Write in details types of rocks with suitable example.

SLR-JY-19

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Computer Science
PROCEDURAL PROGRAMMING LANGUAGE

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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 data type is used to represent the absence of parameters?
   a) int b) short
   c) void d) float

2) When a language has the capability to produce new data type means, it can be called as _____.
   a) overloaded b) extensible
   c) encapsulated d) reprehensible

3) Identify the user-defined types from the following.
   a) enumeration b) classes
   c) int d) both a and b

4) Pick the right option.
   Statement 1: Global values are not initialized by the stream.
   Statement 2: Local values are implicitly initialised to 0.
   a) Statement 1 is true, Statement 2 is false
   b) Statement 2 is true, Statement 1 is false
   c) Both are false
   d) Both are true

5) What are the parts of the literal constants?
   a) integer numerals b) floating-point numerals
   c) strings and boolean values d) all of the mentioned

6) A type of computer programming language that specifies a series of well-structured steps and procedures within its programming context to compose a program is known as _____.
   a) Procedural language b) Structural language
   c) Assembly language d) Object oriented language

7) Which of the following is illegal?
   a) int *ip; b) string s, *sp = 0;
   c) int i; double* dp = &I; d) int *pi = 0;

8) By using which method sorting is not possible?
   a) Insertion b) Selection
   c) Deletion d) Exchange

9) The complexity of sorting algorithm measures the _____ as a function of the number n of items to be sorter.
   a) Average time b) Running time
   c) Average-case complexity d) Case-complexity

10) A pointers is _____.
   a) A keyword used to create variables
   b) A variable that stores address of an instruction
   c) A variable that stores address of other variable
   d) All of the above

11) A Compiler generates _____ file.
   a) Executable code b) Object code
   c) Assembly code d) None of these

12) Keep the statement language _____ while writing a pseudo code.
   a) Dependant b) Independent
   c) Case Sensitive d) Capitalized

13) Problem with procedural paradigm is that it leads to an even large number of potential connections between _____.
   a) Function and Constant b) Function and Loop
   c) Function and Data d) Data and String

14) An array can be sorted by using _____.
   a) Quick Sort b) Bubble Sort
   c) Merge Sort d) All of these

Q.2 A) Answer the following questions. (Any Four) **08**
1) Write a short note on Structured Programming.
2) Explain Linear Search in brief.
3) Write a note on Constants.
4) Write a note on run time errors.
5) Write a short note on integral data type.

B) Write Notes. (Any Two) **06**
1) Multidimensional Array
2) CASE Selection
3) Preprocessor

Q.3 A) Answer the following questions. (Any Two) **08**
1) Explain how algorithm implementation is almost a mechanical process.
2) Explain the branching constructs with syntax and example.
3) Define flowchart and state the uses of its symbols.

B) Answer the following questions. (Any One) **06**
1) Explain recursive algorithm in detail.
2) Explain insertion sort with example.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Explain concepts of data storage within a computer program.
2) Explain I/O streams.
3) Explain following loop control statements with example
   i) break
   ii) continue

B) Answer the following questions. (Any One) **04**
1) Differentiate between compiler and interpreter.
2) Describe the stages involved in program development

Q.5 Answer the following questions. (Any Two) **14**
a) Explain Top-Down approach in programming.
b) Explain iterative structure in detail with example.
c) What is a pointer? What is the use of pointer?

SLR-JY-2

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov 2019
Electronic Science
COMMUNICATION & DIGITAL ELECTRONICS

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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 8-bit binary value of the decimal no. 80?
   a) 10101010 b) 01100101
   c) 01010000 d) 1010110

2) Boolean expression for EX- OR gate is _____.
   a) A' B+AB' b) A+B
   c) A'B'+AB d) B+A

3) The boolean expression (X+Y) (X+Z) is equal to _____.
   a) X+YZ b) Y+XZ
   c) X+Y d) X+Z

4) The NOR gate output will be high if the two inputs are _____.
   a) 00 b) 01
   c) 10 d) 11

5) The transmitter-receiver combination in the satellite is known as a _____.
   a) Relay b) Repeater
   c) Transponder d) Duplexer

6) Which of the following is not a satellite subsystem?
   a) Ground station b) Power system
   c) Telemetry tracking d) Communication subsystem

7) Why does the orbit take the shape of an ellipse or circle?
   a) Position can be easily determined
   b) Consume less fuel
   c) Most efficient geometry
   d) Better coverage on earth

8) The process of using a pulse signal to represent information is called ____.
   a) Pulse modulation b) Frequency modulation
   c) Amplitude modulation d) Phase modulation

9) RF amplifiers are used in radio receivers for _____.
   a) improved image frequency rejection
   b) improved rejection of adjacent unwanted signals
   c) prevention of re-radiation of the local oscillator through the antenna of receiver
   d) all of the above

10) The sequence of operations in which PCM is done is
   a) Sampling, quantizing, encoding b) Quantizing, encoding, sampling
   c) Quantizing, sampling, encoding d) None of the above

11) What type of multiplexing is widely used in cellphones?
   a) Time division multiplexing b) Frequency division multiplexing
   c) Code division multiplexing d) Spatial multiplexing

12) Time division multiplexing: Digital signal: Frequency division multiplexing:?
   a) Pulse code modulated signal b) Continuous wave signals
   c) Analog signal d) Pulse position modulated signal

13) Bluetooth is the wireless technology for _____.
   a) local area network
   b) personal area network
   c) both local area network and personal area network
   d) none of the mentioned

14) WiMAX provides you?
   a) Full duplex communication b) Half duplex communication
   c) Simplex communication d) duplex communication

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

1) Find the decimal value equivalent for the binary number 11101.011
2) What is modulation index in AM?
3) Write different types of Satellite obits.
4) Draw AM Demodulator Block diagram.
5) Draw the truth table for two input NAND gate.

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

1) ASK
2) Universal Logic Gates
3) 3G Network

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

1) State Demorgan's theorems and explain it with truth table.
2) Disuses in brief LTE Network.
3) How non uniform quantization can be done using compander?

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

1) Compare between AM and FM.
2) What is the need of sampling? Explain sampling theorem.

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

1) What is the need of transponder? Explain it with block diagram.
2) Draw and explain basic stages in generation of PCM.
3) Explain Associative, Distributive and Commutative laws of Boolean algebra.

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

1) Implement the expression AB+BCD+EFGH with basic logic gates.
2) Compare between Wifi and WiMax.

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

a) With the help of block diagram explain FM Transmitter.
b) Discuss in detail CDMA with its advantages.
c) With the help of suitable waveforms explain PAM and PWM.

SLR-JY-20

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Computer Science
INTERNET OF THINGS

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time:03:00 PM To 05:30 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) CoAP is specialized in _____ applications.
   a) Internet b) Device
   c) Wired d) None of above

2) CoAP is present in _____ layer.
   a) Control b) Service
   c) Application d) None of above

3) _____ is open standard.
   a) HTTP b) MQTT
   c) CoAP d) None of above

4) CoAP is a specialized _____ protocol.
   a) Web Transfer b) Power
   c) Resource d) None of these

5) _____ protocol is used to link all the devices in the IoT.
   a) TCP/ IP b) UDP
   c) HTTP d) None of above

6) _____ is designed for connections with remote locations.
   a) UDP b) HTTP
   c) MQTT d) None of above

7) _____ is designed to easily translate to HTTP for integration with the web.
   a) MQTT b) CoAP
   c) RPi d) None of above

8) _____ defines a set of constraints to be used for creating web services.
   a) REST b) Arduino
   c) MQTT d) None of above

9) _____ can run on most devices that support UDP or UDP analogue.
   a) MQTT b) RPi
   c) CoAP d) None of above

10) _____ is/ are applications of IoT.
   a) Smart Home b) Smart City
   c) Connected Car d) All of above

11) _____ is not present in the IoT Protocol Stack.
   a) UDP b) Telnet
   c) CoAP d) All of above

12) All data moving to the cloud or vice versa goes through _____.
a) MQTT b) Stack
c) Gateway d) None of above

13) _____ layer is also called as recognition layer.
a) Perception b) Network
c) Application d) None of above

14) _____ layer is at the top of the conventional IoT architecture.
a) Physical b) Application
c) Network d) None of above

Q.2 A) Answer the following (Any Four) **08**
1) What is the future web of things?
2) Define role of TCP/IP in IoT?
3) Discuss perception layers in brief?
4) Explain the role of Gateways in IoT?
5) What is Enabling technologies in IoT?

B) Write notes on (Any Two) **06**
1) MQTT
2) IoT data Analysis.
3) End user programming

Q.3 A) Answer the following (Any Two) **08**
1) Explain programming Raspberry PI with python.
2) Discuss functional view specification in IoT.
3) Elaborate on User Centered Design in IoT.

B) Answer the following (Any one) **06**
1) Discuss Wireless Sensor Networks in Building IoT.
2) Elaborate on Operational view specification in brief.

Q.4 A) Answer the following (Any Two) **10**
1) Explain the role of Communication Protocols in IoT.
2) Elaborate on open source development in brief
3) Discuss syndicating things in IoT.

B) Answer the following (Any One) **04**
1) Relationship between IoT & Big Data Analysis.
2) Explain Oozie workflow in brief.

Q.5 Answer the following (Any Two) **14**
a) Explain the various IoT protocols in brief.
b) Discuss service specification in IoT.
c) Elaborate on Application Layer in IoT.

SLR-JY-21

Seat No.		Set	P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Zoology
WILD LIFE AND CONSERVATION BIOLOGY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) _____ is the major raw material for biogas.
   a) Plant leaves b) Cow dung
   c) Mud d) Grass

2) Dense shrub land in California, where the summers are hot and very dry are known as _____.
   a) Chaparral b) Opperal
   c) Mesorral d) Megarral

3) In ecology, a _____ is a *statistic* which is intended to measure the biodiversity of an ecosystem.
   a) correlation b) population
   c) sampling d) diversity index

4) The intermediate transitional zone between two ecological communities is known as _____.
   a) Ecology b) Exobiology
   c) Ecosphere d) Ecotone

5) Sanctuaries are established to _____.
   a) rear animals for milk b) entrap animals
   c) protect animals d) none of the above

6) Cryopreservation involves storage of cells from embryos and shoots tips in liquid nitrogen at _____.
   a) 0°C b) 5°C
   c) -196°C d) 100°C

7) Which year Wildlife Protection Act was implemented in India?
   a) 1970 b) 1971
   c) 1972 d) 1973

8) Which is the natural habitat of Indian lion?
   a) Western Ghats b) Sunderban delta
   c) Gir forest d) Himalayas

9) What is called for a scheme to protect and conserve bio-diversity?
   a) Biosphere b) Bio-reserve
   c) Biotechnology d) Bio-ecology

10) In which year the Convention on Biological Diversity signed?
   a) 1990 b) 1991
   c) 1992 d) 1993

11) Which one of the following is an example of non-renewable resources?
a) Wind b) Water
c) Vegetation d) Coal and minerals

12) When was the Project Tiger launched?
a) 1973 b) 1974
c) 1975 d) 1976

13) When did World Wild Fund for Nature-India (WWF-India) established?
a) 1956 b) 1969
c) 1976 d) 1997

14) Which of the following is the most important human activity leading to the extinction of wildlife?
a) Afforestation b) Controlling of pollution level
c) Destruction of the natural habitats d) Stop hunting animals

Q.2 A) Answer the following questions. (Any Four) **08**
1) Give an account on Definition and characteristics of community.
2) Write a note on Indices of diversity.
3) Give an account on Niche.
4) Note on Reserve forests.
5) Describe the red data book.

B) Write Notes. (Any Two) **06**
1) Describe the Natural factors: Earthquakes.
2) Give an account on Indian Forest Acts.
3) Species abundance and distribution.

Q.3 A) Answer the following questions. (Any two) **08**
1) Give an account on Sanctuaries in Maharashtra.
2) Describe in detail composition of community.
3) Give an account on classification of communities.

B) Answer the following questions. (Any One) **06**
1) Give an account on the Volcanoes and its effect on ecosystem.
2) Give an account on Deforestation.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Give an account on Tsunamis – its effect on ecosystem.
2) Give an account on Ecological succession.
3) Give an account on Agricultural practices.

B) Answer the following questions. (Any One) **04**
1) Describe in detail breaking of food chain.
2) Give an account on Industrialization.

Q.5 Answer the following questions. (Any Two) **14**
1) Give and account on the Volcanoes and its effect on ecosystem.
2) Give an account on Environmental Impact assessment (EIA).
3) Give an account on renewable natural resources.

SLR-JY-22

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Zoology
ECOLOGY AND ETHOLOGY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) Human population Growth curve is _____ shape.
   a) S b) J
   c) parabola d) zigzag

2) The study of behaviour in animals is called as _____.
   a) Ecology b) Ethology
   c) Economics d) Evolution

3) _____ are producers.
   a) pest b) plants
   c) termites d) grasshopper

4) _____ is considered as a social insect.
   a) Honey bee b) Cockroach
   c) Silk moth d) Housefly

5) _____ are also called as tertiary consumers.
   a) Tigers b) Elephants
   c) Frogs d) Rabbits

6) The word ecology was first time used by _____.
   a) Haeckel b) Odum
   c) Taylor d) Vern burg

7) Association between two different species in which both species are benefited is called _____.
   a) parasitism b) commensalism
   c) mutualism d) parental care

8) _____ is the principle and universal constituent of all living organisms.
   a) Wind b) Water
   c) Humidity d) Rainfall

9) Alluvial soil is formed by the transportion of the weather material by _____.
   a) Gravity b) Wind
   c) Running water d) Glaciers

10) Our earth along with the atmosphere that sustain life is called _____.
   a) Environment b) Biosphere
   c) Eco system d) Climate

11) _____ are also called as primary consumers.
   a) Carnivores b) Decomposers
   c) Scavengers d) Herbivores

12) Decomposers are also called as _____.
a) Micro consumers b) Macro consumers
c) Scavengers d) Herbivores

13) The animal that imitates is called as _____.
a) Model b) Camouflage
c) Enemy d) Mimic

14) _____ is an abiotic factor of an ecosystem.
a) Water b) Bacteria
c) Protozoans d) Fungi

Q.2 A) Answer the following questions. (Any Four) **08**
1) Biome
2) Synecology
3) food chain
4) Ecotone
5) Niche

B) Write Notes. (Any Two) **06**
1) Symbiosis
2) Biosphere
3) Ecogicalpyramid

Q.3 A) Answer the following questions. (Any Two) **08**
1) Describe the abiotic factors of a typical ecosystem.
2) Describe the foodchain of an ecosystem.
3) Describe the ecological pyramids of an ecosystem.

B) Answer the following questions. (Any One) **06**
1) Describe the consumers of a typical ecosystem.
2) Describe the role of producers in an ecosystem.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Describe the characteristics of community.
2) Describe the characteristics of population.
3) What is parasite? Describe different types of parasites.

B) Answer the following questions. (Any One) **04**
1) Describe the courtship behavior in birds.
2) Describe the intraspecific relationships.

Q.5 Answer the following questions. (Any Two) **14**
a) Explain the Types of food chains with examples.
b) What is successions? Describe the primary ecological succession.
c) Describe the foodweb of an ecosystem.

SLR-JY-24

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Genetics
MEDICAL BIOTECHNOLOGY AND BIONANOTECHNOLOGY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) _____ enzyme is present in tears of eyes.
   a) Lysozyme b) Catalase
   c) Oxidase d) Hydroxylase

2) Doderlein's bacillus is present as normal flora in _____.
   a) Mouth b) Skin
   c) Vagina d) Eyes

3) Amoebiasis is caused by _____.
   a) Plasmodium vivax b) Aspergillus oryzae
   c) Candida albicans d) Entamoeba histolytica

4) For the prevention of TB _____ vaccine is used.
   a) BCG b) DPT
   c) OPV d) MMR

5) Nystatin is _____ drug.
   a) Antifungal b) Antibacterial
   c) Antiviral d) Antiprtozoal

6) Exotoxins are made up of _____.
   a) Carbohydrates b) Lipids
   c) Nucleic acids d) Proteins

7) _____ a device which combines a biological component with physicochemical detector.
   a) Biosensor b) Bioreceptor
   c) Bioluminsor d) Bioradiator

8) Photosensitizing dyes are used to inactivate viruses in _____.
   a) Photolysis b) Photophophorylation
   c) Photodynamic inactivation d) Photosynthesis

9) _____ nanoparticles are used to kill bacteria.
   a) Silicon b) Silver
   c) Zinc oxide d) Nickel

10) _____ is the thermal decomposition of biomass occurring in the absence of oxygen.
   a) Pyrolysis b) Chemical Precipitation
   c) Hydrolysis d) Chemical Vapor Deposition

11) Zidovudine is _____ drug.
a) Antifungal b) Antibacterial
c) Antiviral d) Antitumor

12) Mantoux test is used to detect infection caused by _____.
a) Mycobacterium b) Plasmodium
c) Tryponema d) Pseudomona

13) Merozoites in malaria are produced in _____.
a) RBCs in human b) In intestine of mosquitoes
c) Liver of human d) Saliva of mosquitoes

14) Cross infections occurring in hospitals are called _____ infections.
a) Recurrent b) Systemic
c) Nosocomial d) Latent

Q.2 A) Answer the following question.(Any Four) **08**
1) Define Exotoxins and Endotoxins.
2) Give applications of biosensors in medical diagnosis.
3) What are interferons?
4) What are Nanotubes, thin films and multilayer?
5) Define Sputtering.

