2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Assess the basic leadership style of 4 college students (2 boys and 2 girls) using Greenberg Basic Leadership style scale and find out the gender difference in leadership style. 12

   OR

   Measure the conflict handling style of 4 college students by using Rahim's scale to identify their conflict handling style and observe the gender difference. 12

2. Record. 5

3. Viva 8

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. What is case study ? Write a report about the academic performance of an educational institution through case study. 10

   OR

   Prepare a quationnaire for conducting a case study for an educational institution.

2. Record. 10

3. Viva-Voce. 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any two of the following as per the instruction of the examiners : 9×2

   a) To study the different types of fish deseases

   b) Identify the different types of scales in fishes

   c) Study of different types of fins of fishes

   d) Study of different modified structures of fishes (Saw of Saw fishes, Hammer of hammer-headed fish, tail of Shark)

2. Practical Record 3

3. Viva-Voce 4

❐❐

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Study the different techniques of hybridization found in bisexual plants. 12

2. Draw labelled diagrams and identify with reasons of the materials given-A, B and C. 6

3. Viva-Voce 5

4. Class-Record 2

❐❐

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***two*** of the following : 9×2

   a) The following table give the number of defectives in 20 samples, each sample containing 2,000 items.

   425, 430, 216, 341, 225, 322, 280, 306

   337, 305, 356, 402, 216, 264, 126, 409

   409, 193, 326, 280, 389

   Calculate the values for central lines and control limits for p-chart.

   Draw the p-chart and comment if the process can be regarded in control or not ?

   b) Construct a control chart for mean and the range for the following data on basis of fuses, samples of 5 being taken every hour (each set of 5 has been arranged in ascending order of magnitude).

Comment on whether the production seems to be under control, assuming that these are the first data :

42	42	19	36	42	51	60	18	15	69	64	61
65	45	24	54	51	74	60	20	30	109	90	78
75	68	80	69	57	75	72	27	39	113	93	94
78	72	81	77	59	78	95	42	62	118	109	109
87	90	81	84	78	132	138	60	84	153	112	136

c) A machine is set to deliver the packets of given weight. Ten sample of size five each were examined and the following results were obtained :

Sample No	1	2	3	4	5	6	7	8	9	10
Mean	43	49	37	44	45	37	51	46	43	47
Range	5	6	5	7	7	4	8	6	4	6

Calculate the values for the central line and the control limits for the mean chart and range chart. Comment on the state of control.

d) i) Plot the operating characteristic curves for single sampling plan where N = 5,000 n = 100 ; c = 1, 2, 3. Assuming P_c =.10 determine the lot tolerence fraction defective.

ii) For the above data, plot the average outgoing quality (AOQ) curve and determine (AOQL).

2. Record. 3

3. Viva-Voce. 4

❐❐

5. $\frac{d^2y}{dx^2} - 2x\frac{dy}{dx} = 0, \quad y^1(0) = 1, \quad y(0) = 0$

6. $\frac{d^2y}{dx^2} + \frac{2}{x}\frac{dy}{dx} + y = 0, \quad y^1(0) = 0, \quad y(0) = 1$

7. $\frac{dv}{dt} = g - av, \quad v(0) = 0, \quad t(0) = 0$

Take $g = 9.8\ m/sec^2$, $a = 0.2\ sec^{-1}$

Distribution of marks

Experiment	18
Viva	5
Record	3

❐❐

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Solve any one of the following differential equations with appropriate scilab programme.

Plot the solutions.

1. $\frac{d^2y}{dx^2} = 1, \quad y^1(0) = 0.5, \quad y(1) = 2$

2. $\frac{d^2y}{dx^2} = 1, \quad y^1(0) = 1, \quad y(1) = 2$

3. $\frac{dy}{dx} = e^{-x}, \quad y(0) = 0, \quad x = 0$

4. $\frac{dy}{dx} + e^{-x}y = x^2, \quad y = 0, \quad x = 0$

f) Calculate the stomatal index and stomatal frequency from the two surfaces of leaves of dorsiventral and isobilated leaves.

2. Demonstration experiments (any ***one***): 6

a) To demonstrate suction due to transpiration

b) Avena coleoptile bioassay.

3. Viva-voce 5

4. Class Record 2

❐❐

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Perform any ***one*** of the following choosen by lot : 12

a) Determine the O.P of the cell-sap of the given plant material by plasmolytic method.

b) Determine the D.P.D of given tissue by weight method.

c) Determine the relation between transpiration and the traspiring surface.

d) Study the effect of wind velocity on the rate of transpiration in excised twig

e) Study the effect of light on the rate of transpiration in excised twig

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Calculate the percentage of germination of supplied specimen-A by using hanging drop method. 7

2. Test the viability of supplied specimen 'B' by tetrazolium. 6

3. Draw labelled diagrams of supplied microslides or photographs on the spot and identify with comments. Specimen-C, D, E and F. 1½×4

4. Viva 4

5. Class Record. 2

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Determine the Saponification value of coconut oil. 15

OR

Determine the iodine number of coconut oil.

OR

Demonstrate the action of human salivary amylase on starch.

2. Viva-voce 6

3. Record. 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Write a JSP program to find the sum of two numbers passed as parameter from HTML file. 5

   OR

   Write a JSP program to display the sum of first 10 natural numbers. 5

2. Write a JAVA program using Servlet and JDBC to display all the rows of a EMP table. 5

   OR

   Write a JAVA program using JDBC to display all the rows of EMP table. 5

3. Write a Java Script program to check whether a number is positive or negetive. 5

   OR

   Write a Java Script program to check whether a character is vowel or constant. 5

4. Record. 4

5. Viva-voce 6

❐❐

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. To study the developmental stages and Life Cycle of Drosophila from stock culture. 8

   OR

   To study different types of placenta that are shown in photograps/charts.

2. Identify with comments on the given spots I to V. (5 permanent slides of developmental stages of Frog and chick are to be supplied) 2 × 5

3. Practical Record. 3

4. Viva-voce 4

❐❐

V-UG-Anth(CC)-XII (Pr)

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. a) What is NGOs ? Describe different types of NGOs and NGOs its functions. 5

OR

b) What is Tourism ? Explain any tourism with examples ? 5×1

2. Student were visited NGOs office 10

3. Lab. Record 5

4. Viva-voce 5

❐❐

V-UG-Geol(CC)-XI (Pr)

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. a) Solve the problem related to Ground water. 3
(To be given at the time of Exam).

OR

b) Solve the ground water problem. 3

2. Identify the building stones and mention their uses.($B_1 - B_4$) 12

3. Lab. Record 3

4. Viva-voce 4

❐❐

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Draw a choropleth map showing the population density distribution of India ? 6

   (Data to be supplied)

2. Draw a map showing the physical division of India ? 6

3. Draw a map of India showing the Rice cultivated Regions ? 8

4. Practical Record. 2

5. Viva-Voce. 3

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. What is a handaxe. What are the different varieties of handaxe. 5

   OR

   What is a scraper. Write down its different varieties.

2. Write down two different varieties of microliths with diagrams, their period of occurance, possible raw material and purpose of preparation. 5

   OR

   What is chopper and chopping tools. Write down their period of occurance, raw material and probable usage.

3. Write down tool technology of neolithic period. 5

   OR

   Write any two tool technology of palaeolithic period.

4. Record. 5

5. Viva. 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Assess the sleep quality of 4 college students by using the Pittsburgh Sleep Quality Index (PSQI). 12

OR

Measure the engagement coping strategies of 4 college students and find out the gender difference using Tobin's coping strategy Inventory. 12

2. a) Record 5

b) Viva 8

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Prepare a term paper on the comparing the primary education system of Japan with India. 10

OR

Choose any topic of your interest of comparative education and prepare a report.

2. Record 10

3. Viva-voce 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Verify Lambert-Beer's law and determine the concentration of $CuSO_4$/$kMnO_4$ in a solution of unknown concentration. 15

OR

Determine the amount of iron present in a sample using 1, 10– phenonthraline.

OR

Analyse the vibration-rotation spectrum of diatomic molecule.

2. Viva-Voce 6

3. Record 4

2017

Full Marks - 25

Time - 6 Hours

Attempt any ***one*** question

1. Determine the susceptibility of paramagnetic solution by Quinck's Tube Method.

2. Determine the magnetic susceptibility of the given solid.

3. Study the PE Hysteresis loop of a Ferroelectric crystal.

4. Determine the resistivity of a given semiconductor with temperature by four probe method and determine the band gap.

Distribution of marks

Experiment	18
Viva	04
Record	03

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer any ***three*** questions

1. Write a C program for encryption and decryption of a string entered by user. 5

2. What are the information security tips that you will provide to owner of an organisation to run a business. 5

3. Write a C program using hashing technique to insert, display, search and delete records. 5

4. Explain briefly the network security threats

5. Record and Attendance 4

6. Viva-Voce 6

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***one*** of the following as per the instruction of the examiners. 10

   a) Study of DNA replication using photographs or slides and special cases, e.g.polyteny using permanent slides of polytene chromosomes.

   b) Estimation of RNA using oricinol reaction quantitatively.

2. To prepare models to molecular biology (any two models) 4 + 4

3. Practical Record 3

4. Viva-Voce 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Write down the procedures of searching Internet for collecting study material. 10

OR

Write the importance of Internet for collection of study material for a student and for the teacher.

2. Record 10

3. Viva-Voce 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Report the areas of emotional difficulties of your subject by administering Jung/Kent Rosanoff list of word association test (WAT). 12

OR

By administering the Rorschach's Ink Blot Test on your subject give a summary report. 12

2. Record 5

3. Viva 8

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Draw UML Use Case diagram for the following problem. 5

   a) Consider a library, where a member can perform two operations : issue book and return it. A book is issused to a member only after verifying his credentials.

   OR

   b) Consider your neighboring travel agent from whom you can purchase flight tickets and book a hotel. To book a ticket you ned to provide details about your journey i,e your address, on which date and at what time you would like to travel. You can pay by cash or by credit card. You can also cancel a booked ticket and hotel booking. Appropriate refund as per policy is made in case of cancellation.

2. Draw UML Class Diagram for the following problem. 5

a) Consider an Online Shopping, where each customer has unique id and is linked to exactly one account. Account owns shopping cart and orders. Customer could register as a web user to be able to buy items online. Web user has login name which also serves as unique id. Web user could be in several states-new, active, temporary blocked, and be linked to shopping cart. Shopping Cart belongs to account.

OR

b) *Draw a UML Activity Diagram for the following :*

Consider an Online Shopping, where each customer can browse or search items, view specific item, add it to shopping cart, view and update shopping cart, checkout. User can view shopping cart at any time. Checkout is assumed to include user registration and login.

3. *Draw a UML Use Case diagram for the following :* 5

a) Consider a Hospital Management System. Where the receptionist schedules patient's appiontments and admission to the hospital, collects information from patient upon patient's arrival and/or by phone. For the patient that will stay in the hospital("inpatient") she or he should have a bed alloted in a ward. Receptionists might also receive patient's payment, record them in a database and provide receipts, file insurance claims and medical reports.

OR

b) Consider an automated teller machine (ATM) that provides bank customers with access to financial transactions in a public space without the need for a cashier, clerk, or bank teller. Customer (actor) uses bank ATM to check Balances of his/her bank accounts, Deposit Funds, Withdraw Cash and/or Transfer Funds (use cases). ATM Technician provides Maintenance and Repairs.

4. Record and Attendance 4

5. Viva-Voce 6

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***two*** of the following : 9×2

   a) Compute the crude and standardised death rates of two population A and B, regarding A as standard population, from the data given below.

Age-group years	A		B	
	Population	*Deaths*	*Population*	*Deaths*
Under 10	20,000	600	12,000	372
10-20	12,000	240	30,000	660
20-40	50,000	1250	62,000	1612
40-60	30,000	1050	15,000	525
Above 60	10,000	500	3,000	180

   b) Given the following table for l_x, the number of rabbits living at age x, complete the life table for rabbits.

X..	0	1	2	3	4	5	6
l_x..	100	90	80	75	60	30	0

X, Y, Z are three rabbits of age 1, 2 and 3 years respectively. Find the probability that :

i) at least one of them will be alive for one year more

ii) X, Y, Z will be alive for two years time

iii) exactly one of the three is alive in two years

iv) all will be dead in two years time.

c) Complete the life table of the population of a certain types of insects, x being the age in days and l_x = 1,000 for x = 0

X..	0	1	2	3	4	5	6	7	8
q_x..	0.120	0.005	0.010	0.050	0.100	0.500	0.800	0.900	0.950

d) Compute (i) GF.R (ii) S.F.R (iii) T.F.R and (iv) the gross production rate, from the data given below :

Age group of child bearing females	*Number of women (000)*	*Total Births*
15-19	16.0	260
20-24	16.4	2244
25-29	15.8	1894
30-34	15.2	1320
35-39	14.8	916
40-44	15.0	280
45-49	14.5	145

Assume that the proportion of female births is 46.2 percent.