Q.2 B) Write Notes on (Any Two) **06**
1) Normal flora of intestine
2) Laboratory diagnosis of Ameobiosis
3) Molecular diagnosis of various diseases

Q.3 A) Answer the following question.(Any two) **08**
1) Write on physical methods of nanoparticle synthesis.
2) Describe Pathogenesis of Malaria.
3) Give the types and mechanism of action of antiviral drugs.

Q.3 B) Answer the following question.(Any One) **06**
1) Write on Functionalization of nanoparticles for biological applications.
2) Explain Photodynamic inactivation of viruses.

Q.4 A) Answer the following question.(Any Two) **10**
1) Describe Concept and development of biosensors.
2) Explain role of nanotechnology in various fields
3) Describe Chemical methods of nanoparticles synthesis.

Q.4 B) Answer the following question. (Any One) **04**
1) Write on pathogenesis of disease caused by Klebsiella.
2) Write on Industrial applications of biosensors.

Q.5 Answer the following question.(Any two) **14**
a) Discuss AIDS with respect to: pathogenesis, lab diagnosis and treatment.
b) Write on structure, types and mode of action of 3 antibacterial antibiotics.
c) What are vaccines? Write on killed and attenuated bacterial and viral vaccines with respect to examples and preparation.

SLR-JY-25

Seat No.	

Set P

M.Sc. (Semester – III) (CBCS) Examination Oct/Nov-2019
Biotechnology
ADVANCED PHARMACEUTICALS

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) Dissolution is affected by _____.
   a) Surface area b) Viscosity
   c) Temperature d) All of the above

2) Particle size is determined by _____.
   a) Gas Chromatography b) Cascade impactor
   c) Light scatter decay d) Both b & c

3) _____ property measures the resistance of a liquid to flow.
   a) Density b) Viscosity
   c) Volume d) Solubility

4) Electro dialysis is a method for the purpose of _____.
   a) Purification b) Identification
   c) Preparation d) Stabilization

5) The temperature at which the solubility of the surfactant is equal to CMC is ___.
   a) Boiling point b) Melting point
   c) Kraft point d) None of the above

6) Finely divide powder have _____ wettability.
   a) Average b) Good
   c) Poor d) Moderate

7) _____ is the correct definition of a pseudoplastic liquid.
   a) A liquid which becomes less viscous as the rate of shear increases
   b) A liquid which becomes more viscous as the rate of shear increases
   c) A liquid which becomes less viscous over time when a constant shear stress is applied.
   d) A liquid which becomes more viscous over time when a constant shear stress is applied

8) A type of flow in which viscosity increases when the substance agitated is _____.
   a) Plastic b) Pseudoplastic
   c) Dilatant d) Thirotroph

9) _____ is the correct definition of solubility.
   a) The ability of solid particles to disperse throughout a liquid continuous phase
   b) The ability of a solute to dissolve into a solvent
   c) The rate at which a solute dissolves into a solvent
   d) The ability of immiscible liquid droplets to disperse within a second liquid phase

10) The pH of pharmaceutical buffer system can be calculated by _____.
   a) pH partition theory
   b) Noyes whitney law
   c) Henderson- Hasselbaltch equation
   d) Michalis Menton equation

11) As per USP XX, the term “objectionable” means _____.
   a) An organism can cause disease or the presence may interrupt the function of the drug or lead to deterioration of the product
   b) Pathogens if they produce disease or infection, in the newborn or debilitated persons
   c) Organisms or their toxins that are responsible for human disease or infection.
   d) None

12) The number of milligrams of KOH required neutralizing free acids & saponify the esters contained in 1g of fat is known as _____.
   a) Iodine value
   b) Saponification value
   c) Water number
   d) Acid value

13) All of the following physicochemical constants are useful in predicting the solubility of drug except _____.
   a) Dielectric Constant
   b) pH of a solution
   c) Valency
   d) pKa of the drug

14) Partition co-efficient generally measures _____.
   a) Drug’s lipophilicity
   b) Ability of drug to cross cell membrane
   c) Both
   d) None

Q.2 A) Answer the following questions. (Any Four) **08**
1) Pharmaceutics.
2) Drug.
3) Carrier.
4) Dispersion.
5) CMC.

B) Write Notes. (Any Two) **06**
1) Particle characters
2) Drug Absorption
3) Antibacterial activity

Q.3 A) Answer the following questions. (Any Two) **08**
1) Drug metabolism.
2) Cyclodextrin inclusion.
3) Characterization of granules.

B) Answer the following questions. (Any One) **06**
1) Theory of dissolution.
2) Shelf life of drug.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Add a note on dissolution of different dosage forms.
2) Write a note on destabilization of pharmaceutical products.
3) Explain hydrotrophy in pharmaceuticals.

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

1) Explain phase behavior of surfactant in ternary system.
2) Add a note on Kinetics of micelle formation.

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

a) Define surfactant. Add a note on its biological implications.
b) Define polymer. Explain in detail methods of polymerization.
c) Define solids and briefly discuss the characterization of particles.

SLR-JY-26

Seat No.		Set	P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Biotechnology
COMPUTATIONAL STRUCTURE BIOLOGY AND DRUG DESIGNING

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) _____ is a Protein Structure Classification database.
   a) SCOP b) SCOOP
   c) SOOP d) 3D database

2) _____ rotatable bonds should be present in the drug.
   a) ≤5 b) ≤10
   c) ≥ d) ≥5

3) Pharmacodynamics involves the following _____.
   a) Biotransformation of drugs in the organism
   b) Distribution of drugs in the organism
   c) Mechanism of drug action
   d) Excretion of the drug from the organism

4) _____ of the following is not a primary target of drug action.
   a) Carriers b) Enzymes
   c) Hormones d) Receptors

5) Drugs are approved by _____.
   a) FAD b) FDD
   c) FDA d) FAAD

6) _____ is drug metabolizing enzymes.
   a) Protease b) CYP2A
   c) Kinase d) Amylase

7) Catalytic residue annotation for enzymes are predicted using _____ database.
   a) Literature b) BLAST
   c) CAS d) PDB

8) Conserved pattern of amino acids in protein is called _____.
   a) Domain b) Motif
   c) Structure d) Loop

9) _____ algorithm was used in docking.
   a) Flexible b) Fixed
   c) Rigid d) Genetic

10) Relationships chemical structure and pharmacological activity in a quantitative manner can be predicted by _____.
   a) QSAR b) PSAR
   c) RSAR d) GSAR

11) EC_{50} refers to drug _____.
   a) Potency b) Efficacy
   c) Strength d) Dose

12) Drugs combine with receptor and elicit submaximal response are called _____.
   a) Antagonist b) Partial Agonist
   c) Affinity d) Agonist

13) Query sequence identity _____% to template is selected to build 3D structure.
   a) >20 b) >25
   c) >30 d) >15

14) The protein 3D structure model quality should be _____ %.
   a) Above 70 b) Above 80
   c) Above 90 d) Above 100

Q.2 A) Answer the following questions. (Any Four) **08**
1) What is PROCHECK?
2) What is SOPMA?
3) What are drug like molecules?
4) What are integral membrane proteins?
5) What are torsion angles?

B) Write Notes. (Any Two) **06**
1) Write a note pro-drug.
2) Write a note GOR
3) Write a note on PDB flat file.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Describe protein and DNA structure visualization tools.
2) Describe protein-Lipid interaction.
3) Give account on structure based drug design.

B) Answer the following questions. (Any One) **06**
1) Describe different QSAR methods.
2) Describe in detail about pre-clinical trials.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Give detailed account on biological pathway databases.
2) Give detailed account on protein-carbohydrate interaction.
3) Give account on the protein structure validation and its tools.

B) Answer the following questions. (Any One) **04**
1) Describe drug metabolism in detail.
2) Give account on PDBeChem.

Q.5 Answer the following questions. (Any Two) **14**
a) Explain in detail *in silicodrug* discovery process.
b) Explain in detail SCOP and CATH databases.
c) What is docking? Explain docking process using AUTODOCK tool.

SLR-JY-27

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Bioinformatics
ADVANCED MOLECULAR BIOLOGY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) Western Blotting is used for _____.
   a) DNA b) Protein
   c) RNA d) Fats

2) _____ tool is used to analyze peptide mass fingerprint.
   a) Mass spectroscopy b) MASCOT
   c) ExPasy d) PCR

3) Separation of hormone can be efficiently done by _____ technique.
   a) FTIR b) PCR
   c) Affinity chromatography d) GLC

4) _____ chromatography is used to separate proteins based on only size.
   a) Ion exchange b) Affinity
   c) Gel flteration d) GC

5) _____ technique is used to separate proteins in its native form.
   a) SDS PAGE b) Native PAGE
   c) IEF d) 2D PAGE

6) _____ is an example of horizontal gel electrophoresis.
   a) Agarose b) polyacryl amide
   c) both a & b d) Cellulose

7) _____ molecular marker is used to study the polymorphism in genetic material using PCR.
   a) Western Blot b) RAPD
   c) RFLP d) Dot blot

8) The variation in number of tandem repeats between two or more individuals is called _____.
   a) VNTR b) RFLP
   c) PCR d) Chromosome walking

9) Denaturation in PCR involves _____.
   a) Heating between 90^0-98^0 C b) Heating between 40^o-60^o C
   c) Heating between 72^0 C d) Heating between 65^0 - 72^0 C

10) Labelled antibodies are used to detect presence of particular _____ molecule in blotting.
   a) RNA b) DNA
   c) Protein d) mRNA

11) _____ Factor does not affect the formation of hybrid DNA.
a) Ionic strength b) Temperature
c) Pressure d) Homologous DNA

12) All of the following are thermostable polymerase except _____.
a) Taq polymerase b) Vent polymerase
c) DNA polymerase III d) pfu polymerase

13) Dialysis is used to remove _____.
a) Salt b) Protein
c) Dust d) Buffer

14) _____ tool is used to design primers.
a) BLAST b) Oligo4
c) ClustalW d) Phylip

Q.2 A) Answer the following questions. (Any Four) **08**
1) Define in vitro amplification of DNA.
2) Define probe.
3) Define column chromatography.
4) Enlist molecular marker
5) Ammonium sulphate.

B) Write Notes. (Any Two) **06**
1) Write a note on hybridization.
2) Explain the principle of HPLC.
3) Add a note on protein dialysis.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Write a note on simple sequence length polymorphism.
2) Explain in detail autoradiography.
3) Write account on working of affinity chromatography.

B) Answer the following questions. (Any One) **06**
1) Write a note on Southern blotting.
2) Write a short note on SDS-PAGE.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Explain in RFLP and its application.
2) Write an account on cDNA library.
3) Explain in detail the technique of iso-electric focusing.

B) Answer the following questions. (Any One) **04**
1) Write a note on GLC
2) Briefly explain the shotgun method.

Q.5 Answer the following questions. (Any Two) **14**
a) Write an account on Ion exchange column chromatography.
b) Write note on 2D electrophoresis.
c) Explain in brief construction of genomic library.

SLR-JY-28

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Bioinformatics
ADVANCED PHARMACEUTICS

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) Particle size is determined by _____.
   a) Gas Chromatography b) Cascade impactor
   c) Light scatter decay d) Both b & c

2) _____ property measures the resistance of a liquid to flow.
   a) Density b) Viscosity
   c) Volume d) Solubility

3) _____ is the correct definition of a pseudoplastic liquid.
   a) A liquid which becomes less viscous as the rate of shear increases
   b) A liquid which becomes more viscous as the rate of shear increases
   c) A liquid which becomes less viscous over time when a constant shear stress is applied
   d) A liquid which becomes more viscous over time when a constant shear stress is applied

4) _____ is the correct definition of solubility.
   a) The ability of solid particles to disperse throughout a liquid continuous phase
   b) The ability of a solute to dissolve into a solvent
   c) The rate at which a solute dissolves into a solvent
   d) The ability of immiscible liquid droplets to disperse within a second liquid phase

5) As per USP XX, the term “objectionable” means _____.
   a) An organism can cause disease or the presence may interrupt the function of the drug or lead to deterioration of the product
   b) Pathogens if they produce disease or infection, in the newborn or debilitated persons
   c) Organisms or their toxins that are responsible for human disease or infection
   d) None

6) The number of milligrams of KOH required neutralizing free acids & saponify the esters contained in 1g of fat is known as _____.
   a) Iodine value b) Saponification value
   c) Water number d) Acid value

7) Partition co-efficient generally measures _____.
   a) Drug’s lipophilicity
   b) Ability of drug to cross cell membrane
   c) Both a & b
   d) Drug Molecular weight

8) Dissolution is affected by _____.
   a) Molecular weight b) Viscosity
   c) Volume d) Stability

9) Electro dialysis is a method for the purpose of _____.
   a) Purification b) Identification
   c) Preparation d) Stabilization

10) The temperature at which the solubility of the surfactant is equal to CMC is _____.
   a) Boiling point b) Melting point
   c) Kraft point d) None of the above

11) Finely divide powder have _____ wettability.
   a) Average b) Good
   c) Poor d) Moderate

12) A type of flow in which viscosity increases when the substance agitated is _____.
   a) Plastic b) Pseudoplastic
   c) Dilatant d) Thirotroph

13) The pH of pharmaceutical buffer system can be calculated by _____.
   a) pH partition theory
   b) Noyes whitney law
   c) Henderson- Hasselbaltch equation
   d) Michalis Menton equation

14) All of the following physicochemical constants are useful in predicting the solubility of drug except _____.
   a) Dielectric Constant b) pH of a solution
   c) Valency d) pKa of the drug

Q.2 A) Answer the following questions. (Any Four) **08**
1) Lubricant
2) Compacts
3) Carrier
4) Solid dispersions
5) CMC

B) Write Notes. (Any Two) **06**
1) Dissolution rate
2) Binary Mixtures
3) Antibacterial activity

Q.3 A) Answer the following questions. (Any two) **08**
1) Cyclodextrin inclusion
2) Drug Absorption
3) Characterization of granules

B) Answer the following questions. (Any One) **06**
1) Theory of dissolution
2) Shelf life of drug

Q.4 A) Answer the following questions. (Any Two) **10**
1) Dissolution of different dosage forms.
2) Factors responsible for destabilization of pharmaceuticals products.
3) Hydrotrophy in pharmaceuticals.

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

1) Phase behavior of surfactant in ternary system
2) Kinetics of micelle formation

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

1) Describe in details of biological implications of surfactants.
2) Define the polymer and explain in details of methods of polymerization.
3) Define solids and briefly discuss the characterization of particles.

SLR-JY-29

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Electronics
MEDICAL INSTRUMENTATION

Day & Date: Tuesday, 19-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) The cardiovascular system is a complex closed _____ system.
   a) respiratory b) Circulatory
   c) hydraulic d) Nervous

2) The _____ is an instrument for recording the electrical activity of the muscle.
   a) ECG b) EEG
   c) EMG d) VCG

3) The chemical reaction of glucose with oxygen is catalyzed in the presence of _____.
   a) glucose oxidase b) monoglucosecarbodase
   c) glucosedioxidase d) biglucose oxidase

4) MRI stands for _____.
   a) mechanical resonance imaging b) magnetic resonance imaging
   c) mutually related imaging d) magnetic resultant imaging

5) The material of the needle electrode are normally prepared by _____.
   a) stainless steel b) Copper
   c) nickel d) Alloy

6) The interior of the neuron is at a potential of about _____ mv relative to the exterior.
   a) -70 b) +70
   c) -170 d) +170

7) The _____ technique is used in ultrasound medical field.
   a) sound b) pulse-echo
   c) MRI d) computer tomography

8) Normal EEG frequency range is _____.
   a) 50-500Hz b) 0.5-50Hz
   c) 0.05-5Hz d) 1-200Hz

9) Electrode paste _____.
   a) increase contact impedance b) equates contact impedance
   c) reduces contact impedance d) absorbs contact impedance

10) In bedside patient monitoring system are basically consist of _____.
   a) preamplifier section b) logic boards
   c) display part d) all of these

11) The _____ is the innere layer of the heart.
a) pericardium b) Myocardium
c) epicardium d) Endocardium

12) Silver-silver chloride electrodes are normally prepared by _____.
a) electrolyte b) non-electrolyte
c) electrolysis d) none of these

13) The electromagnetic type flowmeter is based upon the _____ law.
a) voltage b) Kirchhoff's
c) Faraday's d) Current

14) The X-ray picture is called as _____.
a) radiology b) Tomography
c) sonography d) Angiography

Q.2 A) Answer the following questions. (Any Four) **08**
1) Give the advantages of modem imaging system.
2) What is the use of WSN technology in central monitoring system?
3) Give the medical use radioisotopes.
4) Draw the diagram of the pH electrode.
5) Explain the concept of recording electrodes.