2. Record 3

3. Viva-Voce 4

V-UG-Geol(DSE)-II (Pr)

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Solve the Ore Reserve Estimation problem. 6
   (To be given at the time of exam).

2. Solve the mining and drilling problem. 6
   (To be given at the time of exam)

3. Solve the bore hole logging problem. 6
   (To be given at the time of exam)

4. Lab-Record 3

5. Viva-Voce 4

❐❐

V-UG-Geol(CC)-XII (Pr)

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Identify the given Ores under microscope. (S_1–S_5). 3×5

2. Solve the problem. 3

3. Lab-Record 3

4. Viva-Voce 4

❐❐

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Show important interpretation keys used for visual interpretation of satellite imageries. 6

2. Interprete supplied Aerial photograph. 6

3. Briefly explain GPS system with its application. 8

4. Practical Record 2

5. Viva-Voce 3

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. What is blood pressure (both systolic and diastolic) ? What should be the normal blood pressure of a human being. 5

OR

What is pulse rate, normal pulse rate of a human being, method of taking pulse rate.

2. Write down the procedure of haemoglobin estimation. 5

OR

Estimate the haemoglobin of your friend and write down the result.

3. What is step test ? Write down its procedures. 5

OR

Do a step test of your friend and write down the result.

4. Record 5

5. Viva 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

Perform the following Operation using Microprocessor kit

1. Add two Binary numbers each of 8 bytes long. 5

2. Find the maximum number in a given string (16 bytes long) and store it in location 0310. 5

3. A data string of number of bytes (to be specified in CX reg) is located from the starting address 0300. Convert this data string to its 2'3 complement and store the result from 0400 onwards. 5

4. Add two 16 bit no. Write the steps to insert and execute a program in M86-01 Trainer kit. 5

5. Record and attendance 4

6. Viva-Voce 6

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Synthesize acrylonitrile by precipitation polymerization. 15

OR

Synthesize Polymethyl Methacrylate.

OR

Synthesize Acrylamide by Redox Polymerization.

OR

Prepare Urea-formaldehyde resin.

2. Viva-Voce 6

3. Record 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. To study different types of parental care in animals that are shown in photographs/videos. 9

OR

To study behavioural response of wood-lice in response to humid condition.

2. To study geotaxis behaviour in earthworm. 9

OR

To study phototaxis behaviour in insect larvae.

3. Practical Record 3

4. Viva-Voce 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. a) Estimate the solid waste (biodegradable and non-biodegradable) generated by a domestic system and write its important on land degradation. 8

OR

b) Measure the dominance of woody specics by DBH method.

2. Submit any ecological model prepared by you. 7

3. Viva-Voce 7

4. Practical Records 3

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Estimate the amount of dissolved oxygen in a given sample of water. 10

   OR

   Determine the amount of chlorine present in the sample of bleaching powder.

   OR

   Determine the total alkalinity present in a given water sample.

2. Prepare and submit 2gms it borax/boric acid. 5

3. Viva-Voce 6

4. Record 4

5. Write a value returning function to determine the smallest number from a set of numbers. Use this function to determine the smallest number from a set of 10 numbers. 5

6. Write a program to enter 10 integer into an arry and sort them in ascending order and print it. 5

Record 4

. Viva-Voce 6

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer any ***three*** questions

1. Calculate the sum of the series 1+1/2+1/3+1/4...1/N for any positive integer N. 5

2. Write a program that prompts the user to input a positive integer. It should then output a message indicating whether the number is a prime number or not. 5

3. Write a program that prompts the user to input the value of a, b, and c involved in the equation $ax^2 + bx + c = 0$ and outputs the type of the roots of the equation. Also the program should outputs all the roots of the equation. 5

4. Write a program that genetares random integer between 0 and 99. Given that first two Fibonacci numbers are 0 and 1. Generate all Fibonacci numbers less than or equal to generated number. 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. What is case study? How to conduct a case study for an exceptional child (procedure of case study). 10

OR

Write a report about the behavioural disorder of a visual handicap child through case study.

2. Record 10

3. Viva-Voce 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Assess the quality of life in 2 nuclear 2 joint families using 'The Beach Center Family Quality of life scale'. 12

OR

Assess the community integration of a village by using community integration questionnaire (CIQ) of Barry Willer. 12

2. a) Record 5

   b) Viva 8

V-UG-Anth(DSE)-II (Pr)

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. What is case study ? What are the methods and techniques used in the case study. 7½

2 Write down any one of the following case study of social institute with respect to culture perspective.

   a) Religion 7½

   b) Economic

   c) Political

3. Record 5

4. Viva-Voce 5

V-UG-Geol(DSE)-I (Pr)

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. a) Plot availability of coal in map of India. 5

   b) In an outline map of India show occurrences of radioctive minerals. 5

   c) Show petroliferous basins of India in map. 5

2. Distinguish Gondwana Coal Vs Tertiary Coal. 3

3. Lab. record 3

4. Viva-Voce 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. a) The following data relates to problem of urban population distributed over urban centers of different size classes as per 1991 Census. Compute the data by Gini Concentration Ratio.

Size class	*% of urban Population*	*No. of urban Centers*
1	65.20	296
2	10.95	341
3	13.19	927
4	7.77	1135
5	2.60	725
6	0.29	185
	100	3609

b) Calculate population pyramid from the following data.

Age	Male	Female
0-4	49.6	51.9
5-9	4.2	5.1
10-14	2.4	2.5
15-19	2.5	2.9
20-24	2.7	4.1
25-29	3.1	4.6
30-34	4.2	4.8
35-39	4.5	5.6
40-49	9.5	4.7
50-54	12.1	8.0
55-59	19.5	12.6
60-64	28.6	18.5
65-69	48.4	33.4
70-79	57.6	46.4
80	114.6	85.5

c) Calculate of preference Indexes for Terminal Digit by Myer's Blended Method for males in Kerala 2001.

Terminal digit a	*Population with terminal digit a*	
	Starting at age 10+a	*Starting at age 20+a*
0	1928833	1634757
1	1020540	759682
2	1429180	1101733
3	1164700	850473
4	1142095	829095
5	1672085	1382265
6	1107979	824701
7	1019295	734958
8	1346316	1000128
9	904084	628546

2. Record 3

3. Viva-Voce 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Draw a Map showing the distribution of Bauxite mines in Odisha. 6

2. Prepare a map showing different soil types of Odisha. 6

3. Prepare a choropleth map showing the density distribution of population of Odisha. 8
   (Data to be supplied)

4. Practical Record 2

5. Viva-Voce 3

V-UG-Geog(DSE)-II (Pr)

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Draw a Map showing the distribution of Bauxite mines in Odisha. 6

2. Prepare a map showing different soil types of Odisha. 6

3. Prepare a choropleth map showing the density distribution of population of Odisha. 8
   (Data to be supplied)

4. Practical Record 2

5. Viva-Voce 3

V-36-0.2 ❐❐

c) Compute the seasonal indices by the 'Link Relatives' method for the adjoining data relating to the average quarterly prices (Rs per kg) of a commodity for five years :

Year / Quarter	1996	1997	1998	1999	2000
I	30	35	31	31	34
II	26	28	29	31	36
III	22	22	28	25	26
IV	36	36	32	36	33

d) Calculate the trend of the following time series by applying Spencer's 15-point formula :

Deaths From Cancer and other tumours

Year	1	2	3	4	5	6	7	8	9	10
Death for persons	1401	1437	1460	1493	1516	1586	1615	1634	1654	1678
Year	11	12	13	14	15	16	17	18	19	20
Death for persons	1867	1998	2078	2197	2208	2263	2343	2395	2920	2481

2. Record 3

3. Viva-Voce 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***two*** of the following : 9×2

a) The following figures are the production data of a certain factory manufacturing air-conditioners :

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Production	17	20	19	26	24	40	35	55	51	74	79

Fit the second degree parabolie trend curve to the above data and obtain the trend values.

b) Calculate seasonal indices by the ratio to moving average method from the following data :

Year / Quarter	2001	2002	2003	2004
Q1	75	86	90	100
Q2	60	65	72	78
Q3	54	63	66	72
Q4	59	80	85	93

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 6 ×4

   a) Normalise the wave function

   $$\Psi(x) = Ae^{-\alpha x^2}$$

   Where A and α are constants. Find the expectation value of x. 2+4

   b) Prove that the momentum operator is hermitian. 6

   c) Show that the position coordinate operator in momentumspace is 6

   $$x = i\hbar \frac{\partial}{\partial p_x}$$

   d) Derive the time independent schrodingers equation fromthe time dependent one. 6

e) i) Explain gyromagnetic ratio of electron and proton. 2+2+2

ii) State Larmors theorem.

f) Define Bohr magneton. State the possible orbital magnetic moments of a d-orbital electron 6

g) Show that for hydrogen atom the ground state does not have any normal Zeiman splitting. 6

h) Write a note on Paschen-Back effect. 6

Group-B

2. Starting from the Scrodinger's equation in 3-dimension derive expression for the probability current density and hence establish the equation of continuity. 4 + 5

3. Show that a Gaussian packet spreads in time by evaluating the uncertainty in position at time t and comparing it with that at time t = 0 7 + 2

4. Set up and solve the Schrodinger equation for the one dimensional simple harmonic oscillator and get the energy eigen values. 9

5. Calculate the reflection and transmission coefficients for particles incident on a potential step given by

$$U(x)=\begin{cases} U_0 & x>0 \\ 0 & x<0 \end{cases}$$

for $E > U_0$

6. Describe the Stern-Gerlach experiment in detail and explain how it establishes the existence of spin.

7. Explain Zeeman spectra of atoms placed in external magnetic field.

What do you mean by anamelous Zeeman effect ? How it differs from Normal Zeeman effect ? 5+2+2

8. What is strak effect ? Explain strack effect in atoms using quantum theory.

❐❐

8. What is meant by analgesics ? Discuss the structure,synthesis and therapeutic uses of Ibuprofen. 1½+7½

9. What do you mean by antipyretics ? Write the structure,method ofpreparation and therapeutic uses of paracetamol. 1½+7½

❐❐

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following :

   a) How can you synthesise α-mino acids by 3×2

      i) Strecker's method and

      ii) Azalactone method ?

   b) i) What happens when glycine is boiled with ethylalcohol in presence of anhydrous HCl and the product obtained is treated with moist Ag_2O ? 3

      ii) Explain isoelectric point. 3

   c) Discuss the factors affecting enzyme action. 6

   d) Give an account of the common fatty acids present in oils and fats. 6

e) Discuss caloric value of food. 6

f) Give an account of metabolism. 6

g) i) Define and explain the following with one example of each. 2 × 2

1) Antimalerials

2) Antibiotics.

ii) How is the above antimalarial synthesised? 2

h) Discuss the medicinal value of : 6

i) Curcumin

ii) Vitamin C

iii) ranitidine

iv) azadirachtin

Group-B

2. a) How can you synthesise glycine from potassium phthalimide ? 3

b) What happens when glycine is treated with 2+2

i) nitrous acid

ii) formaldehyde ?

c) Write the geometry of peptide bond. 2

3. Write notes on the following : 4½×2

a) Structure of DNA

b) End group analysis.

4. What are enzymes ? Give an account of mechanism of enzyme action with an example. 1 + 8

5. Discuss the structure and characteristics of enzyme ? 9

6. Give an account of inter-relationship in the metabolic pathways of protien, fat and carbohydrate. 9

7. Discuss ATP as energy currency. Give an account of ATP hydrolysis and free energy change. 9

3. What do you mean by gamete? Discuss the structure and development of male gametophyte in flowering plants. 9

4. Describe different types of embryosacs found in Angiosperms with a special reference to monosporic embryo. 9

5. How is endosperm formed in Angiospermic Plants ? Give a detailed account of different types of endosperm. 9

6. With the help of suitable diagrams, describe systematically the developmental pattern of embryo in a monocotyledonous plant. 9

7. Why is Cross-Pollination always preferred by plants ? Describe different agencies found in nature help favouring cross-pollination. 9

8. What is self-incompatibility ? Why is it essential for plants ? Describe methods to overcome incompatibility

9. Define polyembryony. Describe different types, causes and significance of polyembryony in Angiosperms. 9

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Write notes on any ***four*** of the following : 6 ×4

   a) Tapetum

   b) Microspore tetrads

   c) Nucellus

   d) Haustorial bahaviour of embryo sac

   e) Paeonia embryo

   f) Double fertilization

   g) Parasexual hybridization

   h) Apomixis.

Group-B

2. Describe the contribution of scientists creating "Embryology of Angiosperm" a new branch in plant science. 9

3. Give the evidences for the existence of cytoplasmic determinants. 9

4. Describe the major events that occur during process of Fertilization. 9

5. Define Teratogenesis and explain the effects of environmental teratogenic agents on embryonic development. 9

6. Explain the molecular basis of Differentiation. 9

7. Give an account of the early development of Frog upto Gastrulation. 9

8. Discuss the morphological, anatomical and biochemical changes involved in metamorphosis of Amphibian tadpole Larva. 9

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2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 6 ×4

   a) Ammiocentesis

   b) Morphallaxis

   c) Perforation Theories

   d) Patterns of Cleavage

   e) In Vitro Fertilisation

   f) Fate of Germ Layers

   g) Discovery of Induction

   h) Factors of Ageing.

Group-B

2. What is Placenta ? Describe the various functions of placenta in mammals. 9

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1
which is compulsory

Group-A

1. Answer any ***four*** of the following : 4 ×6

   a) What is Java Beans ? Describe different features and need of Java Beans.

   b) Describe different operators used in Java Script.

   c) Differentiate between Array and Array List in Java. Explain the concept of Array List with an example.

   d) Write short notes on the following :

      i) Resultset Object

      ii) Introspection.

   e) What is meant by JAR files ? Write a procedure to create a JAR file.

f) Write different steps to connect the JAVA application programwith the Database.

g) Describe different Looping and Conditional statements used in Java Script with their syntax.

h) Write short notes on the following :

i) Implicit JSP Objects

ii) Type-I Vs. Type-II Driver in JDBC.

Group-B

2. What is the difference between static page and dynamic page ? Write a program in java script through which you can validate the log-in Page which consists of two text field and one button. Out of two text field one is used for log-in and another is used for password. If the log-in and password is correct display another HTML page in the same browser otherwise give an error message and reset the log-in page. 9

3. What is the main function of Driver in JDBC ? Describe different JDBC Drivers with their advantages and disadvantages. 9

4. What is JSP ? Draw and explain the detail Life Cycle of JSP. 9

5. a) Write different steps to connect the Java application programwith the Database. 4½

b) Describe different elements of JSP with examples. 4½

6. Write short notes on the following : 9

a) Event Vs. Event Handling

b) Functions in Java Script

c) Error debugging procedure in JSP.

7. What is meant by JDBC ? Draw and explain the detail architecture of JDBC. 9

8. a) Write different steps of connecting the Database with Java Beans application program 4½

b) Describe different Statements used in JDBC with proper syntax. 4½

7. a) Evaluate $\iint_R x^2 + y^2 \, dxdy$

where R is the region bounded by $x = 0, y = 0, x + y = 1$. 6

b) Evaluate $\int_{-½}^{1} \int_{-x}^{1+x} (x^2 + y) dy dx$ 6½

8. a) Evaluate $\int . \vec{F} , d\vec{r}$ where

$\vec{F} = 3xy\,\hat{i} - 5z\hat{j} + 10x\hat{k}$ along the curve C given by $x = t^2 + 1, y = 2t^2, z = t^3$ from $t = 1$ to $t = 2$. 6

b) Evaluate $\int_S (yz\hat{i} + zx\hat{j} + xy\hat{k}).\hat{n}\, ds$

where S is the surface of the sphere $x^2+y^2+z^2=1$ in the 1st quadrant. 6½

❐❐

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No 1 which is compulsory

Symbols used have their usual meaning

Group-A

1. Answer any ***four*** of the following : 7½ ×4

a) If, $f(x,y) = \sqrt{|xy|}$, find $f_x(0, 0)$ and $f_y(0, 0)$

b) Prove that $\lim_{(x,y)\to(1,2)} (x^2 + 2y) = 5$

c) Find the equation of the tangent plane to the surface $xyz = 4$ at $(1, 2, 2)$

d) Find div grad r^n

e) Find the extremum of the function

$f(x, y) = x^3 + y^3 - 3x - 12y + 20$.

f) Evaluate $\iiint_R xyz\,dx\,dy\,dz$, the value of integration being the positive octant of the ellipsoid $\frac{x^2}{a^2}+\frac{y^2}{b^2}+\frac{z^2}{c^2}=1$

g) Change the order of integration

$$\int_0^{2a} dx \int_{\sqrt{2ax-x^2}}^{\sqrt{2ax}} f(x,y)\,dy$$

h) Verify Gauss divergence theorem for the function $\vec{F}=x^2\hat{i}+z\hat{j}+yz\hat{k}$ over the unit cube.

Group-B

2. a) Test the continuity of the function $f(x,y)=\frac{x^3+y^3}{x-y}$ when $(x, y)\to(0, 0)$ 6

b) If (a, b) be a point of the domain of definition of a function f(x, y) such that 6½

i) f_x is continuous at (a, b)

ii) f_x exists at (a, b) then prove that f(x, y) is differentiable at (a, b)

3. Let $f(x,y)=\begin{cases}\frac{xy(x^2-y^2)}{x^2+y^2} & (x, y)\neq(0, 0)\\ 0 & ,(x, y)=(0,0)\end{cases}$ 12½

Show that $f_{xy}(0, 0)\neq f_{yx}(0, 0)$.

4. a) Find the directional derivative of $\phi=x^2yz+4xz^2$ at (1, 2, –1) in the direction $2\hat{i}-\hat{j}-2\hat{k}$ 6

b) Determine the constant a. So that the vector

$\vec{F}=(x+3y)\hat{i}+(y-2z)\hat{j}+(x+az)\hat{k}$

is solenoidal. 6½

5. a) If $\vec{a}$ is a constant vector, show that $\nabla\cdot(\vec{r}\times\vec{a})=0$. 6

b) Prove that curl 6½

$(\vec{f}\times\vec{g})=\vec{f}\,\text{div}\,\vec{g}-\vec{g}\,\text{div}\,\vec{f}-(\vec{g}\cdot\nabla)\vec{f}-(\vec{f}\cdot\nabla)\vec{g}$

6. Prove that the volume of the greatest rectangular parallelopiped can be inscribed in the ellipsoid $\frac{x^2}{a^2}+\frac{y^2}{b^2}+\frac{z^2}{c^2}=1$ is $\frac{8abc}{3\sqrt{3}}$. 12½

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 7½ ×4

   a) What is the Universal Doubt of Rene Descartes ?

   b) Explain Innate Ideas of Descartes.

   c) What does Descartes mean by 'will' ?

   d) What are the Factitious Ideas of Descartes ?

   e) What does Descartes mean by 'intallect' ?

   f) Explain in brief the ontological argument for the existence of God.

   g) What are the primary qualities of a thing as explained by Descartes ?

   h) What are secondary qualities ?

Group-B

2. Explain and evaluate the sceptical doubts of Descartes. 12½

3. How does Descartes analyse that the principle of cogito ergo sum is the basis for self-existence ? Explain. 12½

4. What are the clear and distinct perceptions of Descartes as explained in Meditation III ? Discusss. 12½

5. Explain the possiblity of Error as conceived by Descartes. 12½

6. Discuss Descartes proofs for the existence of God. 12½

7. Explain after Descartes the mind-body dualilism as stated in the Meditation VI 12½

8. Explain and evaluate the statement of Descartes that 'God is no Deceiver' 12½

3. What are the principles of material handling ? Examine the factors for selection of equipment. 8+8

OR

Write notes on the following : 8 + 8

a) Demand forecasting

b) Scheduling.

4. What do you mean by work-study ? Discuss its two phases-method study and work-measurement. 4+12

OR

What do you mean by maintenance management ? What are its objectives. 6 + 10

5. What is materials management ? State the scope of materials management ? 6 +10

OR

Write notes on the following : 8 + 8

a) Perpetual Inventory Control

b) Economic Ordering Quantity (EOQ).

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. What do you mean by production and operations management? Discuss the scope of production and operations management. 6 + 10

OR

Write notes on the following : 8 + 8

a) Product life cycle (PLC)

b) Product design.

2. Discuss the various factors that affect the location of a plant. 16

OR

Describe the characteristics of a theoretically perfect plant layout. 16

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 7 ½×4

   a) Distinguish between stock. and shares.

   b) Discuss different types of shares.

   c) Distinguish between private limited company and public limited company.

   d) Distinguish between capital reserve and reserve capital.

   e) Hitesh and Co. decided to purchase a business. The profits for the last four years are : 2012-₹60,000, 2013-₹75,000, 2014-₹72,000, and 2015-₹60,000.

The business was looked after by the management. Remuneration from alternative employment if not engaged on the business comes to ₹9,000 p.a. Find the amount of goodwill, if it is valued on the basis of 3 year purchase of the average net profit for the last four year.

f) Distinguish between provision and Reserve

g) Distinguish between Amalgamation and Absorption.

h) Book of Rana Ltd. Show the following assets and liabilities as on 31-12-2015.

Liabilities	₹	***Assets***	₹
Share capital (₹10 each)	3,00,000	Fixed Assets	4,50,000
		Current Assets	30,000
Revenue	1,20,000		
Loans	50,000		
Current liabilities	10,000		
	4,80,000		4,80,000

It is observed that Fixed Assets are undervalued by ₹30,00. The current Assets are overvalued by ₹2,000. The Assets are to be valued properly.

It is proposed to issue fully paid shares by capitalisation of General Reserve in ratio of one share for threee shares held.

Find the value of shares by Net Assets method :

i) Before issue of Bonus Shares

ii) After issue of Bonus Shares.

Group-B

2. A company was floated with an authorised capital consisting of 20,000 9% preference shares of ₹100 each, payble ₹25 per share on application, ₹25 per share on allotment and balance on first and final call; and 3,00,000 Equity Shares of ₹10 each, payble ₹2.50 per share on application, ₹2.50 per share on allotment and balance on the 1st and final call. Applications

were received for the whole of the preference and Equity Shares. All the money due on the shares was paid with the exception of the amount due on the first and final call on 4,000 Equity Shares. Make the necessary entries and the Balance sheet of the company. 12½

3. What are the different types of companies ? Give the procedure of forming a company. 12½

4. What is Goodwill ? Explain and illustrate different methods of valuation of goodwill. 12½

5. What is debenture ? Describe the various methods for redemption of debenture. 12½

6. From the following particulars, show how the fixed asset machinery should be shown in the Balance Sheet of a company as on 31st March 2015 and March 31, 2016 : 12½

a) Cost of machinery as on 31-3-2014 ₹2,40,000;

b) Amount added on writing up of asset in June 2014 ₹1,00,000

c) Additions made in 2014-2015 ₹12,000

d) Cost of machinery Sold in 2014-2015 ₹7,000;

e) Additions made an 2015-16 ₹21,000;

f) Cost of machinery Sold in 2015-16 ₹11,000;

g) Depreciation provided upto 31-3-2014 ₹65,000;

h) Depreciation in respect of machinery sold in 2014-15 ₹3,000;

i) Depreciation in respect of machinery Sold in 2015-16 ₹8,000;

j) Depreciation provided in 2014-15 ₹15,000;

k) Depreciation provided in 2015-16 ₹20,000

7. Ascertation the value of goodwill of P.Co. Ltd. carrying on business as retail traders from the following assets and liabilities as on 31-12-2015 according to capitalisation method :

Liabilities	₹	*Assets*	₹
Paid-upcapital : 2,500 shares of ₹100 each	2,50,000	Good will	25,000
		Land and building	1,10,000
Surplus Account	56,650	Plant & machinery less depreceation	1,00,00
Bank Overdraft	58,350		
Sundry crditors	90,500	Stock at cost	1,50,000
Provision for taxation	19,500	Book debts less provision for doubtful debts	90,000
	4,75,000		4,75,000

Addtional information :

The company commenced operations in 2011 with a paid up capital as aforesaid of ₹2,50,000. The profits earned before providing for taxation, have been as : 2011 ₹61,000; 2012 ₹64,000; 2013 ₹71,500; 2014 ₹78,000; and 2015 ₹85,000;

You may assume that Income tax at the rate of 50% has been payble on these profits.

The average dividend paid by the company for the four years is 10% which is taken as reasonable return expected on the capital invested in the business. 12½

8. Define Amalgamation. What entries are passed by a company to close its books when it is amalgamated by another company ? 12½

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4. Write short note on any ***one*** of the following : 7½

   a) How does Oedipus kill his father ?

   b) What are some examples of dramatic irony in *Oedipus the King* ?

5. The main motives in *Pot of Gold* by Plautus are greed, cheapness and gold. Discuss. 12½

   OR

   How does Plautus's *Pot of Gold* reflect the role of women in Greek Society ?

6. Write short note on any ***one*** of the following : 7½

   a) What is the role of slaves in *Pot of Gold* ?

   b) What role do the gods play in *Pot of Gold* ?

7. How does Ovid depict a group of gods in *Metamorphoses*. 12½

   OR

   Love is most often described as the transformation in *Metamorphoses*. Discuss.

8. Write short note on any ***one*** of the following : 7½

   a) What Does Ovid mention about the creation of human beings ?

   b) How does Ovid describe about creation of the world ?

❐❐

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. The notion personal honour is prevalent throughout Homer's *The Illiad*. Discuss. 12½

   OR

   Sketch the character of Achilles.

2. Write short note on any ***one*** of the following : 7½

   a) What is the role of women in *The Illiad* ?

   b) Write a note on Homer's portrayal of Gods in *The Illiad*.

3. The tragic flaw in character leads to the downfall and destruction of Oedipus. Discuss. 12½

   OR

   Oedipus the King by Sophocles is a tragic play illustrating a shift from the belief of predestination to freedom of choice. Discuss.