B) Write notes. (Any Two) **06**
1) What is the Nernst equation?
2) Explain the electrical safety analyser.
3) Explain the measurement of the ECG.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Explain the contact impedance.
2) Explain the electric shock hazards.
3) Explain the EEG.

B) Answer the following questions. (Any One) **06**
1) Explain in detail of the MRI.
2) Explain the cardio-vascular system.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Describe the general architecture of the x-ray machine.
2) Explain the blood gas sensors.
3) Explain in detail the central monitoring system.

B) Answer the following questions. (Any One) **04**
1) Explain the EMG electrode.
2) Describe the basis of diagnostics radiology.

Q.5 Answer the following questions. (Any Two) **14**
a) Describe the electrode- tissue interface.
b) Explain the measurement of the pulse rate and heart rate.
c) Explain the measurement of blood pressure.

SLR-JY-3

Seat No.		Set	P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Physics (Applied Electronics)
ENERGY HARVESTING DEVICES

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) All questions carry equal marks.

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

1) What is redox mediator?
   a) Electrolyte b) Dye
   c) Counter Electrode d) All of these

2) Which of the following is used as photosensitizer in DSSC?
   a) Eosin-Y b) Rose Bengal
   c) N719 d) All of these

3) Dye Sensitized Solar cell is _____ solar cell.
   a) First Generation b) Second Generation
   c) Third Generation d) Fourth Generation

4) Which of the following is most preferable metal Oxide for DSSC?
   a) ZnO b) ZrO_2
   c) TiO_2 d) CeO_2

5) Which of the following is most preferable electrolyte for DSSC?
   a) Polysulphide b) Polyiodide
   c) Polyaniline d) None of these

6) Voc is maximum when _____.
   a) Both terminals of cell is closed b) Both terminal of cell is open
   c) Low shunt resistance d) None of these

7) Shockley queasier limit is define for _____.
   a) Fill Factor b) Efficiency
   c) Quantum Efficiency d) Photoanode

8) The theoretically efficiency of QDSSC is found to be _____.
   a) 20-30% b) 30-40%
   c) >60% d) <60%

9) Quantum Dots defines by _____.
   a) Nuclear radius b) Bohr Radius
   c) Brus Equation d) Scherrer Formula

10) In Fabrication of QDSSC _____.
   a) Series resistance and Shunt resistance are equal
   b) Series resistance and Shunt resistance are zero
   c) Series resistance is higher and Shunt resistance is lower
   d) Series resistance is lower and Shunt resistance is higher

11) The presence of Electric Field In the space charge region indicates the presence of voltage drop across it. This voltage drop is known as _____.
   a) Helmholtz Potential b) Built in Potential
   c) Cut off potential d) Threshold voltage

12) Choose what Generation Current is _____.
   a) The current flowing through the junction in reverse bias situation
   b) The current flowing through the junction in forward bias situation
   c) The current generated in the junction
   d) None of the above

13) Process in which two dissimilar materials in close contact produce an electrical voltage when struck by light or other radiant energy.
   a) Photovoltaic effect b) Radiation Effect
   c) Photochemical Effect d) Photoluminescence

14) Fill Factor is defined as the squareness of the I-V curve and it is mainly related to_____.
   a) Capacitive losses b) Resistive losses
   c) Voltage drop d) Voltage gain

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

1) What is Energy Band Diagram? Draw the Solar Cell Structure of Si:H based Solar Cells.
2) What are the elements of an Electrochemical Cell?
3) What is Fill Factor and what is its role in Designing of Solar Cell?
4) Write a short note on Losses in Solar Cells.
5) Briefly explain the effect of Temperature on Efficiency of Solar Cells.

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

1) Briefly describe Solar Cell Characteristics.
2) Explain what is Surface Passivation
3) What is TCO? What are the material requirements of a TCO layer.

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

1) What is the theoretical efficiency of photodiodes made of semiconductor with band gap energy of 2.4 eV when exposed to sunlight?
2) What is the short-circuit current delivered by a 10 cm by 10 cm photocell (with 100% quantum efficiency) illuminated by monochromatic light of 400 nm wavelength with a power density of 1000 W/m^2.
3) Under different illumination, the cell (10 cm X 10 cm with 100 % quantum efficiency) delivers 5 A into a short circuit. The reverse saturation current is 100 pA. Disregard any internal resistance of the photodiode. What is the open-circuit voltage at 300 K?

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

1) Explain inorganic solar cells: basic concept, working, fabrication etc.
2) Write a note with applications on magnetoelectric composites.

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

1) Explain piezoelectric power generators with power storage circuit.
2) Explain principle and working of proton exchange membrane in fuel cells
3) Explain organic solar cells: basic concept, working, fabrication etc.

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

1) Explain fabrication of fuel cell with example
2) Explain the different types of supercapacitor?

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

1) Principal construction and working of electrochemical double layer capacitor.
2) Explain the concept of energy storage with example and write difference between supercapacitors and capacitors.
3) Discuss basic concept, working and materials for Fuel cell.

SLR-JY-32

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Electronics
CMOS ANALOG CIRCUIT DESIGN

Day & Date: Tuesday, 19-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Use of Logtable and calculator is allowed
3) Draw neat and labeled diagram wherever necessary.
4) Figures to the right indicates full marks.

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

1) The differential amplifier stage of CMOS operational amplifier is referred as _____.
   a) Voltage amplifier b) Transconductance amplifier
   c) Push- pull amplifier d) None of these

2) The output amplifier stage of CMOS operational amplifier is configured as _____.
   a) Class A amplifier b) Class B amplifier
   c) Class C amplifier d) Class AB amplifier

3) If gate of two nMOS transistors are coupled together and biased for same potential, then the circuit is called _____.
   a) active load b) passive load
   c) current mirror d) voltage amplifier

4) Due to effect of channel width modulation, the drain current _____.
   a) decreases with increase in drain voltage
   b) increases with increase in drain voltage
   c) independent of drain voltage
   d) independent with substrate potential

5) Input impedance of BiCMOS transistor is _____.
   a) always low b) always high
   c) infinity d) zero

6) In switched capacitor circuit the resistor is given by _____.
   a) R = 1/FC b) R = TC
   c) R = F/C d) R = FC

7) _____ compensation is used to minimize the output swing effect.
   a) Miller capacitor b) Miller resistor
   c) Folded transistor d) All of these

8) To ensure active load to the nMOS amplifier _____ is configured.
   a) CMOS device b) PMOS device
   c) BiCNOS device d) NMOS device

9) For MOS transistor the transconductance, β, is given by _____.
   a) $\beta = \mu C_{ox}$ b) $\beta = W/L$
   c) $\beta = \mu W.L$ d) $\beta = \mu C_{ox} W/L$

10) In classical two stage CMOS Operational amplifier, the impedance of output stage _____.
a) is very high
b) depends upon nature of load
c) is low
d) all of these

11) Which of the following is correct?
a) For current sink nMOS is used
b) For current source nMOS is used
c) For current mirror circuit both nMOS and pMOS transistors are cross coupled
d) For current sink pMOS is used

12) The switched capacitor amplifier is the realization of _____ domain circuit.
a) discrete time
b) continuous time
c) discrete amplitude
d) all of these

13) To avoid feed forward current in capacitive feedback _____ is used.
a) buffer
b) reverse diode
c) inverter
d) miller capacitor

14) In switched capacitor, the clocks ϕ_1 and ϕ_2 should be _____.
a) Non-overlapping and in phase
b) Overlapping and in phase
c) Non-overlapping and Out of phase
d) Overlapping and Out of phase

Q.2 A) Answer the following questions. (Any Four) 08
1) What do you mean by Gate capacitance?
2) What is threshold potential?
3) Draw circuit diagram for switched capacitor based difference amplifier.
4) Mention the stages of MOS transistor fabrication.
5) What is push-pull amplifier?

B) Answer the following questions. (Any Two) 06
1) With suitable diagram describe the operation of current source inverter circuit.
2) What do you mean by channel width modulation?
3) Write a note on MOS transistor as a switch?

Q.3 A) Answer the following questions. (Any Two) 08
1) Write a note on current mirror circuit.
2) Describe in detail the small signal model of CS amplifier.
3) Write a note on class-A Amplifier.

B) Answer the following questions. (Any One) 06
1) What do mean by passive components in MOS technology? Describe the fabrication of different types the capacitors using MOS technology.
2) What do you mean by potential inversion? Explain formation of channel.

Q.4 A) Answer the following questions. (Any Two) 10
1) Describe in detail, the principle of Switched capacitor as a resistor. Derive expression for switched capacitor resistor.
2) Describe in detail the design of differential amplifier by using nMOS transistor.
3) Describe in detail, the current sink and current source circuits.

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

1) Discuss the term nMOS Transistor as a active resistor.
2) What do you mean by Miller compensation?

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

a) Describe in detail the design of two stage classical and cascoded operational amplifier.

b) With suitable diagram explain current mechanism in nMOS device. Derive expression for drain current.

c) With respect to different loads, explain the operation of CS inverter.

SLR-JY-33

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Botany
PLANT GROWTH AND DEVELOPMENT

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) Garner and Allard worked on _____ and discovered photoperiodism.
   a) Maryland mammoth variety of tobacco
   b) Biloxy variety of soyabea
   c) Both a and b
   d) Hyoscymus niger

2) Monocarpic senescence is seen in _____.
   a) mango b) coconut
   c) pomegranate d) bamboo

3) _____ is not a secondary messenger.
   a) Ca++ b) c AMP
   c) c GMP d) ABA

4) The chromophore of phytochrome is attached to polypeptide through _____.
   a) nitrogen atom b) sulphur atom
   c) oxygen atom d) phosphorus atom

5) Blue light responses are mediated through _____.
   a) phytochrome b) cryptochrome
   c) carotenoids d) anthocyanin

6) Polyamines are conjugated with some _____.
   a) sugars b) amino acids
   c) fatty acids d) phenolic compounds

7) _____ are synthesized from campesterol.
   a) Polyamines b) Brassinosteroids
   c) Morphactins d) CCC

8) Pr form of phytochrome is _____ in color.
   a) red b) green
   c) blue d) yellow

9) The term phytochrome was introduced by _____.
   a) Borthwick b) Borthwick and Hendricks
   c) Moore d) Garner and Allard

10) Pollen grains do not germinate on the stigma of the same flower this phenomenon is known as _____.
   a) perpotency b) self- sterility
   c) dicliny d) dichogamy

11) Programed cell death is scientifically known as _____.
a) automy b) cell lysis
c) apoptosis d) none of these

12) Growth regulator which retards senescence _____.
a) cytokinin b) GA
c) auxin d) ABA

13) Seed dormancy can be broken by _____.
a) ABA and ethylene b) Auxin and GA
c) GA and cytokinin d) Auxin and ABA

14) Metabolic precursor for the synthesis of ethylene is _____.
a) methionine b) α-ketoglutaric acid
c) citric acid d) succinic acid

Q.2 A) Answer the following questions. (Any Four) **08**
1) What is pollination?
2) Define senescence.
3) What is tissue culture?
4) Define plant growth regulators.
5) Give any two role of maleic hydrazide

B) Write notes. (Any Two) **06**
1) Cryptochrome
2) Role of mutant in plant physiology
3) Metabolism of stored seeds

Q.3 A) Answer the following questions. (Any Two) **08**
1) Explain in brief ripening of fruit.
2) Explain in brief Petal senescence.
3) Explain in brief discovery and mechanism action of salicylic acid.

B) Answer the following questions. (Any One) **06**
1) Give role of TIBA.
2) Explain in brief discovery of Brassins.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Describe in brief pollen – stigma interaction.
2) Describe in brief polyamines.
3) Describe in brief secondary messengers.

B) Answer the following questions. (Any One) **04**
1) Describe mechanism of programmed cell death.
2) Describe in brief role of paclobutrazol.

Q.5 Answer the following questions. (Any Two) **14**
a) Describe the biochemical changes seen during leaf senescence.
b) Give an account of discovery, properties and role of phytochrome in plants.
c) Describe development of flower.

SLR-JY-35

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Agrochemicals and Pest Management
ANALYSIS OF AGROCHEMICALS

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) All questions carry equal marks.

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

1) In paper chromatography _____ is the mobile phase.
   a) Solid b) Liquid
   c) Gas d) Water

2) In TLC _____ of the following is used as an adsorbent.
   a) Cellulose powder b) Ammonium chloride
   c) Sugar d) Sodium chloride

3) Which of the following method is not used for sampling of gases?
   a) Cold trapping b) Absorption
   c) Adsorption d) Centrifugation

4) Influenza shows _____ type of hazard to our body.
   a) Chemical b) Psychological
   c) Physical d) Biological

5) Which of the following is used as fluorescence indicator?
   a) Phenolphthalein b) Methyl orange
   c) Eosin d) Eriochrome Black-T

6) _____ acts as an anode in Dropping Mercury Electrode.
   a) Pool of mercury b) Platinum
   c) Glass d) DME

7) Which of the following compound shows UV absorption?
   a) n-pentane b) Benzene
   c) Cyclohexane d) Isobutane

8) The cis isomer absorbs at _____ wavelength with _____ intensity than the trans isomer in UV spectroscopy.
   a) Longer, shorter b) Smaller, shorter
   c) Longer, greater d) Smaller, greater

9) Which of the following is IR inactive?
   a) Acetic acid b) Methanol
   c) Acetone d) Hydrogen molecule

10) The removal of single electron from the molecule in the gaseous state by bombarding electrons forms _____.
   a) Molecular ion b) Parent ion
   c) Radical cation d) All of these

11) In mass spectroscopy the sample to be analysed must be in _____ state.
   a) Liquid b) Solid
   c) Gaseous d) Ionic

12) In ethyl acetate _____ NMR signals are observed.
a) 1 b) 2
c) 3 d) 4

13) In NMR spectroscopy, the multiplicity of peak due to proton on adjacent carbon atom is given by _____ rule.
a) 2n+1 b) n+1
c) n+2 d) 2n+2

14) In 2- butanone, how many equivalent sets of proton are present?
a) 3 b) 2
c) 1 d) 0

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

1) Write names of different adsorbents used in thin layer chromatography.
2) Define chromatography.
3) Write names of fluorescent indicators with their P^H range.
4) How is aldehyde distinguished from ketone by IR spectroscopy?
5) What are non magnetic nuclei? Write examples.

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

1) Classification of chromatography
2) Health hazards in radioactivity.
3) GC-MS technique

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

1) Describe analysis of NOx by spectrophotometer.
2) Describe isotopic dilution method.
3) Explain functional group region with examples.

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

1) Explain various types of electronic excitations in UV spectroscopy.
2) Draw and explain PMR spectra of Acetophenone and 2-Butanone.

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

1) Describe double beam fluorimeter.
2) Write the applications of UV spectroscopy in qualitative and quantitative analysis.
3) Explain applications of mass spectroscopy.

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

1) Describe analysis of SO_2
2) What is TMS? Why is it used as reference in PMR spectroscopy?

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

a) Describe various types of developments and applications of paper chromatography.
b) Explain working of dropping mercury electrode. Write its advantages and disadvantages.
c) Describe instrumentation of IR spectroscopy.