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 7½ ×4

   a) National Assembly of France

   b) Reforms of Nepolean Bonaparte

   c) Franco-Prussian War

   d) The Balkan crisis

   e) Results of Industrial Revolution

   f) Causes of German Unification

   g) Impact of demographic trends in Europe

   h) Goal of conservatives in Concert of Europe.

Group-B

2. Describe the factors which led to the outbreak of French Revolution ? 12½

3. Discuss the causes responsible for the downfall of Nepolean Bonapartes ? 12½

4. Analyse the work of National Convention ? 12½

5. Discuss the causes and results of July Revolution in France ? 12½

6. How did the Industrial Revolution affect gender roles and family life ? 12½

7. Discuss the role of Count Cavour in the Unification of Italy. 12½

8. Briefly discuss the causes and results of the Cremean War ? 12½

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 7½ ×4

   a) Explain briefly ecosystem

   b) Explain the environmental degradation

   c) Discuss briefly the relationship between urbanization and development

   d) Write a note on forest rights

   e) Describe the Silent Valey movement

   f) Write a note on Deforestation

   g) Explain the problems of water as a contemporary environmental problem

   h) Discuss briefly environmental protection at the national level in India.

Group-B

2. Discuss the relationship between environment and society. 12½

3. What is the sustainable development. Explain its features. 12½

4. Discuss the Chipko movement and Narmada Bachao Andolan as environmental movements. 12½

5. Discuss the relationship between industrialisation and development. 12½

6. Write an essay on Global Warming and climate change. 12½

7. Explain the growth of slums and urban waste as environmental problem. 12½

8. Discuss the efforts at the global level and at the national level in India for environmental protection. 12½

Group-B

2. Give an account of the physiography of the Himalayans.

3. Describe the Soils in India. 9

4. Write the production and distribution of rice in India. 9

5. Discuss the growth of population in India since indipendence. 9

6. Describe the distrubution and production of iron ore in India. 9

7. Give an account of the localising factors and growth of aluminium industries in India. 9

8. Discuss the importance and growth of railways in India. 9

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2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 6 × 4

   a) Decan Plateau.

   b) Period of retreating monsoon.

   c) Literacy in India.

   d) Age structure in India.

   e) Production of bauxite in India.

   g) Growth of Airways in India .

   h) National Highways.

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 6 × 4

   a) Discuss the objectives of Vedic Education.

   b) Describe the salient features of Islamic education.

   c) Discuss the impact of the interaction between Islamic and Hindu Education systems in India.

   d) Write a brief note on Macaulay's minute.

   e) State the recommendations of Secondary Education Commission with regards to curriculum.

   f) What are the recommendations of the NKC (2017) on improvement of quality of higher education ?

g) Make a note on Adam's Report wit Education.

h) Discuss the chief characteristics of National System of Education.

Group-B

2. Discuss in details the education system of our country during Buddhist period. 9

3. Make a comparision between Islamic and Hindu education system with reference to aims, structure and curriculum. 3+3+3

4. Discuss the impact of Wood's Despatch and Hunter Commission Report on Indian Education System. 9

5. Describe the Salient Features of Basic Education. How far these features have been adopted in our state education system ? 6+3

6. "If one single reform is to be suggested regarding the educational system, it is with regard to evaluation". Comment on the above verdict of the University Education Commission. 9

7. Discuss the structure of Secondary Education as proposed by Mudaliar Commission and Kothari Commission. Which is more suited to the present needs of our country and why ? 5+4

8. Summarise the report of NKC with regard to school education. Trace the impact of this report on development of school education in your state. 5+4

❐❐

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 6 × 4

   a) Discuss the different features of open system approach.

   b) What is orgnisational design ? Discuss the steps involved in designing of organisational structure.

   c) Describe the techniques of decision making in group.

   d) Briefly discuss Alderfer's ERG theory.

   e) Analyse the effectiveness of impression management in organisation.

f) Discuss the nature of organisational politics.

g) Describe the different training programes for development of human resources.

h) Discuss the purpose of performance evaluation in organisation.

Group-B

2. Discuss the effectiveness of Fayoll's management model in organisational development. 9

3. Critically examine the human relations theory of organisational behaviour. 9

4. What is Management ? Discuss the roles and functions of management in an organisation. 9

5. What is organisational leadership ? Discuss the different types of leadership in organisations. 9

6. Evaluate the reinforcement theory of work motivation. 9

7. Define power and discuss the bases of power in organisation.

8. Discuss the parctices in selection of human resources for organisation. 9

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Group-B

2. Define colonialism. Explain the various impacts of of British colonial rule on the Indian economy. 12½

3. Explain various basic features of the Indian economy. 12½

4. The quality of population in India suffers from the problem of ill-health, ill-education and Malnutrition. Explain. 12½

5. Analyse the trends of national income and Per Capita income in India during different plan periods. 12½

6. What do you mean by "Economic Planning" ? Explain briefly how strategies do work for the sources of planning in an economy. 12½

7. Analyse the various Poverty alleviation programmes introduced in India during the Planning era. 12½

8. Explain the types of Unemployment in India. Outline the various causes of incidence of Unemployment Problem in India. 12½

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Write short notes any ***four*** of the following : 7½ × 4

   a) Dualistic Economy

   b) Consequences of Colonial Exploitation

   c) Causes of Drain

   d) Stages of Demographic Transition

   e) Major features of National Income

   f) Objectives of Planning

   g) Poverty line

   h) Disguised Unemployment.

h) Discuss the 'right to Dissent of Locke.

Group-B

2. Discuss Plato's concept of Philosopher King. 12½

3. Describe Plato's concept of Communism. How it is different from modern communism. 12½

4. Analyse the theory of virtue of Aristotle. 12½

5. Explain the Aristotle's concept of citizenship. 12½

6. Describe Machiavellian State Craft. 12½

7. Discuss the Social Contract of Hobber. 12½

8. Analyse the view of Locke on Natural Rights. 12½

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No 1 which is compulsory

Group-A

1. Write short notes any ***four*** of the following : 7½ × 4

a) Discuss Plato's theory of Forms.

b) Explain "Plato-a critique of Democracy".

c) Describe Aristotle's concept of Justice.

d) Elabrate Machiavelli's view on vice and virtue.

e) Discuss Religion on Machiavelli's point of view.

f) Analyse Hobbe's view on state of nature.

g) Describe laws of nature on Locke's point of view.

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 6 ×4

   a) Gunz

   b) Pebble tool culture

   c) Cave art

   d) Middle palaeolithic tools

   e) Sohan Valley

   f) Microliths

   g) Neolithic sites of Odisha

   h) Odisha Mesolithic and Neolithic tools.

Group-B

2. What is Lower Palaeolithic culture of India ? Give the evidences obtained from Kashmir and Peninsular India. 9

3. Describe the characteristic feature and important sites of Upper Palaeolithic culture of India. 9

4. Describe the major tool types of Mesolithic culture of India. 9

5. Discuss the important Neolithic sites of Odisha. 9

6. Describe the Neolithic characteristic features. 9

7. Describe the prehistoric Art in Central India. 9

8. Describe the different Palaeolithic sites of Odisha. 9

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following :

   a) Calculate the packing factor of BCC and FCC lattice. 3+3

   b) Define Reciprocal Lattice. Show that reciprocal Lattice of BCC is FCC. 2 +4

   c) i) State and explain Doulong Patit law. 4

      ii) State the departure of Debye theory from Einstein's theory of heat capacity. 2

   d) State any four properties of diamagnetism and paramagnetism. 3 + 3

   e) Derive the formula for a ferromagnet. 6

f) Distinguish between polar and non-polar dielectrics. 3+3

g) Describe how band gap arises in a solid. 6

h) Distinguish between type-I and type-II superconductors. 3 + 3

Group-B

2. What are Miller indices ? Show that the interplaner spacing between a pair of adjacent parallel planes of Miller indices (hkl) in a simple cube lattice is given by

$$d = \frac{a}{\sqrt{h^2 + k^2 + l^2}}$$ 2 + 7

3. What are lattice vibrations ? Derive expressions for the frequencies of acoustical and optical modes in case of vibrations of a diatomic lattice in one dimension. 2+7

4. Derive the Debye T^3 law for the phonomic contribution to specific heat of materials. 9

5. Derive Langevins formula for the volume susceptibility of diamagnetism of core electrons in a diamagnetic material. 9

6. Define electric susceptibility. Derive the Clausius-Mosotti equation relating dielectric constant with molecular polarizability. 2 + 7

7. What is LASER. Give its characteristics properties. Define Einsteins A and B coefficients. Find a relation among them. 1+2+2+4

8. Derive the London equations for the super current and define London penetration depth. 7 + 2

8. a) What is Photosensitized reaction ? Explain with an example. 4

   b) What is Quantum Yield ? 5

9. a) What are the laws of Photochemical process ? 4

   b) What is Quenching ? Explain with example. 3

   c) What is the limitation of Lambert-Beer's law ? 2

❐❐

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following :

   a) i) Derive an equation for practical in one D box .4

      ii) What is zero point energy ? 2

   b) i) Outline the statement of variation theorem. 5

      ii) What is Compton effect ? 1

   c) i) Set an equation for the energy of vibratory molecule using Quantum mechanics. 4

      ii) Write down the selection rules for vibration spectroscopy. 2

   d) i) State Franck-Condon principle. 3

      ii) What is hyperfine splitting ? 3

e) i) Write down the postulates of Quantum machanics. 5

ii) What is degeneracy ? 1

f) i) State and explain Beer-Lamberts law. 5

ii) How absorbance and transmittance are reflected ? 1

g) Write short notes on the following : 3 + 3

i) Fluorescence

ii) Phosphorescence.

Group-B

2. a) Using vibration method, set an equation for the ground state energy of helium atom. 6

b) Calculate the degeneracy of the energy level with energy equal to

i) $11\frac{h^2}{8ma^2}$

ii) $12\frac{h^2}{8ma^2}$

For a cubical box. 3

3. a) Write down Schrodinger wave equation for 3-D box. 6

b) What is Quantization of energy. 3

4. a) Write down Schrodinger equation in terms of Sperical Polar Coordinates. 6

b) What is molecular orbital theory ? Write down the two postulate of MOT. 1 + 2

5. a) Write down an application of rotational spectroscopy. 5

b) What is isotopic effect. 4

6. a) What is mutual exclusim ? 3

b) Set an expression for vibrational-rotational spectroscopy. 6

7. a) Write down the principle of ESR and NMR and state the difference. 7

b) Explain Spin-Spin Coupling. 2

Group-B

2. Discuss Ascent of SAP. 9

3. Explain Mechanism of Stomatal Movement. 9

4. Discuss Mineral deficiency symptoms in Plants in brief. 9

5. Describe active transport mechanism of soil nutrient. 9

6. Describe Auxin, as a plant Growth Regular. 9

7. Discuss photoperiodism in details. 9

8. Explain what is called Photo-Morphogenesis and role of Phytochrome in this process. 9

9. Explain what you understand by phloem loading and unloading. 9

❐❐

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Write short notes on any ***four*** of the following: 6×4

   a) Symplast and Apoplast

   b) Antitranspirants

   c) Source and Sink

   d) Micronutrients

   e) Symport and Antiport

   f) Phyto hormones

   g) Dormancy

   h) HIR.

Group-B

2. Describe the salient features of DNA double helix. 9

3. Give an account of mechanism of DNA replication in prokaryotes. 9

4. Explain the mechanism of transcription in Eukaryotes. 9

5. Give an account of structure and assembly of ribosome in prokaryote. 9

6. Describe the proteins involved in initiation, elongation and termination of polypeptide chain in prokaryote. 9

7. What is alternative splicing? Explain the mechanism and regulation of alternative splicing of gene. 9

8. Describe the transcription regulation in eukaryote. 9

❐❐

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Write short notes on any ***four*** of the following: 6×4

   a) Cot Curve

   b) Replication of telomere

   c) RNA priming

   d) Wobble hypothesis

   e) RNA editing

   f) RNA interference

   g) Regulation of transcription

   h) Aminoacylt RNA synthetases and charging of t RNA.

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 4×6

   a) Give a brief explanation with schematic diagram the prototyping model of software development.

   b) What is the importantce of Requirement analysis ? What are the tools used for gathering the requirement ?

   c) Write short notes on the following :
      i) Agile Software Development
      ii) Software Processes.

   d) What is meant by Software Quality Assurance ?

e) Write short notes on the following :

i) Interaction Model

ii) Behavioral Model.

f) Discuss different dependability and security assurance procedures.

g) Write short notes on the following :

i) Development testing

ii) Risk Driven requirements.

h) Describe different software evolution strategies.

Group-B

2. What do you mean by SRS ? What are the characteristics of good SRS ? Give an example of Bad SRS document ? 9

3. Explain the various software design techniques with suitable diagrams. 9

4. Discuss the spiral model for software engineering. Why this is regarded most realistic approach to the development for large scale systems ? 9

5. What is meant by Software Reliability ? Explain how software review helps in finding software reliability. What are the principles of Software Engineering ? 9

6. Write short notes on the following : 9

i) Software Process Models

ii) Open source Development

iii) Architectural Views.