SLR-JY-37

Seat No.		Set	P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Nanotechnology
ORGANOMETALLIC CHEMISTRY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) Simple alkanes (saturated hydrocarbons) are _____.
   a) straight chain hydrocarbons b) branched chain hydrocarbons
   c) can be both A and B d) no chain hydrocarbons

2) The alkyl radical formed by removing a secondary H-atom from propane is _____.
   a) Iso-propyl b) n-propyl
   c) Neo-propyl d) None of these

3) On the basis of carbon skeleton, organic compounds are classified into _____ groups.
   a) Two b) Three
   c) Four d) Five

4) Term used for a formula that uses established abbreviation for various groups chain _____.
   a) Molecular formula b) Structural formula
   c) Condensed formula d) None of these

5) _____ is used for artificial ripening of fruits.
   a) Ethylene b) Acetylene
   c) Phenol d) Methanol

6) Following has two hydrocarbon groups bonded to carbonyl Carbonatom _____.
   a) Aldehydes b) Ketones
   c) Carboxylic acids d) Ethers

7) Following is true about alkenes _____.
   a) They are saturated hydrocarbons
   b) They are soluble in water
   c) They are unsaturated hydrocarbons
   d) They are insoluble in organic solvents

8) Loss of hydrogen halide is called _____.
   a) Halogenation b) Dehydration
   c) Dehydrohalogenation d) Hydrogenation

9) Following statement is not true about ferrocene _____.
   a) decamethyl ferrocene is staggered in solid state
   b) cyclopentadienyl rings in ferrocene are almost eclipsed
   c) cyclopentadienyl ring in ferrocene are staggered
   d) ferrocene can be nitrated by reaction with dil. HNO_3

10) Following is not considered as an organometallic compound?
a) Ferrocene b) Cis-platin
c) Ziese's salt d) Grignard reagent

11) Formic acid is also called _____.
a) Methanoic acid b) Ethanoic acid
c) Carboxylic acid d) Acetone

12) Following is used as a solvent for fats, oils, paints and varnishes _____.
a) Ethylene b) Acetylene
c) Phenol d) Methanol

13) Organic compounds are _____.
a) ionic b) amphoteric
c) Covalent d) coordinate covalent

14) General formula for primary amines is _____.
a) R-OH b) R-O-R
c) R-COOH d) R-NH_2

Q.2 A) Answer the following questions. (Any Four) **08**
1) What is homogenous catalysis? Give example.
2) Draw the structure of triplet carbene
3) What is carbonylation of alkene? Give example.
4) What are metal carbonyls? Give example.
5) Draw the structure of ferrocene.

B) Write notes. (Any Two) **06**
1) Write the difference between Fischer carbene and Schrock carbine.
2) Fischer carbene
3) Organometallic compounds

Q.3 A) Answer the following questions. (Any Two) **08**
1) What is heterogenous catalysis?
2) What are metal carbene complexes?
3) Explain structure of metal carbonyls.

B) Answer the following questions. (Any One) **06**
1) Explain methyl derivatives of metals.
2) Explain cleavage of metal Carbonbonds with suitable example.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Explain free radical with examples.
2) Explain structure and bonding of ferrocene.
3) Explain in brief Grignard reagents.

B) Answer the following questions. (Any One) **04**
1) Explain structure and bonding of olefins.
2) Explain alkyl halides with example.

Q.5 Answer the following questions. (Any Two) **14**
a) Explain in brief hydrogenation, Isomerisation of olefins.
b) Explain the preparation, structure of metal carbonyls with alkylhalides.
c) Briefly explain Techniques of Organometallic Chemistry.

SLR-JY-4

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Physics (Applied Electronics)
INTRODUCTION TO MATLAB & LABVIEW

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) Which of the following statement is correct for MATLAB?
   a) Single-line commands can be entered and executed
   b) Environment is an interactive environment
   c) Environment doesn't require the compile-link
   d) All of the above

2) Run arrow option is present on _____.
   a) front panel b) block diagram
   c) front panel and the block diagram d) none of above

3) Result of following command is _____.
   $X = B\ (1{:}\ 2, :);$
   a) error message b) not displayed
   c) 1st and 2"ĸl row from B matrix d) 1, 2

4) Sub-VI is similar to _____.
   a) subroutine b) sub-program
   c) object d) all of the above

5) What is HIL in virtual process?
   a) high-input-logic b) high performance in language
   c) hardware integration logic d) none of above

6) LabVIEW is _____ flow programming.
   a) image b) graph
   c) data d) syntax

7) In the content indexing, values arc enclosed in _____ and cell contains are enclosed in _____.
   a) ( ) , [ ] b) ( ), { }
   c) { }, [ ] d) both a and c

8) In the MATLAB, rand(n) command is used for _____.
   a) generate n- random numbers of elements
   b) generate n x n matrix with random numbers bet. 0 and 1
   c) generate a row with n- random numbers of elements
   d) generate a column with n- numbers of elements

9) If A and B are the two (3X3) matrix, which of the following command is correct for the multiplication?
   a) A X B b) A*B
   c) multiply (A, B) d) all of the above

10) Which of the following is used for data acquisition?
   a) An arduino b) DAQ
   c) GPIB d) All of the above

11) In the for loop of labview 'i' stands for _____.
   a) Implementation b) Indexing
   c) Iteration number d) Instrumentation

12) Which of the following is not pre-defined variable in MATLAB?
   a) pi b) inf
   c) j d) gravity

13) _____ characters in MATLAB are represented in their value in memory.
   a) decimal b) ASCII
   c) hex d) string

14) An icon of VI is _____.
   a) Graphical symbol
   b) Represent in the block diagram of calling VI
   c) In the upper right corner of the front panel
   d) All of the above

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

1) Explain the concept 'multi-dimensional array' of MATLAB.
2) Define script files of MATLAB.
3) Draw and explain the for loop of LabVIEW.
4) What is unbundle cluster?
5) Create a column vector of 5 elements with random values.

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

1) While loop of LabVIEW.
2) History window of MATLAB
3) Tools palette

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

1) Explain shift register node of LabVIEW with suitable example.
2) List of any functions of MATLAB commands with examples.
3) What is string? Give brief explanation on any 2 sub-functions of string with suitable diagram.

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

1) Discuss Help feature of MATLAB.
2) What is an array of LabVIEW? Explain types of array and sub-functions of array.

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

1) Discuss 'functions' and 'controls' of LabVIEW.
2) Distinguish between text based and graphical programming.
3) Create a 3 X 3 matrix 'A' in which the first row is 1, 2, 3 second row is 6, 5, 4 and third row is 6, 8, O. Create another 3X3 matrix 'B' in which the first row is 7, 7, 9 second row is 4, 1, 6 and third row is 8, 9, 6. Add two matrix A and B using appropriate commands with MATLAB.

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

1) Explain build array with suitable example of LabVIEW.
2) Create a matrix in which the first three rows are 0's and the next two rows are 1s.

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

a) Explain command window with suitable diagram.
b) Draw and explain the GSD model.
c) Explain LabVIEW environment with suitable sketch.

SLR-JY-40

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov 2019
Microbiology
ENVIRONMENT AND WASTE MANAGEMENT TECHNOLOGY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) _____ method have been popularly used for sludge dewatering in waste treatment.
   a) Sludge drying beds b) Anaerobic sludge
   c) Sedimentation d) Vacuum filtration

2) _____ acid is present in acid rain water.
   a) Hydrochloric b) Nitric
   c) Sulfuric d) Phosphoric

3) El Nino effect is observed in _____.
   a) Rivers b) Ponds
   c) Wells d) Oceans

4) In water tracing technique _____ tracer is used as visible tracer.
   a) Textile dyes b) Azo dyes
   c) Natural dyes d) Fluorescent dyes

5) BOD test is performed at _____°C temperature.
   a) 10 b) 20
   c) 25 d) 37

6) One of the purposes of secondary treatment of waste water and sewage is to _____.
   a) increase in chlorine content
   b) reduce the B.O.D
   c) discourage ammonification
   d) increase the formation of PCB's

7) _____ is the middle layer of atmosphere.
   a) ozonosphere b) ionosphere
   c) exosphere d) endosphere

8) _____ of the following interaction directly kills the host.
   a) antibiosis b) parasitism
   c) predation d) competition

9) _____ gas is produced in large amount during sludge digestion.
   a) methane b) carbon dioxide
   c) Hydrogen d) Nitrogen

10) Oxidation ponds are _____ in depth.
   a) 2-4 ft b) 6-8 ft
   c) 4-6 ft d) 1-2 ft

11) El Nino is related to band of _____.
a) Tomado b) Warm sea water
c) Hurricane d) Volcano

12) _____ plant is used for root zone process.
a) Reeds b) Myriphyllum
c) Spartina d) Nerium

13) The lake rich in nutrient is called _____ lake.
a) Eutrophic b) Oligotrophic
c) Mesotrophic d) All of these

14) ISI tolerance limit of BOD for Industrial effluents discharged into public sewer is _____ ppm.
a) 2000 b) 500
c) 200 d) 100

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

1) Define Environmental audit.
2) Define Eutrophic lakes.
3) Give types of industrial wastes.
4) What are hydraulic characters of reactor?
5) Define Vermicomposting.

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

1) Give Sources of water pollution.
2) Explain bioaugmentation with examples.
3) Explain root zone process?9*

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

1) Explain Novel Method of Pollution: Control treatment using aquatic plants.
2) Write on Food chains and Food webs.
3) Environmental Impact Assessments

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

1) Give Introduction, types and process of biological treatments.
2) Explain Novel Methods of Pollution Control Vermicomposting with significance.

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

1) Describe schematically treatment of distillery and textile industrial wastes.
2) Give the role of microorganisms in waste water treatment with respect to treatability tests, mass scale production and mixed cultures.
3) Write on Water pollution control, regulation and limits for disposal in water bodies by different pollution controlling bodies.

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

1) Write on Water Tracing with respect to need, tracing problems, criteria for selection of tracer, tracing method and significance.
2) Describe global warming with significance.

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

a) Write on microorganisms in waste water treatment with respect to sources, enrichment and isolation.

b) Explain impact of pollutants on bio- treatment, bioaugmentation and basic concepts of waste water treatment.

c) Give the effects of eutrophication on the quality of water environment, factors influencing Eutrophication, qualitative characteristics and properties of eutrophic lakes.

SLR-JY-41

Seat No.	

Set P

M.A./M.Sc.(Semester - III) (CBCS) Examination Oct/Nov-2019
Geography
CULTURAL GEOGRAPHY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

सूचना : 1) सर्व प्रश्न अनिवार्य आहेत.
2) उजवीकडील अंक पूर्ण गुण दर्शवितात.
3) स्टेन्सिलचा वापर करण्यास परवानगी आहे.
4 आवश्यक तेथे सुबक आकृत्या व नकाशे काढा.

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

1) ––– हा जीवनाचा पूर्ण मार्ग आहे.
अ) धर्म ब) वंश
क) संस्कृती ड) भाषा

2) समान वंश, धर्म व भाषिक वैशिष्टये असणाऱ्या लोकांच्या समुहाला ––– समुह असे म्हणतात.
अ) वांशिक गट ब) सर्वसाधारण
क) सांस्कृतिक ड) यापैकी नाही

3) ज्या ठिकाणी मानवी समुदायाचा उदय होतो त्या ठिकाणास ––– म्हणतात.
अ) संस्कृती प्रसार ब) संस्कृती उगमस्थान
क) संस्कृती क्षेत्र ड) वरील सर्व

4) जगातील सर्व धर्मात ––– धर्म सर्वात मोठा आहे.
अ) मुस्लिम ब) ख्रिश्चन
क) हिंदू ड) बौद्ध

5) उच्च रोजगार क्षमता, प्रति कामगार अधिक नफा व नुतनीकरणाचे अधिक प्रमाण ही ––– श्रेणीच्या आर्थिक क्रियेची वैशिष्टये आहेत.
अ) प्राथमिक ब) द्वितीय
क) तृतीय ड) चतुर्थ

6) बौद्ध धर्माची स्थापना ––– यांनी केली.
अ) गौतम बुद्ध ब) चंद्रगुप्त
क) शंकराचार्य ड) यापैकी नाही

7) ––– हे मुस्लिम धर्माचे पवित्र पुस्तक आहे.
अ) बायबल ब) रामायन
क) कुराण ड) भगवतगीता

8) सामाजिक कल्याणाची संकल्पना ––– यांनी मांडली.
अ) मार्क जेफरसन ब) हंटीग्टन
क) डेव्हीड स्मिथ ड) कार्ल रिटर

9) ––– ही सामाजिकरणाची ताकद आहे.
अ) वंश ब) धर्म
क) जात ड) भाषा

10) ––– हे टुंड्रा प्रदेशातील रहिवासी आहेत.
अ) एस्किमो ब) नागा
क) पिग्मी ड) बुशमन

11) कॅथोलिक आणि प्रोटेस्टंट हे ––– धर्माचे दोन विभाग आहेत.
अ) मुस्लिम ब) ख्रिश्चन
क) जैन ड) हिंदू

12) ––– यांचे वांशिक भूगोलाच्या विकासात मोठे योगदान आहे.
अ) ग्रिफित टेलर ब) हंबोल्ट
क) हंटिग्टन ड) एच. जे. मॅकिंडर

13) ––– या भटक्या जमातीच्या लोकांच्या आहारात बैलाचे रक्त हा महत्वाचा आवडता घटक आहे.
अ) बुशमन ब) मसाई
क) गोंड ड) एस्किमो

14) भारतातील ––– ही आदिवासी जमात सर्वात विकसित जमात म्हणून ओळखली जाते.
अ) नागा ब) भिल्ल
क) मायनाज ड) गोंड

प्र.2 अ) खालीलपैकी कोणत्याही चार प्रश्नांची उत्तरे लिहा. **08**
1) भाषा म्हणजे काय?
2) संस्कृती प्रसार म्हणजे काय?
3) वंश म्हणजे काय?
4) सामाजिक कल्याणाची व्याख्या द्या.
5) प्राथमिक आर्थिक क्रिया म्हणजे काय?

ब) खालीलपैकी कोणत्याही दोन टिपा लिहा. **06**
1) सांस्कृतिक भूगोलाचे घटक/तत्त्व (Element)
2) सांस्कृतिक विविधतेचे पायाभूत घटक
3) ग्रामीण भागातील सांस्कृतिक रचना

प्र.3 अ) खालीलपैकी कोणत्याही दोन प्रश्नांची उत्तरे लिहा. **08**
1) सांस्कृतिक भूगोलाची व्याप्ती सांगा.
2) सांस्कृतिक उगमस्थानाचे वर्णन करा.
3) धर्म स्पष्ट करा.

ब) खालीलपैकी कोणत्याही एका प्रश्नाचे उत्तर लिहा. **06**
1) सांस्कृतिक भूगोल म्हणजे काय ते सांगून त्याचे घटक सांगा.
2) जगातील वंशाचे वर्णन करा.

प्र.4 अ) खालीलपैकी कोणत्याही दोन प्रश्नांची उत्तरे लिहा. **10**
1) सामाजिक कल्याणाचे मुख्य दर्शक विशद करा.
2) भारतातील धर्मांचा थोडक्यात वृत्तांत द्या.
3) आफ्रिका व युरोप मधील जमातीचा वृत्तांत द्या.

ब) खालीलपैकी कोणत्याही एका प्रश्नाचे उत्तर लिहा. **04**
1) मुस्लिम धर्म प्रसाराची चर्चा करा.
2) मानवी आर्थिक क्रिया थोडक्यात वर्णन करा व शेती क्षेत्रातील बदलावर चर्चा करा.

प्र.5 खालीलपैकी कोणत्याही दोन प्रश्नांची उत्तरे लिहा. **14**
अ) शहरी व ग्रामीण लोकजीवनातील फरकावर चर्चा करा.
ब) भारतातील विविध जमातीवर चर्चा करा.
क) विकसनशील देशातील विशेतषतः भारतातील सामाजिक व सांस्कृति प्रक्रियेची चर्चा करा.

SLR-JY-41

Seat No.	

Set P

M.A./M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Geography
CULTURAL GEOGRAPHY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) _____ is total way of life.
   a) Religion b) Race
   c) Cultural d) Language

2) The group of people having common racial, religious and linguistic characteristics is known as _____ group.
   a) Ethnic b) Common
   c) Cultural d) None of these

3) The place where human societies are originated is called _____.
   a) Cultural diffusion b) Cultural hearth
   c) Cultural d) all of these

4) Among all the religions of the world _____ is biggest religion.
   a) Muslim b) Christian
   c) Hindu d) Buddhism

5) High employment potential, high profit per worker, high degree of modernization are the characteristic of _____ economic activities.
   a) Primary b) Secondary
   c) Tertiary d) Quaternary

6) Buddhism is formed by _____.
   a) Gautam Buddha b) Chadragupta
   c) Shankaracharya d) None of these

7) _____ is the holy book of Muslim religion.
   a) Baible b) Ramayan
   c) Kuran d) Bhagwatgita

8) Social well being concept is given by _____.
   a) Mark Jefferson b) Hantingaton
   c) David Smith d) Karl Ritter

9) _____ is force of socialization.
   a) Race b) Religion
   c) Cast d) Language

10) _____ are inhabitants of Tundra region.
   a) Eskimo b) Naga
   c) Pigmi d) Bushmen

11) Catholic and protestant are the two broad divisions of _____ religion.
a) Muslim b) Christian
c) Jains d) Hindu

12) _____ gave the most important contribution to Racial geography.
a) Grifit Taylor b) Humbalt
c) Hantington d) H.J. Mackinder

13) 'Ox blood' is favourite and important ingredient in the diet of _____ tribal group.
a) Bushman b) Masai
c) Gond d) Eskimo

14) In India _____ tribal community is termed as most developed tribal community.
a) Naga b) Bhils
c) Minas d) Gond

Q.2 A) Answers of the following questions .(Any four) **08**
1) What is Language?
2) What is mean by cultural diffusion?
3) What is Race?
4) Define social well being.
5) What is mean by primary economic activities

B) Write short notes of the following questions. (Any two) **06**
1) Elements of cultural geography
2) Bases of cultural diversity
3) Cultural pattern of rural society

Q.3 A) Answers of the following questions. (Any two) **08**
1) Describe the scope of cultural geography.
2) Describe the cultural hearths.
3) Explain the Ethnic Religion.

B) Answers of the following questions. (Any one) **06**
1) What is cultural geography? Explain in brief components of cultural geography.
2) Describe the Race of the world.

Q.4 A) Answers of the following questions. (Any two) **10**
1) Give a brief account of major indicators of social well being.
2) Give an account of religions in India.
3) Give an account of tribes in Africa and Europe.

B) Answers of the following questions. (Any one) **04**
1) Comment on diffusion of Muslim religion
2) Explain in brief economic activities of man and discuss with special reference to agriculture sector changes.

Q.5 Answer the following questions. (Any two) **14**
a) Explain the difference between Rural and Urban Life.
b) Explain the various tribes in India.
c) Comment on social and cultural process in developing countries, with special reference to India.

SLR-JY-42

Seat No.	

Set P

M.A./M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Geography
COMMERCIAL GEOGRAPHY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) माल सेवा व कल्पना योग्य मोबदल्याच्या बदल्यात देणे म्हणजे ———— होय.
अ) वाहतूक ब) बाजार
क) व्यापार ड) पर्यटन

2) व्यापारी भूगोल ही ———— भूगोलाची शाखा आहे.
अ) ऐतिहासिक ब) सांस्कृतिक
क) सामाजिक ड) आर्थिक

3) व्यापारी मासेमारी ही मानवाची ———— आर्थिक क्रिया आहे.
अ) प्राथमिक ब) द्वितियक
क) तृतियक ड) चथुरतक

4) वस्तू आणि लोक यांची एका ठिकाणाहून दुसऱ्या ठिकाणी होणारी हालचाल म्हणजे ———— होय.
अ) बाजार ब) पर्यटन
क) वाहतूक ड) व्यापार

5) आयाती पेक्षा निर्यात केलेल्या मालाची किंमत जास्त असल्यास त्या व्यापाराला ——— व्यापार म्हणतात.
अ) संतुलित ब) अनुकूल संतुलनाचा
क) प्रतिकुल संतुलनाचा ड) यापैकी नाही

6) ——— शेती प्रकारामुळे जंगले नष्ट होत आहेत.
अ) उदनिर्वाह ब) संधन
क) संमिश्र ड) स्थलांतरीत

7) तांबडा समुद्र व भुमध्यसमुद्र यांच्या दरम्यान ———— कालवा आहे.
अ) पन्नामा ब) सुएझ
क) किल ड) यापैकी नाही

8) ——— हा जगातील सर्वात लांब लोहमार्ग आहे.
अ) केप–कैरो ब) कॅनेडियन–पॅसिफिक
क) ट्रान्स–सैबेरियन ड) मुंबई–दिल्ली

9) ——— या कंपनीने 1995 मध्ये भारतात सर्व प्रथम इंटरनेट सेवा सुरू केली.
अ) BSNL ब) VSNL
क) ATCL ड) ISDL

10) आंतराष्ट्रीय व्यापारातील अडथळे दूर करण्यासाठी जिनिव्हा येथे ––– या वर्षी बैठक झाली.
अ) 1945 ब) 1947
क) 1960 ड) 1965

11) 'चिशॉल' या भूगोल तज्ञाला ––––– भूगोलाचे जनक म्हणतात.
अ) आर्थिक ब) प्राकृतिक
क) वैद्यकिय ड) वाहतूक

12) ––– हा व्यवसाय प्राथमिक आर्थिक व्यवसायात येतो.
अ) शिक्षक ब) हमाल
क) संगीतकार ड) डॉक्टर

13) भारतामध्ये कृषी पर्यटनास ––– पासून सुरूवात झाली.
अ) 2004 ब) 2007
क) 2009 ड) 2000

14) ––––– साली 'आर्यभट' हा उपग्रह अवकाशात सोडण्यात आला.
अ) 1965 ब) 1970
क) 1975 ड) 1977

प्र.2 अ) खालीलपैकी कोणत्याही चार प्रश्नांची उत्तरे लिहा. **08**
1) व्यापार म्हणजे काय?
2) पर्याप्त लोकसंख्या म्हणजे काय?
3) कृषी पर्यटन म्हणजे काय?
4) हजर बाजारपेठ म्हणजे काय?
5) आर्थिक क्रियाचे प्रकार सांगा.

ब) खालीलपैकी कोणत्याही दोन टिपा लिहा. **06**
1) संतुलित व्यापार
2) पर्यटनाचे आर्थिक महत्व सांगा.
3) सांस्कृतिक पर्यावरण

प्र.3 अ) खालीलपैकी कोणत्याही दोन प्रश्नांची उत्तरे लिहा. **08**
1) व्यापारी भूगोलाच्या दृष्टीकोनाचे वर्णन करा.
2) भारतातील IT उद्योग स्पष्ट करा.
3) भारतातील कृषी पर्यटन स्पष्ट करा.

ब) खालीलपैकी कोणत्याही एका प्रश्नांचे उत्तरे लिहा. **06**
1) व्यापारी भूगोलाचे महत्व स्पष्ट करा.
2) भारताच्या निर्यात व्यापाराचे वर्णन करा.

प्र.4 अ) खालीलपैकी कोणत्याही दोन प्रश्नांची उत्तरे लिहा. **10**
1) जगातील हवाई वाहतूकीचा वृत्तांत लिहा.
2) मानवाच्या प्राथमिक आणि द्वितियक व्यवसायाचा वृत्तांत लिहा.
3) भारतातील लोह –पोलाद उद्योगाचा वृत्तांत लिहा.

ब) खालीलपैकी कोणत्याही एका प्रश्नांचे उत्तरे लिहा. **04**
1) व्यापारी भूगोल म्हणजे काय आणि त्याची व्याप्ती स्पष्ट करा.
2) तृतियक व चथुरतक आर्थिक क्रियाचे वर्णन करा.

प्र.5 खालीलपैकी कोणत्याही दोन प्रश्नांची उत्तरे लिहा. **14**
1) शेतीच्या विविध प्रकाराचे वर्णन करा.
2) आंतराष्ट्रीय आयात निर्यात व्यापाराची माहिती लिहा.
3) भारतातील रेल्वे वाहातूकीचा वृत्तांत लिहा.

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Seat No.	

Set P

M.A./M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Geography
COMMERCIAL GEOGRAPHY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) _____ means the exchanges of goods, services and ideas.
a) Transport b) Market
c) Trade d) Tourism

2) Commercial geography is branch of _____ geography.
a) Historical b) Cultural
c) Social d) Economic

3) Commercial fishing is _____ Economic activities of man.
a) Primary b) Secondary
c) Tertiary d) Quaternary

4) _____ refers to the movement of commodities and people from one place to another place.
a) Market b) Tourism
c) Transport d) Trade

5) If value of exported goods is more than imported goods then trade is called _____ balanced trade.
a) Favourable b) Unfavourable
c) Balanced d) none of these

6) _____ type of agriculture is responsible for deforestation.
a) Subsistence b) Intensive
c) Mixed d) Shifting

7) _____ canal is between red sea and Mediterranean sea.
a) Pannama b) Suez
c) Kil d) None of these

8) _____ is longest rail route in the world.
a) Cape-Cairo b) Canadian pacific
c) Trans – saberian d) Mumbai – Delhi

9) In the year 1995 _____ company was started first time internet service in India.
a) BSNL b) VSNL
c) ATCL d) ISDL

10) At Geneva in _____ year to devise means of reducing barriers to international trade.
a) 1945 b) 1947
c) 1960 d) 1965

11) ‘Chishal’ geographer has called as father of _____ geography.
a) Economic b) Physical
c) Medical d) Transport

12) _____ comes under primary economic activity.
a) Teacher b) Porter
c) Musician d) Doctor

13) Agriculture tourism is starts in India since _____.
a) 2004 b) 2007
c) 2009 d) 2000

14) ‘Aryabhatta’ satellite was launched in the year of _____.
a) 1965 b) 1970
c) 1975 d) 1977

Q.2 A) Answer the following questions. (Any Four) **08**
1) What is means by trade?
2) Define the optimum population.
3) What is means by Agro tourism?
4) What is means by present market?
5) State type of economic activites.

B) Write notes (Any Two) **06**
1) Balance trade.
2) State the economic importance of tourism.
3) Cultural Environment.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Describe the approaches of commercial geography.
2) Explain the IT Industries in India.
3) Explain Agro-tourism in India.

B) Answer the following questions. (Any One) **06**
1) Describe the importance of commercial geography.
2) Describe Indian export trade.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Give an account of Air transport in world.
2) Give an account of primary and secondary economic activities of man.
3) Give an account of Iron and steel industry in India.

B) Answer the following questions. (Any One) **04**
1) What is the commercial geography and explain its scope?
2) Explain the tertiary and quaternary economic activities.

Q.5 Answer the following questions. (Any Two) **14**
a) Explain the different type of Agriculture.
b) Write about international import – export trade.
c) Give an account of Rail transport in India.

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Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Industrial Chemistry
ADVANCED TOPICS IN INDUSTRIAL CHEMISTRY - II

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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 fuel has higher calorific value among given fuels?
   a) Natural gas b) Gasoline
   c) Diesel d) Fuel oil

2) Based on what basis are fuels compared?
   a) Fire point value b) High calorific value
   c) Flash point value d) Low calorific value

3) Which is the correct advantage of solid fuels out of given option?
   a) They have low ignition temperature
   b) They produce small amount of smoke
   c) They have higher calorific value
   d) They do not form any clinker

4) Rock phosphate constitutes mainly of _____.
   a) di-ammonium phosphate b) di-calcium phosphate
   c) fluoropatite d) mono calcium phosphate

5) Main component of bone ash is _____.
   a) sodium phosphate b) calcium sulphate
   c) calcium carbonate d) calcium phosphate

6) The cloud point is used as _____ control parameter.
   a) Quantity b) Temperature
   c) Speed d) Quality

7) In the formulation, to facilitate the wetting of insoluble solids, which of the following agents used _____.
   a) Suspending agents b) Flavoring agents
   c) Wetting agents d) None

8) Which of the following is not used as a emulsifying agent?
   a) Surfactant b) Hydrophilic colloids
   c) Electrolytes d) Finely divided solid

9) Which of the following statements best describes pharmacodynamics?
   a) The study of how drugs reach their target in the body and how the levels of a drug in the blood are affected by absorption, distribution, metabolism and excretion.
   b) The study of how drugs can be designed using molecular modelling based on a drug's pharmacophore.
   c) The study of how a drug interacts with its target binding site at the molecular level.
   d) The study of which functional groups are important in binding a drug to its target binding site and the identification of a pharmacophore.

10) Which of the following terms is used to describe a drug that has the same effect on a receptor as the endogenous chemical messenger?
a) agonist b) antagonist
c) partial agonist d) inverse agonist

11) Which of the following terms is the measure of how strongly a drug binds to a receptor?
a) efficacy b) affinity
c) potency d) stability

12) Which of the following statements is not true about receptors?
a) Most receptors are proteins situated in the cell membrane.
b) Receptors contain a hollow or cleft on their surface which is known as a binding site.
c) Receptors bind chemical messengers such as neurotransmitters or hormones.
d) Receptors catalyse reactions on chemical messengers.

13) The principles of green chemistry include the eliminating the _____ treatments.
a) Costly b) Harmful
c) Hard d) Easy

14) The green synthesis methods should have _____.
a) Low efficiency b) High harmful products
c) Low energy requirements d) Low atom efficiency

Q.2 A) Answer the following questions. (Any Four) **08**
1) Define Gross Calorific Value.
2) Give the structure of Salbutamol.
3) Give the classification of route wise dosage.
4) What is meant by the term lubricant?
5) What is the purpose of fertilizers?

B) Write notes. (Any Two) **06**
1) Protein receptor
2) Orsat apparatus
3) Ointments and creams

Q.3 A) Answer the following questions. (Any Two) **08**
1) Describe the synthesis of chloroquine.
2) Explain in detail the proximate analysis of coal.
3) Describe the importance of Flash point and Fire point determination in lubricant.

B) Answer the following questions. (Any One) **06**
1) Discuss the applicability of $NaNO_2$/CAS titration method in pharmaceutical analysis.
2) Explain the Kjeldahl method for estimation of nitrogen in fertilizers.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Explain the analysis of potassium by sodium tetraphenyl borate method.
2) Discuss in brief the Route-wise dosage forms.
3) Describe the synthesis and mechanism of action Alprazolam.

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

1) Give an account on the DNA as receptor.
2) Describe the Redwood method for the determination of viscosity.

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

a) Discuss the pharmacokinetic considerations of oral delivery of drugs.

b) What is green chemistry? Give its principle.

c) Describe in details the working and construction of Bomb calorimeter.

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Seat No.	

Set P

M.Sc. (Semester – III) (CBCS) Examination Oct/Nov-2019
Polymer Chemistry
SPECTRAL AND INSTRUMENTAL ANALYSIS OF POLYMERS

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Questions one is write on separate sheet.
4) Use of log table and non programmable calculator is allowed.

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

1) The Kinetics of Polymerization is well studied by _____.
   a) UV b) IR
   c) Raman d) All of the above

2) The equation $\mathbf{n\lambda = 2d \sin\theta}$ is called _____.
   a) Braggs Equation b) Laue's Equation
   c) Newton's Equation d) Carothers Equation

3) ESCA can identify elements in the periodic table above which of the following?
   a) Carbon b) Boron
   c) Helium d) Potassium

4) What did C. V. Raman's discovery deal with?
   a) Hereditary characteristics b) Space travel
   c) Radio waves d) Scattering of light

5) Beer's law states that the intensity of light decreases with respect to ____.
   a) Concentration b) Distance
   c) Composition d) Volume

6) For identification Tg of polymers which of the following techniques is used?
   a) DSC b) POM
   c) ESCA d) AFM

7) Growth rate of spherulites is identified from which of the following techniques?
   a) DSC b) XPS
   c) POM d) TGA

8) Mass spectrometer separates ions on the basis of which of the following?
   a) Mass b) Charge
   c) Molecular weight d) Mass to charge ratio

9) NMR is the study of absorption of _____ by nuclci in a magnetic field.
   a) Radioactive radiation b) IR radiation
   c) Radio frequency radiation d) Microwaves

10) The % weight loss in polymer sample is calculated by using _____.
   a) DSC b) TGA
   c) ESCA d) AFM

11) For surface analysis of polymers which of the following techniques is used?
a) TGA b) DSC
c) DTA d) AFM

12) What is the Range of IR for functional group region?
a) 4000 – 1400 cm^{-1} b) 200 – 10 cm^{-1}
c) 12500 – 4000 cm^{-1} d) 1400 – 667 cm^{-1}

13) DEPT-90 is used for identifications of _____.
a) Methyl Carbon b) Methylene Carbon
c) Methine Carbon d) Quaternary Carbon

14) X-ray diffractometer is **not** used to identify the physical properties of which of the Following?
a) Metals b) Liquids
c) Polymeric Materials d) Solids

Q.2 A) Answer the following questions. (Any Four) **08**
1) Define the terms isotopomers and bathochromic shift.
2) State the Braggs law and explain the various terms involved in it.
3) What is the MASS? Give It's value and Where it is used?
4) Give any four advantages of FT-NMR technique.
5) Why TMS is used as internal standard in CMR, Give reason?

B) Write Notes. (Any Two) **06**
1) Particle size determination and percentage crystallinity in polymers by XRD.
2) Factors affecting on DTA curves.
3) FAB-MS technique in polymer analysis.