7. What is meant by Risk Management ? Discuss different activities involved in risk management. 9

8. Define UML ? Explain the class diagram for UML ? 9

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 4 × 6

   a) Write note on Cavity Filling Deposit.

   b) Write note on Evaporation Process of mineral formation.

   c) Note on Wall-rock Alteration.

   d) Gossan acts as a signboard to indicate hidden deposit beneath. Discuss.

   e) Write note on "Geochemical Anomaly".

   f) Write note on optical properties of Chalcopyrite and Pyrolusite

   g) Write note on structural control of ore localisation.

   h) Write note on Paragenesis.

Group-B

2. Describe the magnetic concentration Process of mineral formation with example. 9

3. What is placer deposits ? Describe the various types of placer deposits. 9

4. Classify mineral deposits. 9

5. Describe the Geographical method of mineral Exploration. 9

6. Describe in detail the method of preparation of polished surfaces of ore mineral. 9

7. Describe in detail about metallogenic Epoch and Province. 9

8. Describe in detail the ore texture and structures. 9

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 4 ×6

   a) Write note on Aquifer.

   b) Write note on Hydrological Cycle.

   c) Quality of ground water for drinking purpose– Discuss.

   d) Write note on sea water Intrusion.

   e) Explain the concept of Watershed Management.

   f) Note on Engineering properties of soils.

   g) Write note on Building stone.

   h) Write down the methods of soil stabilisation.

Group-B

2. Describe various properties of water bearing formations with examples. 9

3. Describe various methods of Groundwater Exploration. 9

4. Describe various methods of Atrificial recharge to groundwater. 9

5. Describe various groundwater provinces of India. 9

6. Give a detail account of Engineering properties of rocks. 9

7. Geologist plays a vital role in the selection of a Dam site. Justify the statement. 9

8. Describe the geological consideration in the selection of a Bridge Site. 9

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 7½× 4

   a) Distinguish between Matketing and Selling.

   b) Write short notes on pricing process.

   c) Distinguish between Brand and Trade mark.

   d) What is packaging ? Discuss its functions.

   e) Distinguish between wholesellers and retailers.

   f) Discuss different modes of transport.

   g) What do you mean by promotion ?

   h) Discuss the essential characteristics of a successful sales person.

Group-B

2. What is Marketing ? Discuss its characteristics and objectives. 12½

3. What is Marketing Mix ? Discuss the elements of the marketing mix. 12½

4. What is Market segmentation ? Discuss the bases of market segmentation. 12½

5. What do you understand by consumer behaviour ? What is its importance in marketing ? 12½

6. Discuss the stages in the product life cycle. 12½

7. Discuss the role and importance of wholeseller in the channels of distribution. 12½

8. Describe the types of advertising media. Discuss their merits and demerits. 12½

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 7½× 4

   a) Distinguish between Matketing and Selling.

   b) Write short notes on pricing process.

   c) Distinguish between Brand and Trade mark.

   d) What is packaging ? Discuss its functions.

   e) Distinguish between wholesellers and retailers.

   f) Discuss different modes of transport.

   g) What do you mean by promotion ?

   h) Discuss the essential characteristics of a successful sales person.

Group-B

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7. Discuss the role and importance of wholeseller in the channels of distribution. 12½

8. Describe the types of advertising media. Discuss their merits and demerits. 12½

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b) Let 13 cards be taken at random and without replacement from an ordinary deck of playing cards. If X is the number of spades in 13 cards find the pmf of X. If Y is the number of hearts in these 13 cards find P (X = 2, Y = 5). 6

7. a) If X_1 and X_2 have joint pdf

$$f(x_1 x_2)=\begin{cases}2e^{-x\ -x_2} & ,0<x_1<2,\ 0<x_2<\infty \\ 0 & ,\ \text{elsewhere}\end{cases}.$$

Show that X_1 and X_2 are independent. 6½

b) Let X_1 and X_2 be two random variables with joint pdf $f(x_1 x_2)=\begin{cases}x_1 e^{-x_2} & ,0<x_1<x_2<\infty \\ 0 & ,\ \text{elsewhere}\end{cases}$

Determine the joint mgf of x_1, x_2. 6

8. a) State and prove Chebyshev's inequality. 6½

b) Prove that the relation. Communicate from one stage to other is an equivalence relation. 6

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Symbols used have their usual meaning

Group-A

1. Answer any ***four*** of the following : 7½× 4

a) State and prove Baye's theorem.

b) Find the distribution function of the random variable X whose pdf is $f(x) = 3(1–x^2)$, $0 < x < 1$, zero elsewhere and also sketch the graph.

c) Define binomial distribution and find its mgf, mean and variance.

d) Compute measure of skewness and kurtosis of the poission distribution.

e) Define normal distribution and find its mgf, mean and variance.

f) Let X and Y have a bivariate normal distribution with parameters $\mu_1 = 5$, $\mu_2 = 10$ $\sigma_1^2 = 1$, $\sigma_2^2 = 25$, $p > 0$. If $P(4 < Y < 16 \mid X = 5) = 0.954$ determine p.

g) Suppose joint pdf of two random variables X_1 and X_2 is $f(x_1, x_2) = \begin{cases} x_1 e^{-x_1(1+x_2)}, & x_1 > 0, x_2 > 0 \\ 0, & \text{elsewere} \end{cases}$

Find the regression equation of X_2 on X_1 and sketch the regression curve.

h) State and prove central limit theorem.

Group-B

2. a) Let $\{C_n\}$ be non decreasing sequence of events. Prove that 6½

$$\lim_{n\to\infty} P(C_n) = P\left(\lim_{n\to\infty} C_n\right) = P\left(\bigcup_{n\to}^{\infty} C_n\right)$$

b) Let X has the pm f $P(x) = \left(\frac{1}{2}\right)^x$, $x = 1,2,3\ldots\ldots$ zero elsewere. Find pmf of X^3. 6

3 a) If the mgf of a random variable X is $\left(\frac{2}{3} + \frac{1}{3}e^t\right)^9$, Show that 6½

$$P(\mu - 2\sigma < X < \mu + 2\sigma) = \sum_{x\to}^{5} \binom{9}{x} \left(\frac{1}{3}\right)^x \left(\frac{2}{3}\right)^{9-x}$$

b) find the mgf of negative binomial distribution.. 6

4. a) Let joint pdf of two random variables X_1 and X_2 is $f(x_1\, x_2) = \begin{cases} x_1 + x_2, & 0 < x_1 < 1, 0 < x_2 < 1 \\ 0, & \text{elsewhere} \end{cases}$ 6½

Find marginal pdf of X_1, X_2 and $P(X_1 + X_2 \le 1)$.

b) Define exponential distribution and find its variance. 6

5. a) If X is $N(\mu, \sigma^2)$ show that

$$E(|X - \mu|) = \sigma\sqrt{\frac{2}{\pi}}.$$ 6½

b) Let $f(x_1\, x_2) = x\, x_1^2\, x_2^3$, $0 < x_1 < x_2 < 1$, zero elsewhere be the joint pdf of X_1 and X_2. Find conditional variance of X_1 given $X_2 = x_2$, $0 < x_2 < 1$. 6

6. a) Let the random variables X and Y have the joint pdf $f(x, y) = \begin{cases} x + y, & 0 < x < 1, 0 < y < 1 \\ 0, & \text{elsewhere} \end{cases}$

Compute the correlation coefficient of X and Y. 6½

3. What do you mean by the term "leadership" Explain its concept, nature and significances in organisation. 2+4+5+5

OR

Discuss the nature of personality. Explain a Major Personality Theories. 4+12

4. What do you understand by the Stress Management ? What are the nature and sources of Stress Management ? 4+6+6

OR

What do you mean by the term "Resistance" ? Describe its nature and importance. 4+6+6

5. What is a line and staff organisation ? Explain its merits and demerits. 4+6+6

OR

Explain in details the various theories of Group Formation. 4+6+6

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. What are the major factors that determine the individual behaviour ? 16

OR

Discuss the significance of MC Gregor's Theory X and Theory of Y in dynamics of Organizational Behaviour. 16

2. What do you mean by perception ? Discuss the factors affecting perception. 4 + 12

OR

Write short notes on the following : 8 + 8

a) Attribution Theory

b) Job Satisfaction.

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 6×4

   a) What is meant by Process Control in industrial statistics ?

   b) Examine the need for quality control techniques in production.

   c) Define $\overline{X}$, R and σ charts.

   d) Explain what do you mean by Natural tolerance limit and Modified Control limits.

   e) Explain the method of collecting official statistics.

   f) Write the functions of NSSO.

   g) Define agricultural statistics. Explain its scope and importance in the country.

   h) What are the important information collected during Population Census.

Group-B

2. Define AQL,LTPC, AOQL and ASN. 9

3. What is Control chart ? Explain the basic principles underlying the control charts. Discuss the role of controlcharts in manufacturing process. 9

4. What is meant by specification limits and control limits. Explain the relation between the control limits,specification limits and reject limits. Also explain how the reject limits are constructed. 9

5. Explain the need for Statistical Organisation in India. 9

6. What is CSO? Write the important functions of CSO. 9

7. Explain Area and Yeild Statistics. How are these collected in Odisha ? Which are the organisation responsible for collection of such statistics. 9

8. Define Population Census. Name the authority which conducts Population Census in the country ? What is the need of conducting population census ? When was first population census and last census conducted in the country. 9

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following :

   a) Explain generalised coordinates with examples.Discuss an expression for the generalised velocity. 5+2½

   b) Apply Lagranges's equation of motion to a coupled oscillator and find the time period, 6½+1

   c) Using Hamiltons equation of motion derive an expression further Hamiltonian for a charged particle moving in an electromagnetic field. 7½

   d) Using Hamiltons's equation of motion discuss the motion of particle in a central force field. 7½

e) What do you mean by Minkowski space ? Show that the volume element is Lorentz invariant. 2½+5

f) i) A moving meter stic is measured to be 90 cm. What is its Speed ? 2½

ii) A spsce craft moving at 0.9c travels from earth to a star which is 4.5 light years away. Find the time of travel according to earth clock and space craft clock. 5

g) Discuss force four vector. Deduce expressions for its time component and space components. 2½+2½+2½

h) Show that $\frac{E^2}{c^2} - p^2$ is invariant in all reference frames. 7½

Group-B

2. Derive Lagranges equation of motion from Hamilton's principle, Applying the equations find the time period of a simple pendulum. 8 +4½

3. Derive Hamilton's equation as motion. Apply this equation to find the equation of motion of a simple harmonic oscillator. 8½+4

4. State the postulates of special theory of relativity. Using the postulates establish Lorentz transformation equations. 2½+10

5. What Lorentz transformation equations derive expressions for 6½+6
   i) Length contraction
   ii) Time dilations.

6. What do you mean by relativistic Doppler effect ? Using four vector formulation obtain Doppler frequency 2½+5+5
   i) When the source is at rest observer moving
   ii) Observer at rest source is moving.

7. Define Momentum four vector. Find the expression for its time and space components. Evaluate the square of four momentum and hence show that 2+3+ 3+ 4½

$$E^2 = m_0^2 c^2 + p^2 c^2.$$

8 Apply relativistic kinematics to a problem of two body decay of an unstable particle. 12½

7. Discuss how molecular weight of a polymer is determined by viscometric method. 9

8. What is glass transition temperature (Tg) ? How it is determined ? 9

9. Write the mechanism and kinetics of step growth polymerisation. 9

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2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following :

   a) Define and explain polymer with examples.What is the difference between a polymer and a macromolecule ? 6

   b) Define monomer. What are different types of monomers used for addition polymerisation ? 6

   c) Name one each of monofunctional, bifunctional and trifunctional monomers and discuss the geometry of polymers formed by the condensation of such monomers. 6

d) Differentiate between chain growth type and step growth type of polymerisation with two examples of each. 6

e) Indicate which of the following polymers are biological, non-biological or both Plastic, cellulose, wool, silk, resins, nylon, terylene, paints, starch, cotton, protein, rubber. 6

f) Write a note on ionic polymerisation. 6

g) Define with mathematical expression the four types of average molecular weights of polymers. What do you mean by molecular weight distribution of polymers ? 6

h) Discuss the factors affecting glass transition temperatures (Tg). 6

Group-B

2. a) What is the difference between homopolymer and copolymer ? 4

b) Explain the following : 5

i) Bulk polymerisation

ii) Emulsion polymerisation.

3. a) Define and explain the terms gegree of polymerisation. 5

b) Molecular weight of a polyethylene sample was found to be 22000. Calculate the degree of polymerisation. 4

4. Explain the mechanism and kinetics of copolymerisation. 9

5 Discuss the preparation and uses of: 3×3

a) Polystyrenes

b) Polyamides

c) Polysulphides.

6. Write notes on the following : 4½×2

a) Phenol-formaldehyde resin

b) Co-ordination polymerisation.