Q.3 A) Answer the following questions. (Any Two) **08**
1) Explain the use of UV spectroscopy for the analysis of percentage composition in styrene and butadiene in SBR rubber.
2) Describe the use of Laue's photographic method for analysis of polymers.
3) Discuss four important applications of AFM in polymer analysis.

B) Answer the following questions. (Any One) **06**
1) Expand the term DEPT; discuss the various types of DEPT techniques used for polymer analysis with suitable example.
2) Draw the schematic diagram of Pyrolysis GC-MS technique and Give the advantages and limitations of Pyrolysis GC-MS technique.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Explain the use of powder diffraction method in polymer analysis.
2) Draw the typical TGA curve for polyimide and explain the meaning of terms T_{10}, T_{max} and IPDT.
3) In brief, discuss the use of MALDI-TOF Mass Spectroscopy in polymer analysis.

B) Answer the following questions. (Any One) **04**
1) Discuss the survey of characterization technique for polymers.
2) Discuss the production of X-ray in laboratory using Coolidge X-ray tube.

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

a) Give the comparison between IR and Raman Spectroscopy and explain the application of IR technique for analysis of monomer compositions in copolymer styrene and acrylonitrile rubber.

b) How Solid state C-13 NMR technique is useful for analysis of isomeric structures of Polypropylene (PP), discuss in brief?

c) Discuss the Principle and Applications of SEM and ESCA for polymer analysis.

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Seat No.		Set	P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Inorganic Chemistry
ENVIRONMENTAL CHEMISTRY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) Industrial safety regulations were passed in the _____ after Seveso disaster.
   a) European Community b) UK Community
   c) US Community d) Paris Community

2) What was the main reason for Chernobyl accident?
   a) Tsunami b) Earth-Quake
   c) Vent Failure d) Flawed reactor design

3) Which of the following heavy toxic metal undergo biological methylation in aquatic environment?
   a) Mercury (Hg) b) Cadmium (Cd)
   c) Arsenic (As) d) Lead (Pb)

4) The degree of microbially mediated O_2 consumption in water is known as _____.
   a) COD b) DO
   c) BOD d) All of these

5) Chlorinated pesticides are most effectively analysed when one of the following detector is used in gas-chromatography:
   a) Thermal conductivity detector b) Electron capture detector
   c) Flame ionization detector d) Photomultiplier tube

6) The CFC-115 is _____.
   a) $CFCl_3$ b) CF_2Cl_2
   c) $CHClF_2$ d) C_2ClF_5

7) Hydrocarbon emissions from stationary sources can be controlled by _____.
   a) Incineration b) Condensation
   c) Adsorption & Absorption d) All

8) Which one of the following is called as Green-house gas?
   a) CO_2 b) He
   c) N_2 d) H_2

9) Drawback of West-Gaeke method for analysis of SO_2 is _____.
   a) spectroscopic method b) ill detection
   c) use of $HgCl_2$ d) None of these

10) Chemiluminescence is the standard method used for monitoring _____.
   a) NH_3 b) NOx
   c) H_2S d) All of these

11) Extreme nervous excitation is caused by _____.
a) DDT b) HCN
c) CH_3Br d) CH_2Cl_2

12) High level radioactive wastes can be incorporated into _____.
a) Borosilicate glass or ceramic matrix
b) Polycrystalline synrocks
c) both a & b
d) Steel tanks

13) In case of Minamata epidemic, the causative agent identified was _____.
a) Hg^{+} b) Hg^{2+}
c) Organomercurials d) Inorganic Mercury

14) The existence of ozone layer around the earth is mainly held responsible for filtering out _____.
a) UV radiations b) IR radiation
c) Cosmic rays d) Microwaves

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

1) Name green-house gases.
2) State the basic procedures for controlling SO_2 emission from the stationary combustion source?
3) List some factors responsible for water pollution at global level.
4) How does the radioactive pollution differ from air, water or soil pollution?
5) How the SO_4^{2-} ions are determined qualitatively and quantitatively?

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

1) Nuclear fallout
2) Ozone depletion
3) Cyclonic separator

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

1) How copper from waste water sample is separated and analyzed?
2) Describe the storage and disposal of radioactive waste.
3) What are the major sources of air pollution? Give a brief account of it.

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

1) Discuss in short the mercury pollution episode in Minamata.
2) Explain the various methods used for water softening.

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

1) How hydrocarbon emission is controlled by adsorption and condensation methods?
2) Comment on industrial water pollution.
3) Which pollutants are held responsible for the acid rain? Discuss the various chemical reactions involved in acid rain.

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

1) Which factors influence the residual characteristics of pesticides in the atmosphere?
2) Describe in short effects of water pollutants on life.

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

a) Brief the different approaches that can be used for solutions to environmental problems.
b) What are the sources of pesticide pollutants? Describe the biodegradability of pesticides and mention the methods of pesticide analysis.
c) Explain the analysis of H_2S in air and PO_4^{3-} anions in water.

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Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Physical Chemistry
SOLID STATE AND NUCLEAR CHEMISTRY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

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

1) β particle are _____.
   a) protons b) neutrons
   c) electrons d) positrons

2) Give the number of Bravais lattices are existing in cubic crystal.
   a) 1 b) 2
   c) 3 d) 4

3) _____ material is used as a clad for fuel in nuclear reactors.
   a) Aluminium b) Magnox
   c) Zirconium alloy d) All of these

4) The most ionizing radiations among the following is _____.
   a) α rays b) β rays
   c) γ rays d) neutrons

5) The _____ material is used for absorbing neutrons in a nuclear reactor.
   a) platinum b) cadmium
   c) gold d) zinc

6) _____ is India's first nuclear research reactor built in 1956.
   a) Apsara b) Dhurva
   c) Kaiga d) Kudankulam

7) In a body centered cubic lattice how many units are containing in unit cell.
   a) 2 b) 4
   c) 6 d) 1

8) Radioactive decay follows _____ order kinetics.
   a) first b) second
   c) third d) zero

9) When the layer deposition is done on an already existing substrate surface is called as _____ surface.
   a) normal b) epitaxial
   c) lateral d) vertical

10) For _____ cube, distance between successive planes are 1:1/√2: 1/√3.
   a) simple b) FCC
   c) BCC d) both a and b

11) State Bragg's equation for XRD.
   a) $n\lambda$ = d Sinθ b) $n\lambda$ = 2d Sinθ
   c) $n\lambda$ = 2d Sin$^2\theta$ d) $n\lambda$ = d Sin$^2\theta$

12) Currently nuclear power reactors supply about _____ percent of electricity in the world.
a) 5 b) 20
c) 40 d) 60

13) Which of the following material can be used as inorganic scintillators?
a) CsI(Tl) b) NaI(Tl)
c) BGO d) All of these

14) The band gap for Germanium semiconductor material is _____ eV.
a) 0.67 b) 1.12
c) 2.96 d) 3.79

Q.2 A) Answer the following questions. (Any Four) **08**
1) Name any two fissionable nuclei.
2) Define unit cell and crystal lattice.
3) Define Weiss indice and Miller indice.
4) What do you mean by anisotropic crystal?
5) Give the basis of nuclear radiation detection methods.

B) Write notes. (Any Two) **06**
1) Molecular solids
2) Organic scintillators
3) Factors affecting the rate of solid state reactions.

Q.3 A) Answer the following questions. (Any Two) **08**
1) How co-precipitation method is used in preparation of nanomaterials?
2) Discuss sintering process.
3) Explain the method for growth of single crystal from melt.

B) Answer the following questions. (Any One) **06**
1) What is crystal defect? Discuss stoichiometric crystal defects.
2) Explain Bragg's X-ray diffraction method used in elucidation of crystal structure.

Q.4 A) Answer the following questions. (Any Two) **10**
1) Discuss Geiger Muller counter.
2) Discuss kinetics of solid state reactions.
3) Write on pressurized heavy water reactor.

B) Answer the following questions. (Any One) **04**
1) State laws of crystallography.
2) Write on critical size of a thermal reactor.

Q.5 Answer the following questions. (Any Two) **14**
a) Discuss applications of nanomaterials for various devices.
b) Explain the method of determination of structure of naphthalene by electron density map.
c) What are neutron detectors? Write on their applications.

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Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Analytical Chemistry
ANALYTICAL SPECTROSCOPY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

Instructions: 1) All questions are compulsory.
2) Figures to the right indicate full marks.
3) Use of logarithmic table and calculator is allowed.
4) Draw neat and labeled diagram and give equations wherever necessary.

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

1) The intensity of Raman band is proportional to square of change in _____.
   a) dipole moment b) polarizability
   c) magnetic moment d) energy

2) In NQR, 'η' is a measure of _____.
   a) symmetry of EFG b) non symmetry of EFG
   c) spins d) couplings

3) The elements which do not produce Auger electron spectra is _____.
   a) Carbon b) Nitrogen
   c) Halogens d) Helium

4) In ESR, for two equivalent protons, the number of lines are _____.
   a) 2n b) 2nI
   c) 2nI+1 d) $2n^2$

5) The molecule will be Raman active only when the polarizability of the molecule changes with the _____.
   a) rotational mode b) vibrational mode
   c) translation mode d) electronic mode

6) Isomer shift in Mössbauer spectroscopy is also known as _____.
   a) environment shift b) chemical shift
   c) nuclear shift d) volume shift

7) Analysis of surfaces can be achived by _____.
   a) ESCA b) NQR
   c) ESR d) NMR

8) A Klystron in ESR generates _____ radiations.
   a) radiowaves b) IR
   c) microwave d) X-ray

9) Raman spectroscopic measurement is usually carried in the range _____.
   a) 10-200nm b) 200-400nm
   c) 700-800nm d) 400-700nm

10) Mössbauer spectroscopy is due to the absorption of _____.
   a) irradiations b) gamma ray radiations
   c) x-ray radiations d) cosmic radiations

11) The best detector used in PAS is _____.
   a) condensor microphone b) piezoelectric transducer
   c) photomultiplier tube d) multiplier

12) Which of the following is used in electron microscope?
   a) magnetic fields
   b) light waves
   c) electron beams and magnetic fields
   d) electron beams

13) Raman lines on the low frequency side of excitation frequency are called _____.
   a) stokes lines
   b) anti stokes lines
   c) rayleigh lines
   d) frequency lines

14) Photoacoustic spectroscopy is also called _____ spectroscopy.
   a) photovoltic
   b) macroscopic
   c) microscopic
   d) optoacoustic

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

1) What type of molecules gives pure rotational Raman lines? Give their examples.
2) Give any two essential characteristics which a nuclide should have for exhibiting Mössbauer effect?
3) Give any two types of photoelectron spectroscopy.
4) How will you differ Electron Spin Resonance spectroscopy from Nuclear Magnetic Resonance spectroscopy?
5) What do you mean by ELDOR and ENDOR in ESR spectroscopy?

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

1) Difference between normal and resonance Raman spectrum
2) Photoelectron spectrum
3) Classification of electron microscopy methods

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

1) Explain the principle of Raman effect.
2) Discuss the structural information obtained by NQR spectra in group (III) halides.
3) Calculate the ESR frequency in magnetic field of 25000G. (Given, g = 2, h = 6.627×10^{-34} Js and $\beta = 9.274 \times 10^{-24}$ JT^{-1}).

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

1) Explain the splitting of NQR spectra in nucleus having spin I = 2 and show the observed NQR transitions.
2) Give the basic principle and working of Atomic Force Microscopy.

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

1) Discuss the applications of resonance Raman spectroscopy.
2) Give the chemical and surface applications of photoacoustic spectroscopy.
3) Predict the ESR spectrum of $\bullet NH_2$ radical and explain the behavior.

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

1) The compound $K_4[Fe(CN)_6]\cdot 3H_2O$ gives single line Mössbauer spectrum with no quadrupole splitting, Explain.
2) How will you compare electron microscopy with electron spectroscopy?

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

1) Discuss the instrumentation of Raman spectroscopy.
2) What is prolate and oblate nuclus in NQR? Enumerate NQR frequencies for nucleus with I = 3/2 in an axially symmetric EFG (η=0).
3) Discuss the basic principle and instrumentation of ESCA

SLR-JY-53

Seat No.	

Set P

M.A. (Semester - III) (CBCS) Examination Oct/Nov-2019
Economics (Campus)
HUMAN DEVELOPMENT

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) National Rural Health Mission launched in _____.
   a) 2000 b) 2004
   c) 2005 d) 2006

2) Human Resource Development Concept is first introduced by _____.
   a) M. M. Khan b) T. V. Rao
   c) Leonard Nadler d) K. C. Gupta

3) _____ is a component of political security.
   a) Diplomacy b) Negotiation
   c) Govt. intervention d) All of these

4) PQLI measures to _____.
   a) Life expectancy index b) infant mortality
   c) literacy rate d) All of the these

5) _____ is indicators of Human Development.
   a) Health b) Education
   c) Quality d) A and B

6) _____ is social determinants of Human capital.
   a) Gross Enrollment ratio b) Assets
   c) Income d) All of these

7) _____ is an important distinction of Amartya Sen's capabilities approach.
   a) Functioning b) Religions
   c) Safety d) None of these

8) The first human development report was published in _____.
   a) 1988 b) 1990
   c) 1996 d) 1998

9) Martha Craven Nussbaum is a _____ philosopher.
   a) Russian b) American
   c) Indian d) African

10) According to David Clark _____ is a other attempt of capability Approach.
   a) Jobs b) Housing
   c) Education d) All of these

11) Jeevandayi Aarogya Yojna is scheme of _____.
   a) Local Government b) State Government
   c) Central Government d) None of these

12) _____ is Child education development Program.
   a) National Resource Human Management
   b) Mid day meal
   c) Navasanjivani
   d) None of these

13) _____ is developed PQLI.
   a) D. Morris
   b) Amartey Sen
   c) Martha Nussbaum
   d) None of these

14) UNDP means _____.
   a) United Nation Development Program
   b) Universal Nation Development Program
   c) United Nation Draught Program
   d) None of these

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

a) What is the meaning of Quality of Life?
b) Define the Human Development.
c) What is the meaning of personal security?
d) How measure the human development?
e) What is the meaning of Livelihood security?
f) What are the economic determinants of human capital?

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

a) Explain the community security.
b) Which reasons are respondent for decline food grains?
c) Explain physical quality of life index.
d) Discuss the importance of National Rural Health Mission.

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

a) Elaborate Marshall Utility of a Commodity approach
b) Elaborate food security in detail

Q.5 Differences between Human Resource Development and Human Development **14**

SLR-JY-55

Seat No.	

Set P

M.A. (Semester - III) (CBCS) Examination Oct/Nov-2019
A.I.H.C & A.
INTRODUCTION TO MUSEOLOGY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) Royal Asiatic Society of Bengal was established at _____ in 1784C.E.
   a) Kolkata b) Mumbai
   c) Delhi d) Chennai

2) _____ is more useful for obtaining light for museum.
   a) Spot light b) Focused light
   c) Fluorescent tube light d) Micro bulb

3) National Museum is famous for its _____ Gallery.
   a) Harrapan b) Paintings
   c) Prehistoric d) Sculptural

4) 'A museum is a non-profit making, permanent institution in the society' this definition given by _____.
   a) Museum Association (UK) b) UNESCO
   c) ICOM d) Bhartiya Sanskriti Kosh

5) Museum publications can be purchased at _____.
   a) Ground floor b) Museum campus
   c) First floor d) Library

6) In _____ of the following sources the Goddesses of Intelligence and arts called as muses.
   a) Indian Puranas b) Greek Puranas
   c) Bible d) Buddhist Literature

7) Royal Asiatic Society of Bengal was established at Kolkata by _____.
   a) James Princep b) John Marshall
   c) William Johnes d) Alexander Cunningham

8) Salarjung Museum is located at _____.
   a) Bangalore b) Bhopal
   c) Hyderabad d) Raipur

9) _____ was established in 1814.
   a) Vijaypur Museum b) Ray Museum
   c) Indian Museum d) Sanchi Museum

10) _____ factor of light is harmful to the museum objects.
   a) Dark light b) Ultra violet rays
   c) Dim light d) Colorful light

11) All museum objects can be divided chemically into broad categories of _____.
   a) Organic & Composite
   b) Organic & Inorganic
   c) Inorganic & Scientific
   d) Scientific & Organic

12) Special attention is necessary for _____ in the museum.
   a) Masterpieces
   b) Manuscripts
   c) Ivory objects
   d) Stone

13) _____ objects can be kept outside the museum.
   a) Metal
   b) Stone
   c) Wooden
   d) Glass

14) _____ is known as first site museum.
   a) Sarnath museum
   b) Nalanda museum
   c) Sanchi museum
   d) Lothal museum

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

1) Museum Administrative units
2) Tribal Gallery in IGRMS Museum
3) Various definitions of museum
4) Display techniques of object
5) Security of museum
6) Exchange method of Acquisition

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

1) Discuss the educational importance of museum.
2) Write about Sculptural Gallery of CSMV museum.
3) Describe the types of Museum.
4) Natural & artificial lighting system in museum.