Group-B

2. Discuss different types Natural Resources vividly. 9

3. Mention about soil degradation and management. 9

4. Discuss threats and management strategies of Biodiversity. 9

5. Describe forests of India and their significance. 9

6. Discuss threats and management strategies of Fresh Water. 9

7. Discuss in detail, the Carbon Foot print. 9

8. Write an essay on Waste Management. 9

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Write short notes on any ***four*** of the following: 6×4

   a) Concept of sustainability

   b) Wetlands

   c) IPR

   d) Minor forest product

   e) GIS

   f) EIA

   g) Horticulture

   h) Estuarine.

Group-B

2. Describe the society organisation of a typical Honeybee colony. 9

3. Give an account of behaviour as a basis of evolution in animals. 9

4. Explain the various characteristics of Reflexes. 9

5. Discuss the 'Mate choice' in animals by inter-sexual-selection (female chioce) and mention its significance. 9

6. Give a brief profile of Karl Von Frisch. 9

7. What is Kinesis ? Describe different types of kinesis with suitable examples. 9

8. Explain various types of 'bee dance' and their significance for Honey bee. 9

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Write notes on any ***four*** of the following : 6×4

   a) Associative learning.

   b) Infanticide.

   c) Reflex Path.

   d) Innate Behaviour.

   e) Formation of New Beehive.

   f) Lunar Rhythm.

   g) Objectives of Behaviour.

   h) Solar Menotaxis.

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 6×4

   a) What is meant by Salami Attacks ?

   b) Write short notes on the following :
      i) Digital Certificates
      ii) Hash Function.

   c) Differentiate between Symmetric and Asymmetric Encryption. Write different uses of Encryption Mechanism.

   d) Write short notes on the following :
      i) Digital Signature
      ii) Transposition.

e) What are the different types of attacks in context of Information Security ?

f) Write short notes on the following :

i) Trap doors

ii) Substitution Ciphers.

g) What are the different Ethical issues in Security ?

h) What are the different file protection mechanisms ?

Group-B

2. What is meant by Threats ? Discuss different protection mechanisms in OS. 9

3. What is meant by programerrors ? Discuss different types of Non malicious programerrors. 9

4. Write short notes on the following : 9

i) Risk Analysis

ii) Organizational Security Policy

iii) Security Management.

5. Discuss Different types of Multilevel Security in Database. 9

6. Draw and explain the detailed architecture of Cryptography. 9

7. Write short notes on the following : 9

i) Sensitive data

ii) Security Planning

iii) Covert Channels.

8. Discuss different Security mechanisms in Networks. 9

Group-B

2. Who are Functional Intermediaries ? Discuss their role in strengthening financial system of a country. 12½

3. Discuss the role of SEBI in the regulation of primary markets in India. 12½

4. What are the main functions of Financial Institutions ? Critically evaluate the performance of LIC as a premier financial Instutution in India 12½

5. What do you understand by NBFCs ? Discuss about different categories of NBFCs and nature of their main activity. 12½

6. Discuss in detail the Pre-issue and Post-issue obligations prescribed for Merchant Banking in India. 12½

7. State the Salient Features of venture capital and explain the regulatory framework of venture capital in India. 12½

8. What are the steps followed by the credit rating agencies on the credit rating process ? 12½

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Write short notes on any ***four*** of the following: 7½×4

   a) Explain the role of Indian Finanacial System.

   b) Distinguish between primary market and secondary market.

   c) Explain the services Sender by merchant banker.

   d) Discuss different types of mutual fund.

   e) "Commercial Banks play an important role on the development of the economy" Discuss.

   f) What is meant by credit rating ? State the limitations of credit rating.

   g) Distinguish between hire purchase and lease.

   h) Distinguish between Commercial Bank and Merchant Bank.

Group-B

2. Who are Functional Intermediaries ? Discuss their role in strengthening financial system of a country. 12½

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5. What do you understand by NBFCs ? Discuss about different categories of NBFCs and nature of their main activity. 12½

6. Discuss in detail the Pre-issue and Post-issue obligations prescribed for Merchant Banking in India. 12½

7. State the Salient Features of venture capital and explain the regulatory framework of venture capital in India. 12½

8. What are the steps followed by the credit rating agencies on the credit rating process ? 12½

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Write short notes on any ***four*** of the following: 7½×4

   a) Explain the role of Indian Finanacial System.

   b) Distinguish between primary market and secondary market.

   c) Explain the services Sender by merchant banker.

   d) Discuss different types of mutual fund.

   e) "Commercial Banks play an important role on the development of the economy" Discuss.

   f) What is meant by credit rating ? State the limitations of credit rating.

   g) Distinguish between hire purchase and lease.

   h) Distinguish between Commercial Bank and Merchant Bank.

h) Write notes on the following :

i) Function proto type

ii) Global and local variable.

Group-B

2. Explain assignment statement, increment and decrement operator. 9

3. Discuss different types of data in C^{++}. 9

4. Write a program in C^{++} to find the roots of a quadratic equation. 9

5. What do you mean by looping ? Describe any two looping statements. 9

6. a) Write a program to generate the following series.
1, 12, 123, 1234, 12345. 4 + 5

b) Write a program to generate Fibonacci Series upto the given number of elements.

7. Write a function 'Power' that computes x raised to the power of y for integers x and y and returns a value. 9

8. Define an array. Explain how one-dimensional and two dimensional arrays are initialised. Write a program for addition of two square matrices. 9

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No 1 which is compulsory

Group-A

1. Write short notes on any ***four*** of the following : 6×4

a) What is a Variable ? Describe the rules of declaration of a variable with examples.

b) Write a program to input the length and width of a rectangle and then print its area and perimeter.

c) Explain if ...else and switch statement.

d) Write a program to find the largest of three numbers using if...else statement.

e) Write notes on while and do-while.

f) Write a program to multiply two integers using function.

g) Write a program using pointer to read an array of integers and prints the elements in reverse order.

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Write short notes on any ***four*** of the following: 6×4

   a) Write note on Rank of coal.

   b) Note on coal petrography.

   c) Write note on uses of coal and petroleum

   d) Write note on oil shale and CBM.

   e) Mention the mineralogy of Uranium and thorium.

   f) Write note on Utilisation of Radioactive elements.

   g) How environment is affected due to coal mining ?

   h) Write note on Reservoir rocks.

Group-B

2. Classify coals ? Mention the important characters of each class. 9

3. Write an essay on "Origin of Coal". 9

4. Give a detail account of Coal resources of India. 9

5. Write an essay on "Origin of Petroleum". 9

6. Give a detail account of Petroleum and gas resources of India. 9

7. Describe various types of oil traps with-diagram. 9

8. Give a detail account of Uranium and Thorium deposits in India. 9

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Write short answers on any ***four*** of the following : 4×7½

   a) What, according to Spivak are the tools for developing alternative histories ?

   b) For Saussure, a language is a system of signs –Explain.

   c) What is performative language ?

   d) How does Showalter distinguish 'the feminist critique' from "gynocriticism" ?

   e) What does Edward Said mean by the oriental "other" ?

f) What does Althusser's "repressive structures" of the state power refer to ? Explain.

g) Explain in brief the postmedernist concept of identity.

h) Explain how Aijaz Ahemed posits several methodologies that could be followed to define the characteristics of Indian Literature ?

Group-B

2. How does Aijaz Ahmed construct Indian Literature ? 12½

3. Discuss Althusser's views on idological state apparatuses and how do these operate. 12½

4. The publication of Showalter's essay "A literature of their own" set the stage for the creative burgeoning of feminist literary studies–Discuss. 12½

5. Derrida's essay "Structure, Sign and Play in the Discourse of the Human Science" is a manifesto of post modernism, deconstruction and poststructuralism–Discuss. 12½

6. Derrida sets play free in the joyous Nietzschean affirmation of the play of the world, a world without centre or origin–Discuss. 12½

7. Edward Said's Orientalism in a critique of the study of the Orient and its ideology–Discuss. 12½

8. How does Edward Said views the west orientalizing the orient ? 12½

9. Post colonial criticism focuses on issues like culture, gender, class, sexual orientation and hybridity–Discuss with reference to the text prescribed. 12½

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Write notes on any ***four*** of the following : 4×7½

   a) Basic characteristics of Odishan economy.

   b) Change in the occupational structure of Odisha.

   c) Main trends in our state's cropping Pattern.

   d) Special Economic zones.

   e) Components of state Domestic product.

   f) Causes of Poverty in Odisha and measures taken in Odisha for poverty alleviation.

   g) Role of education in economic development of Odisha.

   h) Performance of public sector enterprises in Odisha.

Group-B

2. Examine the effects of rapid population growth on Odisha's economic development. 12½

3. Explain the various causes of low agricultural productivity in Odisha. Suggest measures to raise agricultural productivity in our state. 12½

4. Discuss the importance and role of industries in economic development of Odisha. 12½

5. Examine the trends in revenue receipts and state's expenditure. Bring out the causes of fiscal imbalances. 12½

6. Analyse the nature, extent and causes of unemployment in Odisha. 12½

7. Analyse the problems of labour market in Odisha. Discuss the causes of migration of labour from Odisha to other states. 12½

8. Discuss in details the industrial policy Resolutions of 2015. 12½

Group-B

2. Is India taking a departure from its Non aligned foreign policy of the Cold War era ? Identify the continuity and discontinuity stance on broader International issue. 12½

3. Make a critical assessment on India USA civilian nuclear deal. How it redefined the relationship between two democracy ? 12½

4. Do you agree with the statement "better USA-India relationship will have an adverse impact on India-Russia relationship ? If Yes/No. Provide argument to justify your answer. 12½

5. How Indo-China relationship has been affected by India-USA strategic co-operation in Indo-Pacific relation ? 12½

6. "21st Century - a Century that looks set to be mainly Asia-dominated and Asia-Centric in designation ? Discuss. 12½

7. Do you think India as a hegemon in South Asia ? What can India do for making SAARC a success ? 12½

8. How did India negotiate climate deal in Paris Conference, 2016. 12½

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2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 7½×4

   a) Discuss India as an aspiring global power.

   b) To what extent is world multipolar ?

   c) Is regionalism in Asia replicating European experience ?

   d) "Security is from a local problem to a global challenge". Discuss.

   e) What is QUAD ? Do you think it will succeed ?

   f) Indo-China coordination in WTO related Issues. Discuss.

   g) What is Asian Century ?

   h) Give a note on Indo-USA bilateral meet, July 2017.

Group-B

2. State and explain Five-Vows (Pancha-Mahavratas) of Jainism. 12½

3. What are the Four-Noble Truths of Buddhism ? Explain. 12½

4. State and explain Eight-fold path of Buddhism. 12½

5. Explain and examine Four Persuits of Man (Dharma, Artha, Kama and Moksa) according to Hinduism. 12½

6. How the Monotheistic nature of Christianity is reconciled with its concept of God as Trinity ? Explain. 12½

7. State and explain Antony Flew's principle of falsification to Religious language. 12½

8. Discuss Braithwaite's Non-Cognitive theory of religious statements. 12½

2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 7½×4

   a) State the Seven-fold judgements of jainism.

   b) Explain Triratnas (three principles) of Jainism.

   c) Distinguish between Sila, Samadhi and Prajnā.

   d) What is Pratityasamutpāda of Buddhism?

   e) Why Moksa is called the Parama Purusartha ?

   f) State in detail three ways of conduct (Margas) according to Hinduism.

   g) Discuss the concept of 'Grace' in Christianity.

   h) State the nature of Religious language.

Group-B

2. Analyse the causes and results of the Kalinga War. 12½

3. Estimate the achievments of King Kharavela. 12½

4. Write about the growth of Buddhism in early Odisha. 12½

5. Give a picture of the socio-economic, political and cultural life of Odisha on the basis of Sarala Mahabharata. 12½

6. Point out the salient features of Maratha Administration in Odisha. 12½

7. Account for the 'Salt-Satyagraha' in Odisha. 12½

8. Write about the spread of English Education in Odisha during 19th Century. 12½

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2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Write short notes on any ***four*** of the following: 7½×4

   a) Causes of the Downfall of the Bhauma Rule in Odisha.

   b) The Sun Temple at Konark.

   c) 'Ganapati Worship' in Odisha.

   d) Features of Kalingan Temple Architecture.

   e) 'Panchasakhas'

   f) Social impact of Mughal and Maratha rule in Odisha.

   g) Bhakti Movement in Odisha.

   h) 'Chhamana Athaguntha'.

g) Discuss briefly flagship educational programmes of the Government of India.

Group-B

2. Analyse the functionalist theory of education. 12½

3. Discuss the role of education in social and human development. 12½

4. Analyse the role of education in the socialization of an individual. 12½

5. Discuss the causes of inequalities in educational opportunities in the Indian context. 12½

6. Discuss the problems of religious minorities in the Indian context. 12½

7. Discuss the educational reforms undertaken in the Post-Independent India. 12½

8. Discuss the problems associated with universalisation of education in the Indian context. 12½

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2017

Full Marks - 80

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 7½×4

a) Discuss briefly the concept of education.

b) Discuss briefly the relationship between education and social mobility.

c) Discuss the role of education in bringing about social change.

d) Write a brief note on secondary education in India.

e) Discuss briefly the problems of backward castes in India.

f) Write a brief note on the efforts of reformists in bringing about educational reforms in India.

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Answer any ***four*** of the following : 6 × 4

   a) Chilika.

   b) Mohanadi.

   c) Literacy in Odisha.

   d) Manganese production in Odisha.

   e) Super Thermal Power Plant.

   f) Factors of localisation of Aluminium industries.

   g) Airways development in Odisha.

   h) Trade of Odisha.

Group-B

2. Discuss the Physiography of Odisha. 9

3. Give an account of population growth in Odisha since Independence. 9

4. Describe in detail Rice production in Odisha. 9

5. Highlight the distribution and production of coal in Odisha. 9

6. Discuss the factors responsible for slow industrialisation in Odisha. 9

7. Discuss the problems and prospects of Steel Industries in Odisha. 9

8. Write the growth of Roadways in Odisha. 9

2017

Full Marks - 60

Time - 3 hours

The figures in the right-hand margin indicate marks

Answer ***five*** questions including Q.No1 which is compulsory

Group-A

1. Write short notes on any ***four*** of the following : 6×4

   a) Animism

   b) Totemism.

   c) Barter system.

   d) Stateless society.

   e) Religious conversion and movement.

   f) Power.

   g) Balanced reciprocities.

Group-B

2. What are the theories of religion ? 9

3. What is Production, how distribution and consumption occur in simple and complex society. 9

4. What is reciprocities, what are the different froms of exchange ? 9

5. How law and justice enforced in simple and complex societies. 9

6. What are the prospects for democracy and tolerance among and within the World's diverse civilization. 9

7. Write down the emergence of new religious sects in the global order. 9

8. Give the interrelationship between politics, religion and economy. 9

2017

Full Marks - 25

Time - 6 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Assess the level of 'environmental literacy' of four college students by using a questionnaire of environmental literacy in the Indian context. 12

OR

Assess the environmental awareness and attitude of 4 college students using "Bob Simpson's Environmental Awareness Questionnaire". 12

2. Record. 5

3. Viva-voce. 8

2017

Full Marks - 25

Time - 6 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Make statistical analysis by taking some raw data on your own. 10

OR

Write a report on statistical analysis of achievement scencs of the student of a class of two schools. 10

2. Record. 10

3. Viva-voce. 5

2017

Full Marks - 25

Time - 6 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Experimentally determine the R.L. of two point tactual threshold for the voler surface of the S's forearm by the method of limits. 12

OR

Determine experimentally the D.L. of the S's Kinesthetic sensation for lifted weights by using the method of constant stimuli. 12

2. Record. 5

3. Viva-voce. 8

2017

Full Marks - 25

Time - 6 hours

The figures in the right-hand margin indicate marks

Answer any ***three*** questions

1. Write a C program to show that if any five numbers from 1 to 8 are chosen, then two of them will add to 9. (Pigeonhole Principal). 15

2. Write a C program to generate all permutation of a string entered by user. 15

3. Write a C program to find out the shortest path between two distinct vertices of a weighted connected graph. 15

4. Write a C program to find out the minimal spanning trees from a connected weighted graph. 15

5. Write a C program to display all possible combination of a list of numbers entered by user. 15

6. Record and attendance. 4

7. Viva-voce. 6

2017

Full Marks - 25

Time - 6 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. a) Determine the partition coefficient of acetic acid/ benzoic acid in water and cyclohexane system. 15

OR

b) Determine the rate constant for the acid hydrolysis of methylacetate with hydrochloric acid. 15

2. Viva-voce. 7

3. Record. 3

Scheme of valuation

General Working	03
Result	09
Calculation	03

2017

Full Marks - 25

Time - 6 hours

The figures in the right-hand margin indicate marks

Attempt any ***one*** of the following

1. Test the given Diode and Transistor using a Multimeter. Design a switch (NOT gate) using a transistor. 15

2. Verify and design AND, OR, NOT and XOR gates using NAND gates. 15

3. Design a combinational logic system for a specified Truth Table. 15

4. Minimize a given logic circuit. 15

5. Build JK Master-slave flip-flop using flip-flop ICs. 15

6. Design an astable multivibrator of given specification using 555 Timer. 15

Practical Record. 4

Viva-voce. 6

2017

Full Marks - 25

Time - 6 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Examine and describe with labelled diagrams the skull of any one animal (Herbivorous/Carnivorous) as per the instruction of the examiners. 8

2. Identify and comment with labelled diagrams of Spot I-VII (4 disarticulated bones and 2 permanent slides as per the syllabus). 1½×6

3. Practical Record. 4

4. Viva-voce. 4

2017

Full Marks - 25

Time - 6 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Calculate the χ^2 value (chi-square) of the given sample 'A'. Explain whether the result support Mendel's prediction or not? 8

2. Analyse the supplied chart 'B'. Identify the trait and gene. 4

3. Draw and identify the photography/microslide on spot 'C', 'D' and 'E'. 2 × 3

4. Viva-voce. 5

5. Record. 2

2017

Full Marks - 25

Time - 6 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Analyse the pattern of settlement using nearest neighbour method. 8

   (Data to be supplied by the examiner)

   OR

2. Prepare a map diagram showing Central Business District. 6

   (Data to be supplied by the examiner)

3. Interprete the cultural landscape from the supplied toposheet. 6

4. Practical record. 2

5. Viva-voce. 3

2017

Full Marks - 25

Time - 6 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Determine Blood group of your subject. 10

2. Find out the finger ball pattern type of your subject. Find out thenar and hypothenar eminences of your palm. 5

3. Record. 5

4. Viva-voce. 5

c) Among the adult population of a certain town 50 percent males, 60 percent are wage earners and 50 percent are 45 years of age or over, 10 percent of the males are not wage-earners and 40 percent of the males are under 45. Make the best possible inference about the limits within which the percentage of persons (male or female) of 45 years or over are wage-earners.

d) A die is thrown 9,000 times and a throw of 3 or 4 is observed 3,240 times. Show that the die cannot be regarded as an unbiased one and find the limits between which the probability of a throw of 3 or 4 lies.

2. Viva-voce. 4

3. Record. 3

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2017

Full Marks - 25

Time - 6 hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***two*** of the following : 9×2

a) From the data relating to the yield of dry bark (x_1), height (x_2) and girth (x_3) for 18 cinchona plants, the following correlation co-efficient were obtained :

$r_{12} = 0.77$, $r_{13} = 0.72$ and $r_{23} = 0.52$

Find the partial Correlation Co-efficient $r_{12.3}$ and multiple Correlation Co-efficient $R_{1.23}$.

b) In a large city A, 20 percent of a random sample of 900 school children had defective eye-sight. In other large city B, 15 percent of random of 1,600 children had the same defect. Is this difference between the two proportions significan ? Obtain, 95% confidence limit for the difference in the population proportions.

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Prepare an observational matrix by studying the teacher behaviour through Flander's interaction analysis. (From your previous experiences). 10

OR

Write a report on classroom interaction analysis. 10

2. Record. 10

3. Viva-Voce. 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Compare the academic performance of boys and girls in four school subjects and report the differences by descriptive statistical analysis. 12

OR

Find out the descriptive summary of results of one-way ANOVA for five independent samples using SPSS and hypothetical data. 12

2. Record. 5

3. Viva-Voce. 08

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***one*** of the following as per the instruction of examiner. 8
   a) Study and describe six common birds from different orders.
   b) Study of different types of beaks and claws of birds.
   c) Study of different feathers of birds.

2. Identify with comments on the spots I to VI. 1½ × 6
   (4 museum specimen and 2 permanent slides as per the syllabus)

3. Practical Record. 4

4. Viva-Voce. 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Make a temporary preparation of the supplied specimen 'A'. Draw labelled digagrams and identify with reasons. 6

2. Make a temporary preparation of the supplied specimen 'B'. Study the anatomy and comment on the adaptive features. Give labelled diagrams. 6

3. Draw and identify the materials / micro slides / photographs on Spot - C, D, E. 6

4. Viva-Voce. 5

5. Class Record. 2

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Draw a world map showing the distribution of Biomes. 8

2. Drawing and Labelling a diagram of Nitrogen Cycle. 6

3. Draw a diagram of Carbon cycle. 6

4. Practical Record. 2

5. Viva-Voce. 3

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***three*** of the following : 5 × 3

   a) What is an Ethnography ? Distinguish between traditional Ethnography and Alternative Ethnography ?

   b) What are the objectives of the study in the given Ethnographic book's of Nuer Tribe.

   c) What are the methods and techniques used in the study of Nuer Tribe.

   d) What are the key findings in the given Ethnographic ?

2. Viva-Voce. 5

3. Practical Record. 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Draw a graph showing relation between agriculture, climate factors and a seasonal year. 8
   (Data to be supplied by the examiner)

2. Draw Industrial location model of Weber and Isodapane. 6

3. Prepare a map showing agricultural regions of the world. 6

4. Practical Record. 2

5. Viva-Voce. 3

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Take the following measurements and find out the given index : 10

   a) Stature

   b) Body weight

   c) Nasal height

   d) Nasal Breadth

   Find out the following indices :

   a) Body mass index

   b) Nasal index.

2. Project Report. 5

3. Record. 5

4. Viva-Voce. 5

5. a) Write a programme in Scilab for sin x and plot. 7½

   b) Write a programme in Scilab for

   $y = 3 \sin x + 4 \cos x$ and plot it. 7½

6. For matrix

$$P = \begin{bmatrix} 2 & -4 \\ -6 & 7 \end{bmatrix},$$

find the trace. 15

7. Find determinant of matrix 15

$$A = \begin{bmatrix} 5 & -2 & 3 \\ 4 & -1 & -5 \\ 6 & 7 & 9 \end{bmatrix}$$

Record 04

Viva-Voce 06

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Write any ***one*** programme and execute

Plot graph wherever necessary

1. Write a programme in Scilab to determine Resistance (R) of a wire using Ohm's law. 15

2. Write a programme in Scilab to calculate spring constant using Hooke's law. 15

3. Write a programme in Scilab to find solution of the equation and plot it. 15

$$\frac{dy}{dx} + e^{-x} = 0 ; \; x = 0, \; y = 0.$$

4. Write a programme in Scilab to find solution of differential equation and plot it. 15

$$y'' + 2y' = y ;$$

$$y = 0 \text{ at } t = 0$$

$$y' = 0 \text{ at } t = 0.$$

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. a) Determine the mass of copper present in the supplied solution iodometrically by preparing a standard $K_2Cr_2O_7$ solution. 15

OR

b) Determine the % of Chlorine available in the supplied bleaching powder iodometrically by preparing a standard $K_2Cr_2O_7$ solution. 15

2. Viva-Voce. 6

3. Record. 4

Scheme of Valuation

Preparation of standard solution	02
Standardisation	04
Titration	06
Calculation	03

c) X is a uniformly distributed random variables with mean 1 and variance $\frac{4}{3}$, if 3 independent observations of X are made, what is the probability that all of them are negative ?

d) Subway trains on a certain line run every half hour between mid-night and six in the morning. What is the probability that a man entering the station at a random time during this period will have to wait at least twenty minutes ?

2. Viva-Voce. 4

3. Record. 3

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***two*** of the following : 9×2

a) If X is a normal variate with mean 30, S.D. 5, find

i) $P(26 \le X \le 40)$

ii) $P(X \ge 45)$

iii) $P[|X - 30| > 5]$

b) For the 2×2 table,

a	b
c	d

prove that chi-square test of independence gives

$$\chi^2 = \frac{N(ad - bc)^2}{(a+c)(b+d)(a+b)(c+d)}, \quad N = a+b+c+d$$

Gain in wieght

Diet A : 25, 32, 30, 34, 24, 14, 32, 24, 30,

III-UG-Phy(CC)-VI (Pr.)

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Attempt any ***one*** question

1. Determine J by Callender and Barne's constant flow method. 15

2. Determine the co-efficient of thermal conductivity of Cu by Searl's apparatus. 15

3. Determine the co-efficient of thermal conductivity of a bad conductor by Lee's disc method. 15

4. Determine J by Calorimeter. 15

5. Calibrate the given thermocouple. 15

6. Study the variation of thermo-emf of a thermocouple with difference of its two junctions. 15

Practical Record	04
Viva-Voce	06

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***two*** of the following : 9 × 2

   a) The demand for a particular spare part in a factory was found to vary from day-to-day. In a sample study the following information was obtained :

Days	Mon	Tues	Wed	Thurs	Fri	Sat
No. of parts demanded	1124	1125	1120	1120	1126	1115

   Test the hypothesis that the number of parts demanded does not depend on the day of the week. (Given : the values of Chi-squares signficance at 5, 6, 7. d. f are respectively 11.07, 12.59, 14.07 at the 5% level of significance)

   b) Below are given the gain in weights (in kgs) of pigs fed on two diets A and B.