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

Write in detail about various methods of preservation of archaeological objects.

OR

Elaborate the scope, history & development of museums in India.

Q.5 Write an essay on National Museum, Delhi.

SLR-JY-57

Seat No.	

Set P

M.A. (Semester - III) (CBCS) Examination Oct/Nov-2019
Rural Development
HUMAN DEVELOPMENT: CONCEPTS AND MEASUREMENTS

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) _____ is a important component of human development.
   a) Empowerment b) Assets
   c) Income d) None of these

2) _____ is a component of NRHM.
   a) Janani Suraksha Yojna b) Family Welfare Programme
   c) Both of them d) None of these

3) YLL+ YLD= _____.
   a) PQLI b) DALY
   c) GEM d) GDI

4) _____ is Child education development Programme.
   a) National resource Human Management
   b) Navasanjivani
   c) Mid day meal
   d) none of these

5) _____ is an important distinction of Amartya Sen's capabilities approach.
   a) Functioning b) Religions
   c) Safety d) None of these

6) National Rural Health Mission is launched in _____.
   a) 1990 b) 1995
   c) 2000 d) 2005

7) _____ is about the stability of the social order.
   a) Political security b) Economic security
   c) Environment security d) All of these

8) _____ is factor of Quality of Life.
   a) Psychological factor b) Family factor
   c) Spiritual factor d) All of these

9) Human Resource Development Concept is first introduced by _____.
   a) M. M. Khan b) T. V. Rao
   c) Leonard Nadler d) K. C. Gupta

10) Prof. Martha Nussbaum introduced _____ central capabilities.
   a) 5 b) 10
   c) 15 d) 20

11) HRS means _____
   a) Human Resource System b) Human Research System
   c) Human Resource Scheme d) None of these

12) According to Marshall Utility of a commodity is _____.
   a) Realistic b) Quantifiable
   c) Experienced d) All of these

13) Disability Adjusted Life Year is developed in _____.
   a) 1970 b) 1980
   c) 1990 d) 2009

14) Significance of Human Development is _____.
   a) Process of Economic Growth b) Develop the ability values
   c) Creating necessary skill d) All of these

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

a) What is the meaning of human development?
b) What is the meaning of economic security?
c) What is the meaning of human poverty index?
d) Why Human Development Index is important?
e) What are the criteria for selecting capabilities?
f) What is the meaning of human capital formation?

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

a) What are the components of quality of life?
b) National Rural Health Mission is important how?
c) What is the social determinant s of Human capital?
d) Which are the protective factors of Personal Security?

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

a) Elaborate Marshall Utility of a Commodity approach.

OR

b) Explain Amartya Sen's capability approach.

Q.5 Distinction between Human Resource Development and Human Development. **14**

SLR-JY-60

Seat No.	

Set P

M.A. (Semester - III) (CBCS) Examination Oct/Nov-2019
Mass Communication
FILM STUDIES

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) ––– हा चित्रपट ऑस्करशी संबंधित आहे.
अ) श्वास ब) मदर इंडिया
क) दोन्ही अ आणि ब ड) यापैकी नाही

2) ––– हा चित्रपट समीक्षेचा घटक आहे.
अ) संगीत ब) कथा
क) रेटिंग ड) यापैकी सर्व

3) अकिरा कुरोसवा हे ––– भाषेत चित्रपट बनवितात.
अ) तमिळ ब) रशियन
क) चीनी ड) यापैकी नाही

4) मजीद माजिदी हे ––– भाषेत चित्रपट बनवितात.
अ) तमिळ ब) रशियन
क) चीनी ड) यापैकी नाही

5) भारतीय चित्रपट विकास महामंडळाची स्थापना ––– साली झाली.
अ) इ.स. 1975 ब) इ.स. 1985
क) इ.स. 1995 ड) यापैकी नाही

6) ––– हा पहिला भारतीय चित्रपट आहे.
अ) लंका दहन ब) राजा हरिश्चंद्र
क) अयोध्येचा राजा ड) यापैकी नाही

7) ––– हा चित्रपट कल्पनारम्य चित्रपटाचे उदाहरण आहे.
अ) रा. वन ब) रॉक स्टार
क) रंग दे बसंती ड) यापैकी नाही

8) ––– हे सिल्वर जुब्ली मॅन म्हणून ओळखले जातात.
अ) दादासाहेब फाळके ब) दादा कोंडके
क) भालजी पेंढारकर ड) यापैकी नाही

9) स्टीवन स्पीलबर्ग हे ––– चे रहिवासी आहेत.
अ) यु. के ब) यु. ए. ई
क) यु. एस ड) यापैकी नाही

10) प्यासा चित्रपटाचे दिग्दर्शन ––– यांनी केले आहे.
अ) गुरू दत्त ब) व्ही. शांताराम
क) सत्यजित रे ड) यापैकी नाही

11) ––– चित्रपटाचे दिग्दर्शन जब्बार पटेल यांनी केले आहे.
अ) डॉ. बाबासाहेब आंबेडकर ब) अनकही
क) गांधी ड) यापैकी नाही

12) ––– हे प्रसिद्ध नृत्य दिग्ददर्शक आहेत.
अ) सरोज खान ब) शंकर जयकिशन
क) हसरत जयपुरी ड) यापैकी सर्व

13) उंबरठा चित्रपटात ––– ही अभिनेत्री प्रमुख नायिकेच्या भूमिकेत आहे.
अ) स्मिता पाटील ब) दीप्ती नवल
क) अश्विनी भावे ड) यापैकी नाही

14) एफ. टी. आय. ची स्थापना ––– साली झाली.
अ) इ.स. 1960 ब) इ.स. 1970
क) इ.स. 1980 ड) यापैकी नाही

प्र.2 खालीलपैकी कोणत्याही चार प्रश्नांची उत्तरे लिहा. **16**

1) मजीद माजिदी यांच्यावरती संक्षिप्त टिप लिहा.
2) चित्रपटात पार्श्वसंगीताचे महत्त्व काय आहे?
3) मराठी चित्रपटा या विषयी लिहा.
4) चित्रपटांचा तरूणांवरती होणाऱ्या प्रभावाची चर्चा करा.
5) गुरू दत्त यांच्यावरती संक्षिप्त टिप लिहा.
6) दिग्दर्शकाचे महत्त्व लिहा.

प्र.3 खालीलपैकी कोणत्याही दोन प्रश्नांची उत्तरे लिहा. **12**

1) फिल्म अँड टेलिव्हिजन इनस्टिटयूट ऑफ इंडिया – यावरती लिहा.
2) रंगांचे चित्रपटातील महत्त्व काय आहे?
3) मणिरात्म यांच्यावरती टिप लिहा.
4) दादा कोंडकेंच्या चित्रपटांची वैशिष्टये कोणती आहेत?

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

चित्रपटांचे विविध प्रकार कोणते आहेत? उदाहरणे द्या.

किंवा

वॉल्ट डिस्ने यांचे आयुष्य आणि कारकीर्द यावरती चर्चा करा.

प्र.5 चित्रपट निर्मितीचे विविध टप्पे कोणते आहेत? **14**

SLR-JY-60

Seat No.	

Set P

M.A. (Semester - III) (CBCS) Examination Oct/Nov-2019
Mass Communication
FILM STUDIES

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) _____ film associated with Oscar.
   a) Shwaas b) Mother India
   c) Both a and b d) None of these

2) _____ is an element of film review.
   a) Music b) Story
   c) Rating d) All of these

3) Akira Kurosawa makes movies in _____ language
   a) Tamil b) Russian
   c) Chinese d) None of these

4) Majid Majidi makes movies in _____ language.
   a) Tamil b) Russian
   c) Chinese d) None of these

5) Indian Film Development Corporation was established in _____.
   a) 1975 b) 1985
   c) 1995 d) None of these

6) _____ film is a first Indian movie.
   a) Lanka Dahan b) Raja Harishchandra
   c) Ayodhyecha Raja d) None of these

7) _____ movie is the example of fiction movie.
   a) Ra.One b) Rock Star
   c) Rang De Basanti d) None of these

8) _____ is known as the silver jubilee man.
   a) Dadasaheb Falake b) Dada Kondake
   c) Bhalaji Pendharkar d) None of these

9) Steven Spielberg is from _____.
   a) U. K. b) U. A. E.
   c) U. S. d) None of these

10) Pyasa movie is directed by _____.
   a) Guru Datt b) V. Shantaram
   c) Satyajit Ray d) None of these

11) _____ film directed by Jabbar Patel.
   a) Dr. Babasaheb Amedkar b) Ankahee
   c) Gandhi d) None of these

12) _____ is the famous music director.
a) Saroj Khan b) Shaker Jaikishan
c) Hasarat Jaipuri d) All of these

13) _____ actress is main lead in an Umbaratha film.
a) Smita Patil b) Deepti Naval
c) Ashwini Bhave d) None of these

14) FTI was established in _____.
a) 1960 b) 1970
c) 1980 d) None of these

Q.2 Answer the following questions. (Any Four) **16**

a) Write short note on 'Majid Majidi'.
b) What is significance of background music in film?
c) Write on topic 'Marathi Films'.
d) Discuss the impact of cinema on youth.
e) Write short note on 'Guru Datta'.
f) Write down importance of director.

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

a) Write on Film and Television Institute of India.
b) What are the importance of colour in cinema?
c) Write note on the topic 'Maniratnam'
d) What are the characteristics of Dada Kondake's cinema?

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

What are the various genres of films? Give Examples.

OR

Discuss the life and career of 'Walt Disney'.

Q.5 What are the phases of film making? **14**

SLR-JY-64

Seat No.	

Set P

M.C.A. (Semester - III) (CBCS) Examination Oct/Nov-2019
Science
FUNDAMENTALS OF WEB DESIGNING

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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 year in which HTML was first proposed _____.
   a) 1990 b) 1980
   c) 2000 d) 1995

2) Fundamental HTML Block is known as _____.
   a) HTML Body b) HTML Tag
   c) HTML Attribute d) HTML Element

3) Apart from <b> tag, what other tag makes text bold?
   a) <fat> b)
   c) <black> d) <emp>

4) What is the full form of HTML?
   a) HyperText Markup Language b) Hyper Teach Markup Language
   c) Hyper Tech Markup Language d) None of these

5) Who is Known as the father of World Wide Web (WWW)?
   a) Robert Cailliau b) Tim Thompson
   c) Charles Darwin d) Tim Berners-Lee

6) What should be the first tag in any HTML document?
   a) <head> b) <title>
   c) <html> d) <document>

7) HTML web pages can be read and rendered by _____.
   a) Compiler b) Server
   c) Web Browser d) Interpreter

8) Which of the following is not a browser?
   a) Microsofts Bing b) Netscape Navigator
   c) Mozilla Firefox d) Opera

9) Which HTML tag produces the biggest heading?
   a) <h7> b) <h9>
   c) <h4> d) <h1>

10) HTML tags are surrounded by which type of brackets.
   a) Curly b) Round
   c) Squart d) Angle

11) Tags and test that are not directly displayed on the page are written in _____ section.
   a) <head> b) <title>
   c) <body> d) <html>

12) The first page of a website is called?
a) Design page b) Home page
c) First page d) Main page

13) The version of HTML is _____.
a) HTML0 b) HTML1
c) HTML 2 d) All of these

14) How many Heading Tags?
a) 3 b) 4
c) 5 d) 6

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

1) Google Search
2) Explain <label>
3) <HR> in HTML
4) Use of <caption>
5) <big> in HTML

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

1) Explain tag
   a) <b>
   b) <sub>
   c) <p>
2) Brief history of internet.
3) What is google site?

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

1) How to create google form? Discuss.
2) How to create unordered list in HTML? Explain with example.
3) How to use font tag? Explain its attribute with suitable example.

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

1) Explain attributes of table tags with example.
2) Explain five golden rules of web.

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

1) Explain the <frame> tag and its attribute with example.
2) What is WWW? Why create website.
3) How to insert image on web page? Explain its attributes with example.

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

1) Explain Google slides
2) Write brief note <fieldset>and <input>tag.

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

1) Create following table in HTML.

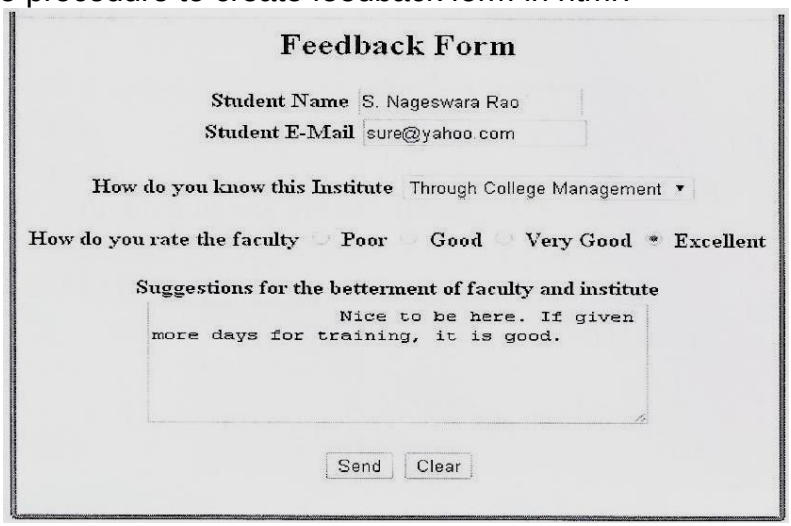
Shortlisted Student Information for CR.

Sr. No.	Name of Student	Class	Year
1)	Ramesh Yadhav	FY BA	2017
2)	Nasurddhin Kazi	TY BA	2014
3)	Supriya B. Sane	BE	2013

2) Create following Home page in HTML using frameset.

<table>
<tr><td>College LOGO</td><td>Welcome to Janta School of Science, Mumbai
Esst. 1987 ISO:478956-456/2014</td></tr>
<tr><td rowspan="2">About School
Mission and Vision
College admission
Forms
Contacts</td><td>About school
Information goes here……</td></tr>
<tr><td>Developed and maintenance by: Shri PVT. LTD, Latur</td></tr>
</table>

3) What is the procedure to create feedback form in html?



SLR-JY-66

Seat No.	

Set P

M.Sc. (Semester – III) (CBCS) Examination Oct/Nov-2019
Pharmaceutical Chemistry
MEDICINAL CHEMISTRY - I

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) Amount of the drug reached to systemic circulation is called as _____.
   a) absorption b) concentration
   c) bioavailability d) metabolism

2) COX I and COX II inhibitors are contraindicated in _____.
   a) Pregnancy b) renal ischemia
   c) cardiac ischemia d) hypocalcaemia

3) Aspirin has highest selectivity towards the _____.
   a) COX I b) COX II
   c) Prostaglandins d) archidonic acid

4) Which of the following drug is selective cox II inhibitor?
   a) aspirin b) rofecoxib
   c) amlodipine d) Dichlorophenac

5) The drug whose action affected by interaction called as _____.
   a) prodrug b) subject drug
   c) object drug d) parent drug

6) Antibiotics increases the bioavailability of digoxin includes which type of interaction _____.
   a) Food- Drug interaction b) Distribution interaction
   c) absorption interaction d) pharmacokinetic interaction

7) Which of the following drug's metabolism is affected by smoking?
   a) Diazepam b) Quinine
   c) Dapsone d) Theophylline

8) DDT was discovered by _____.
   a) Dr. Paul Muller b) J. J. Thomson
   c) Alexander Flaming d) Dr. k. Johns

9) Which of the following antimalarial agent has chiral center in its structure?
   a) Chloroquine b) Quinine
   c) Primaquine d) Cinchona alkaloids

10) Sulfonamides coming out of solution in urine causes _____.
   a) Crystaluria b) renal ischemia
   c) Nephritis d) kidney failure

11) Which of the following anti-TB agent shows gastrointestinal intolerance common side effect?
   a) Isoniazid b) Ethambutol
   c) Ethionamide d) Nicotinic acid

12) Diazepam is metabolized to nordiazepam by _____.
a) CYP2C10 b) CYP3C2
c) CYP2C19 d) CYP2C13

13) Many sedatives and hypnotics are contraindicated in _____.
a) Heart Disease b) Hyperglycemia
c) Insomnia d) Pregnancy

14) Agents which decrease pharmacological action of another drug called as _____.
a) agonists b) competitive inhibitor
c) antagonist d) toxin

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

1) Classify anti-inflammatory drugs.
2) Define the following terms:-
   i) Prodrug
   ii) Agonist
3) Write reaction and principle involved in synthesis of paracetamol.
4) Explain food drug interactions with example.
5) Explain blood brain barrier.

Q.2 B) Write Notes. (Any Two) **06**

1) Mechanism action of sulfonamides
2) Synthesis of Isoniazid
3) SAR of diazepam

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

1) Give chemical classification of analgesic drugs and discuss SAR.
2) Write down chemical structures of following drugs.
   i) Chloroquiune
   ii) Sulfisoxazole
   iii) Phenytoin
   iv) Paracetamol
3) Give synthetic pathway for Phenytoin.

Q.3 B) Answer the following questions. (Any One) **06**

1) Discuss etiology of malaria and give synthesis of Chloroquine and Quinacrine.
2) Classify sedative and hypnotics and discuss SAR with suitable structure.

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

1) Give synthesis of metronidazole and idoquinol.
2) Give chemical classification of anticonvulsant agents and explain types of seizures.
3) Give synthesis of nitrofurazone and explain SAR of anti-infective agents.

Q.4 B) Answer the following questions. (Any One) **04**

1) Write down synthesis of ibuprofen and celecoxib.
2) Give SAR of anti TB agents with suitable example.

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

a) Explain drug interaction and its types with suitable examples.
b) Enlist, explain physicochemical properties of drug and give its importance.
c) Classify antileprotic drugs; give its mechanism of action and SAR with structure.

SLR-JY-68

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Physics (Solid State) & (Nano Physics)
ENERGY HARVESTING DEVICES

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) Pseudocapacitor is also called _____ capacitor.
   a) bulk b) hybrid
   c) non-crystal d) crystal

2) The DSSCs stands for _____.
   a) Dye synthesis solar cells
   b) Dye sensitized super capacitor cells
   c) Dye sensitized solar cells
   d) Dye synthesis super capacitor cells

3) Lithium battery is come into _____ type batteries.
   a) secondary b) primary
   c) non-rechargeable d) none of above

4) Solar cell _____ refers to the portion of energy in the form of sunlight that can be converted via cells into electricity.
   a) fill factor b) open circuit voltage
   c) short circuit current d) efficiency

5) Short circuit current increase with _____ in band gap energy.
   a) increase
   b) decrease
   c) sometime increase and decrease
   d) does not change

6) Leclanche cell and Daniel cell are an example of _____.
   a) both dry cell b) both wet cell
   c) dry cell, wet cell d) wet cell, dry cell

7) In battery cell, the current flows in outer circuit from _____.
   a) Positive to negative terminal and electrons form negative to positive
   b) Positive to negative terminal and electrons form positive to negative
   c) Negative to positive to terminal and electrons form negative to positive
   d) Negative to positive to terminal and electrons form positive to negative

8) The positive plates of nickel iron cell is made up of _____.
   a) Nickel hydroxide b) Lead peroxide
   c) Ferrous hydroxide d) Potassium hydroxide

9) Cells are connected in series in order to _____.
   a) increase the current rating
   b) increase the voltage rating
   c) increase the life of cells
   d) none of the above

10) The region where the electrons and holes diffused across the junction is called _____.
   a) Depletion Junction
   b) Depletion region
   c) Depletion space
   d) Depletion boundary

11) DSSCs are made from _____ organic dye.
   a) Aniline
   b) Safranine
   c) Indulined
   d) Ruthium melallo

12) _____ is a direct band gap material.
   a) Copper Gallium Telluride
   b) Copper Selenide
   c) Copper Indium Gallium Selenide
   d) Copper Iridium Gallium Diselenide

13) Polymer solar cell, also named _____.
   a) Crystal solar cell
   b) Plastic solar cell
   c) Rubber solar cell
   d) DSSCs

14) First solar cell was invented by _____.
   a) George Fritts
   b) Jefferson Fritts
   c) Charles Fritts
   d) Fornster Fritts

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

1) What is the range of wavelengths of electromagnetic spectrum that falls in visible spectrum?
2) How are metals, insulators and semiconductors classified?
3) What is the concept of carrier injection?
4) Define the primary type's batteries.
5) What is super capacitor?

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

1) Polymer solar cell
2) Pseodo capacitor
3) Ni/Cd battery

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

1) Why is a P-N junction required for the operation of a solar cell?
2) Discuss any four parameters of battery.
3) Explain the terms energy density and power density.

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

1) Write notes on lead-acid battery.
2) What are the advantages and disadvantages of polymeric material in solar cells?

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

1) What is the upper limit for short circuit current, open circuit voltage and FF of a single junction solar cell?
2) Explain impedance plat of pseudo-capacitor.
3) Discuss the similarities and dissimilarities between super capacitor and battery.

Q.4 B) Answer the following questions.(Any One) **04**

1) What are the solar cell parameters? Define the *Ise, Voc, FF and* efficiency of solar cells.
2) What is the double layer capacitor? Explain with an example.

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

a) Drew and discuss Regon plat.
b) Drew labeled diagram and explain working of lithium battery.
c) Enlist and explain the different losses in solar cells.

SLR-JY-68-RE

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Physics (Solid State) & (Nano Physics)
ENERGY HARVESTING DEVICES

Day & Date: Thursday, 21-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) The maximum voltage across the terminals at P-side and N-side are _____ that flows in a solar cell.
   a) Connected to a load b) Short circuited
   c) Kept open d) None of these

2) The efficiency of the solar cell device η _____.
   a) $V_m l_m / p_{rad}$ b) $V_{oc} l_{sc} / p_{rad}$
   c) $V_m l_m FF / p_{rad}$ d) $p_{rad} / V_m l_m$

3) The ratio $V_m l_m / V_{oc} l_{sc}$ is _____ of the solar cell.
   a) Absorption coefficient b) Efficiency
   c) Fill Factor d) $V_{oc} l_{sc} / V_m l_m$

4) The band gap of the CdS material is _____.
   a) 3.2 eV b) 1.12 eV
   c) 0.66 eV d) 2.45 eV

5) Which of the following highest power density value?
   a) Capacitor b) Battery
   c) Supercapacitor d) None of these

6) The standard emf of the hydrogen-oxygen fuel cell is _____.
   a) 1.23 V b) 2.54 V
   c) 3.96 V d) 0.58 V

7) Hybrid capacitor electrodes contains _____ as the electrode materials.
   a) Metal oxide b) Carbon
   c) Combination of a and b d) None of these

8) _____ and suitable catalyst are required to promote high rate of electrode processes in fuel cell.
   a) Lower temperature b) Higher temperature
   c) Moderate temperature d) Very low temperature

9) A stable interface between solid _____ liquid _____ and gaseous _____ promotes high rate of electrode processes.
   a) Fuel, electrolyte, electrode b) Electrode, fuel, electrolyte
   c) Electrode, electrolyte, fuel d) Fuel, electrode, electrolyte

10) The average amount of time a carrier spends in the excited state before recombining is known as _____.
   a) The lifetime of carrier b) time of excitation
   c) Time of ejection d) time of absorption

11) Band gap of $CuInS_2$ material is _____ eV.
a) 0.36 b) 3.2
c) 1.5 d) 2.8

12) In intrinsic semiconductor the Fermi energy level is _____.
a) Near the conduction band b) Near the valance band
c) At the center d) Not available

13) For a thin film solar cell material the semiconductor material should have _____.
a) a band gap between 1 eV to 1.5 eV
b) high absorption coefficient of the material
c) low recombination rate of generated charge carriers
d) All of these

14) The thin film solar cell technologies have potential to bring down the module cost to a level of _____ $/W
a) 1 b) 5
c) 10 d) 50

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

1) What is the role of buffer layer and window layer in CdTe and CIGS solar cells? What are the materials used for the buffer layer and window layer?
2) Draw the tree diagram for different routes of Si usage in solar photovoltaics.
3) Write a note on materials for thin film solar cell technology.
4) Differentiate between batteries and supercapacitors.
5) Explain the piezoelectric effect.

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

1) Explain the substrate and Superstrate solar cell configuration used for the thin film technologies.
2) Give the details of the supercapacitor characterizations to determine specific capacitance, energy density and power density.
3) Describe the applications of fuel cells.

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

1) Explain the principle and working of photoelectrochemical cell
2) Explain the charge storage mechanism and materials involved in the pseudocapacitors.
3) Describe the construction and working of the proton exchange membrane fuel cell.

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

1) Explain about the hybrid supercapacitors and describe the symmetric and asymmetric Supercapacitor configurations.
2) Give the key material properties and describe solar cell structure based on the CIGS based solar cells.

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

1) What is photovoltaic effect? Describe the principle of solar energy conversion.
2) Give an account on the recent status of the carbon based supercapacitors
3) Discuss the construction and working of the phosphoric acid fuel cell.

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

1) Write a note on single crystal piezoelectric materials.
2) Describe the solar cell structure of multijunction solar cell.

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

1) Explain the working operation of the solar cell and derive the IV equation of solar cell.

2) Give the advantages of thin film technologies in view of thin film solar cell technologies.

3) Describe the various applications supercapacitors.

SLR-JY-7

Seat No.	

Set P

M.Sc. (Semester – III) (CBCS) Examination Oct/Nov-2019
Organic Chemistry
DRUGS AND HETEROCYCLES

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 PM

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

Q.1 A) Fill in the blanks by choosing the correct alternatives given below: **07**

1) The first penicillin that was widely used is benzyl penicillin is also called _____.
   a) Ampicillin b) Amoxicillin
   c) Penicillin - G d) Penicillin - V

2) Tetracycline being active orally and affecting a broad range of micro organisms, hence are called _____.
   a) Chlortetracycline b) Oxytetracycline
   c) Broad spectrum antibiotics d) Terramycin

3) The drugs which are used to relives pain without the loss of consciousness are known as _____.
   a) Anti - Inflammatory b) Analgesic
   c) Antipyretics d) Anaesthetics

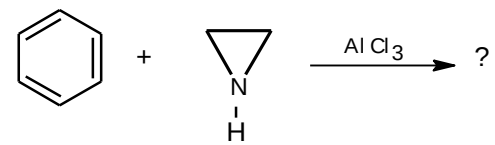
4) Which is the following drug is Non-steroidal Anti-inflammatory Drugs?
   a) Aminopyrine b) Ibu-Profen
   c) Ethambutol d) Phenobarbitone

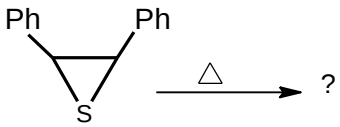
5) The general anaesthetic drug (volatile) is _____.
   a) Thiopental b) Nitrous oxide
   c) Diethyl ether d) Both b and c

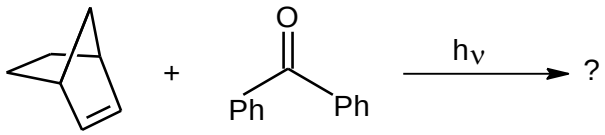
6) The INH drug is used as _____.
   a) Anti – Tubercular b) Anti – Inflammatory
   c) Antipyretics d) Antihistamine

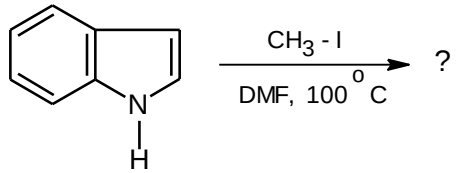
7) The naturally occurring analgesic alkaloid drug is _____.
   a) Hydromorphone b) Morphine
   c) Meperidine d) Methadone

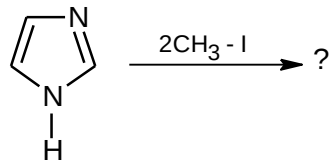
B) Predict the product(s) in the following reactions. **07**

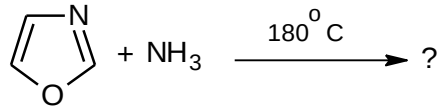
1) 

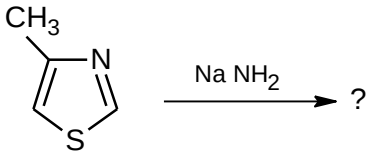
2) 

3) 

4) 

5) 

6) 

7) 

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

1) What are antibiotics? Give the synthesis of Ampiciline.
2) Give the synthesis of Isoniazide and its applications.
3) What are Analgesic and Antipyretics? Give the synthesis of paracetamol.
4) What are NSAID? Give the synthesis of Indomethacin.
5) What are Local anesthetics? Give the synthesis of Lignocaine.

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

1) Mechanism of action of the Local Anesthetics drugs
2) Benadryl
3) Dapsone

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

1) Explain the synthesis and Mechanism of action of phenacetin.
2) Give the synthesis of Trimethoprim.
3) Explain the various synthetic methods, uses and adverse effects of Ampicillin.

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

1) Life cycle of plasmodium malarial parasites.
2) What are cardiovascular drugs? Give the synthesis of Atenolol cardiovascular drug.

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

1) Synthesis and chemical reactions of Indole.
2) Synthesis and chemical reactions of Imidazole.
3) Give the synthetic methods of coumarin and chromones.

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

1) Give the synthesis of aziridine by using nitrene and ylides.
2) Synthesis of benzofuran from coumarin. What is the action of following on benzofuran?
   i) Cl_2/ CS_2 ii) DMF/$POCl_3$ iii) AC_2O

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

a) Synthesis and chemical properties of Quinolines.
b) Synthesis and chemical reactions of Purins.
c) Synthesis and chemical reactions of Triazines.

SLR-JY-9

Seat No.	

Set P

M.Sc. (Semester - III) (CBCS) Examination Oct/Nov-2019
Environmental Sciences
RESEARCH METHODOLOGY

Day & Date: Saturday, 16-11-2019 Max. Marks: 70
Time: 03:00 PM To 05:30 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) Generally a scientist's observations related to experiment and testing are based on _____.
   a) Scientific principle b) House hold rules
   c) Self imagination d) Self experience

2) Information acquired by experience or experimentation is called as _____.
   a) Scientific evidences b) Scientific
   c) Facts d) Empirical

3) Which of the following is not a characteristic of a research?
   a) Irrelevant data collection b) Irrelevant data analysis
   c) Irrelevant conclusion d) All the above

4) _____ was the proponent of deductive method.
   a) Aristotle b) Christian Huygenes
   c) Francis Bacon d) Issac Newton

5) The reasoning that uses general principle to predict specific results is called _____.
   a) Inductive b) Deductive
   c) Both a and b d) Hypothetico-deductive

6) The reasoning that uses specific observations to construct general principles is _____.
   a) Inductive b) Deductive
   c) Both a and b d) Hypothetico-deductive

7) The control in survey method is required _____.
   a) To a great extent b) To a less extent
   c) To a normal extent d) Not at all

8) The method that starts with formulation of hypothesis and testing of hypothesis in sequential steps where deduction applied is _____.
   a) Inductive b) Deductive
   c) Both a and b d) Hypothetico-deductive

9) The ethics in research is not related to _____.
   a) Self –interest b) Scientific method
   c) Reliability d) Humanity

10) All research process starts with _____.
   a) Hypothesis b) experiments to test hypothesis
   c) Observation d) All of these

11) Each word of a research should be _____.
   a) Justifiable b) Full of wisdom
   c) Enjoyable d) Entertaining

12) The method of research report should be _____.
   a) Scientific b) Personal
   c) Ethical d) Favourable to globalization

13) The justifiable scientific list of all references is called as _____.
   a) Index b) Bibliography
   c) References d) Citations

14) Logical reasoning process used in research is important to _____.
   a) Draw inferences b) Make studies
   c) Derive problem statements d) Frame hypothesis

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

1) Meaning of Objectives.
2) Define fundamental research.
3) Meaning of Research methodology.
4) Define qualitative and quantitative research.
5) What is logic and science?

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

1) Research formulation
2) Need of literature review
3) Meaning and importance of hypothesis

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

1) What is primary data? Give details of sources of primary data.
2) What is multi-disciplinary and interdisciplinary research?
3) Explain empirical research?

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

1) Types of research
2) Research problem

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

1) Need of internet resources for research work.
2) Explain in brief importance of abstract and keywords.
3) Explain conceptual research.

B) Write Notes. (Any One) **04**

1) Rephrasing the research problem.
2) Search engines for research work.

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

a) What do you mean by research? Describe the various steps involved in a research process.

b) What is patent? Describe in detail process of filing patent.

c) Discuss in detail process of research projects/dissertation and publications.