2017

Full Marks - 25
Time - 6 Hours
The figures in the right-hand margin indicate marks
Answer ***all*** questions

1. a) Determine the functional group of the supplied organic compound No. 8

   b) Prepare acetyl/benzoyl derivative of the supplied Organic Compound No. 7

2. Viva-Voce. 7

3. Record. 3

Scheme of Valuation

1. a) Preliminary tests 02
   Systematic Procedure 04
   Confirmatory test 02

   b) Derivative preparation 05
   Melting Point 02

2017

Full Marks - 25
Time - 6 Hours
The figures in the right-hand margin indicate marks
Attempt any ***one*** question

1. Determine J by Callender and Barne's constant flow method. 15

2. Determine the co-efficient of thermal conductivity of Cu by Searl's apparatus. 15

3. Determine the co-efficient of thermal conductivity of a bad conductor by Lee's disc method. 15

4. Determine J by Calorimeter. 15

5. Calibrate the given thermocouple. 15

6. Study the variation of thermo-emf of a thermocouple with difference of its two junctions. 15

Practical Record 04
Viva-Voce 06

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Prepare a temporary mount of any one tissue as per the instruction of the examiners. Draw a labelled diagram and comment on the mount. 8

2. Identify and comment with labelled diagrams on the spots I to VI. 1½ × 6

3. Practical Record. 4

4. Viva-Voce. 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Dissect, draw and describe in technical terms the spciemen 'A' and 'B', underline the diagnostic characters. Draw floral diagram, write floral formula and identify the genus. (3+1+2+1) × 2

2. Write the correct scientific name of two specimens 'C' and 'D'. Describe some important economical characters of the two specimens. 1½ × 2

3. Identify the specimen, write the correct family name, genus and species name of two specimen 'E' and 'F'. 3

4. Viva-Voce. 3

5. Class Records. 2

Write a shell script to enter 3 numbers and display the smallest and greatest number. 2½

3. Write a shell script to display the sum of first 10 naturalnumbers. 2½

OR

Write a shell script to enter 10 numbers and display totalodd and even numbers.

4. Write a program in C for First Come First Served Scheduling. 5

OR

Write a program in C for Shortest Job First (SJF) Scheduling. 5

Record and Attendance. 4

Viva-Voce. 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Write Unix commands for the following : 5

   a) Discplay the present working directory.

   b) Create a directory of your name.

   c) Create a file student inside the newly created directory consisting of roll, name, address and phone number of 5 students.

   d) Create a new file stud containing the contents of roll, name and phone number of student file. Display total number of characters, words and lines present in the file.

   e) Display the contents of both the file. Remove the directory.

2. Write a shell script to check whether a given number is positive or negative. 2½

OR

2. Write a PL/SQL program to swap two numbers without using intermediate variable. 2½

OR

Write a PL/SQL program to display the multiplication table of a number of your choice. 2½

3. Create and invoke a procedure QUERY_EMP to query a particular EMP record whose employee code is passed as parameter. 2½

OR

Create and invoke the RETURN-SAL function to return the salary of an employee to a host variable. Pass the employee code as parameter. 2½

4. Write a PL/SQL program to create a cursor to retrieve the EMP table details of thse employees whose department number is passed as parameter and display those employee details. 5

OR

Create a package named Arithmetic for performing all arithmetical operation (+,-,*,/) and test all the operation. 5

Record and Attendance 4

Viva-Voce 6

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Write the SQL commands for the following considering DEPT and EMP table. 5

   a) Display the name of all employees who have 'S' in their name in the EMP table.

   b) Display the employee name and their manager name for whom they are working.

   c) Display the details of those employees whose salary is more than BLAKE's salary.

   d) i) Create a STUDENT table based on the following table structure :

ROLL	NUMBER	2	PRIMARY KEY
NAME	VARCHAR2	10	NOT NULL
DOB	DATE		

   ii) Insert few records

   ii) Add a new column EMAIL in the above table.

   iii) Remove the table from the database.

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Identify the metamorphic rocks megascopically. ($R_1 - R_6$). 9

2. Identify the metamorphic rocks microscopically. ($R_7 - R_8$). 6

3. Solve the ACF problem. (Poblem to be given at the time of examination). 3

4. Lab. Record. 3

5. Viva-Voce. 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Identify the sedimentary rocks megascopically. ($R_1 - R_6$). 9

2. Identify the sedimentary rocks microscopically. ($R_7 - R_8$). 6

3. Analyse the given grain-size data. Represent the data graphically and interprete. 3

4. Lab. Record. 3

5. Viva-Voce. 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Assess the ethical values of five adolescents by using Donedson's Ethical Position Questionnaire (EPQ). 12

OR

Measure the gender difference in attitude towards women among adolescents using the 'Spence, Helmrich and Stapps' attitude towards Women Scale'. 12

2. Record. 5

3. Viva-Voce. 8

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Write a lesson plan of any topic of your method by 5E model. 10

OR

Write a lesson plan of any topic of your choice by Icon design model. 10

2. Record. 10

3. Viva-Voce. 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Describe the idea of any Indian Thinkers. 10

OR

Discuss any contemporary issue. 10

2. Record / Team Paper. 10

3. Viva-Voce. 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Draw a graph showing interrelation between average monthly temperature and rainfall condition of a particular location. (Data to be supplied by the examiner) 8

2. Construct max and min thermometer and explain its uses. 6

3. Construct a barometer and write its uses. 6

4. Practical record. 2

5. Viva-Voce. 3

2017

Full Marks - 50

Time - 6 Hours

The figures in the right-hand margin indicate marks

Perform any ***one*** Experiment

1. Determine wavelength of sodium light by Michelson's interferometer. 30
2. Determine thickness of air film by Fabry-Perot interferometer. 30
3. Verify Brewster's Law. 30
4. Determine Rydberg Constant by Spectrometer. 30
5. Determine wavelength of Laser Source. 30
6. Study of single slit / double slit diffraction using Laser Spectrometer. 30
7. Verification of Fresnel's law of polarised light. 30

Record 08

Viva-Voce 12

2017

Full Marks - 50

Time - 6 Hours

The figures in the right-hand margin indicate marks

Perform any ***one*** Experiment

1. Determine e/m by Magnetron valve. 30
2. Determine Stefan's Constant. 30
3. Determine e/m by Braun tube. 30
4. Determine Planck's constant using photo cell. 30
5. Determine e/m by Helical method. 30
6. Study the GM. counter characteristics. 30

Record 08

Viva-Voce 12

method. 15

6. Determine value of 'g' by bar pendulum. 15

7. Determine value of 'g' by Kater's pendulum. 15

8. Study motion of a spring and calculate spring constant and value of g. 15

Record	04
Viva-Voce	06

❐❐

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer any ***one*** questions

1. a) Measure length of the given cylinder using vernier calliper. 5

   b) Measure diameter of the given wire using screw gauge. 5

   c) Measure diameter of the rubber tube using travelling microscope. 5

2. Determine Moment of inertia of the Fly wheel. 15

3. Determine Young's modulus of a wire by Optical Lever method. 15

4. Determine modulus of Rigidity of a wire by Maxwell's needle. 15

5. Determine elastic constant of wire by Searle's

2. a) Using MATLAB software, find the solution of the diffusion equation

$$\frac{\partial u}{\partial t} - u^2 \frac{\partial^2 u}{\partial x^2} = 0,$$

where $u(x, 0) = \cos \pi x$, $u(0, t) = a$,

$$u(L, t) = b \; ; \; 0 < x < L, t > 0$$

and find the surface. 7½

OR

b) Using MATLAB find the solution of one dimensional wave equation

$$\frac{\partial^2 u}{\partial t^2} - c^2 \frac{\partial^2 u}{\partial x^2} = 0$$

where $u(x,0) = 0.5 - 0.5\cos\left(\frac{2\pi x}{L}\right)$,

$$\frac{\partial}{\partial t} u(x,0) = 0$$

$u(0, t) = 0$, $u(L, t) = 0$ and find the surface. 7½

3. Record. 4

4. Viva-Voce. 6

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. a) Using MATLAB software, find the solution of the 1st order differential equation

$$\frac{\partial v}{\partial t} = v^2, \; v(0) = \frac{1}{1+s^2}$$

and plot the integral surface. 7½

OR

b) Using MATLAB software, find the general solution of the non homogeneous system of ordinary differential equation

$$\frac{dx}{dt} = x + 2y + 1, \; \frac{dy}{dt} = -x + y + 1$$

where $x(0) = 2$, $y(0) = -1$. 7½

c) Calculate :

i) Quartile deviation (Q.D)

ii) Mean deviation (M.D)

from mean, for the following data :

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of Students	6	5	8	15	7	6	3

d) Ten competitors in a beauty contest got ranks by the three judges in the following order :

Judge-I	1	6	5	10	3	2	4	9	7	8
Judge-II	3	5	8	4	7	10	2	1	6	9
Judge-III	6	4	9	8	1	2	3	10	5	7

Use rank Correlation Co-efficient to discuss which pair of judges have the nearest approach to common tastes in beauty.

2. Viva-Voce. 4

3. Record. 3

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***two*** of the following : 9×2

a) A departmental store gives in-service training to its salesman which is followed by a test. It is considering whether it should terminate the service of any salesman who does not do well in the test. The following data give the test scores and sales made nine salesmen during a certain period :

Test scores	14	19	24	21	26	22	15	20	19
Sales ('00Rs.)	31	36	48	37	50	45	33	41	39

Calculate the co-efficient of correlation between the test scores and the sales.

b) Calculate the first four moments of the following distribution about the mean and hence find β_1 and β_2.

x	0	1	2	3	4	5	6	7	8
f	1	8	28	56	70	56	28	8	1

c) Write a 'C' program to enter a string and count total number of vowels present. 7½

3. a) Write a 'C' program to enter two numbers and swap it using pointers. 7½

OR

b) Write a 'C' program to enter values of three sides of a triangle and display the type of triangle. 7½

OR

c) Write a 'C' program to accept record of cricketers using structure having name, country name and batting average and display it. 7½

4. a) Write a program in 'C' to draw a circle. 7½

OR

b) Write a program in 'C' to draw a line. 7½

OR

c) Write a progrm in 'C' to draw an ellipse. 7½

5. Record. 10

6. Viva-Voce. 10

2017

Full Marks - 50

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. a) Write a 'C' program to find the sum of the following series for a given N. 7½

$$1 + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + \ldots\ldots\ldots + \frac{1}{N!}$$

OR

b) Write a 'C' pgoram that accepts a 4-digit natural number and displays the sum of the digits. 7½

OR

c) Write 'C' program to print all the prime numbers between 1 and 200. 7½

2. a) Write a 'C' program to find the factorial value of a natural number entered by user using recursion. 7½

OR

b) Write a 'C' program to multiply two square matrices of order 4. 7½

OR

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Estimate the amount of Fe(II) present in the supplied solution using standard $K_2Cr_2O_7$ solution of strength_____. 10

OR

Estimate the amount of Cu(II) present in the supplied solution using standard $Na_2S_2O_3$ solution of strength_____. 10

2. Identify the extra element present in the unknown organic compound. 5

3. Viva-Voce. 6

4. Record. 4

III-UG-Chem(GE-B)-I (Pr.)

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Estimate the amount of Fe(II) present in the supplied solution using standard $K_2Cr_2O_7$ solution of strength_____. 10

OR

Estimate the amount of Cu(II) present in the supplied solution using standard $Na_2S_2O_3$ solution of strength_____. 10

2. Identify the extra element present in the unknown organic compound. 5

3. Viva-Voce. 6

4. Record. 4

V-198-1.5 ❐❐

III-UG-Zool(GE-B)-I (Pr.)

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. a) To detect adulteration in (i) Ghee (ii) Sugars (iii) Tea leaves and (iv) Turmeric. 8½

   b) Estimation of Calcium in foods by titrimetry. 8½

2. Practical Record. 4

3. Viva-Voce. 4

❐❐

III-PG-Phy-XV (Pr.)

2017

Full Marks - 50

Time - 6 Hours

The figures in the right-hand margin indicate marks

Perform any ***one*** Experiment

1. Study the velocity of ultrasonic waves of various liquids at different temperatures. 30

2. Study the Hall appratus. 30

3. Determine energy gap using Four Probe method. 30

4. Study the lattice dynamics using lattice dynamic Kit. 30

5. Determine the concentration of the supplied unknown solution using spectrophotometer. 30

Practical Record	08
Viva-Voce.	12

❐❐

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Identify the rocks megascopically- ($R_1 - R_6$). 9

2. Identify the rocks microscopically - ($R_7 - R_8$). 6

3. Solve the problem. (Problem to be given at the time of examination). 3

4. Lab. Record. 3

5. Viva-Voce. 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Perform any ***one*** experiment

1. a) Measure length of the given cylinder using vernier calliper. 5

   b) Measure diameter of the wire using screw gauge. 5

   c) Find out diameter of a rubber tube by using travelling microscope. 5

2. Determine moment of inertia of a fly wheel. 15

3. Determine Elastic constant of a wire by Searle's method. 15

4. Determine value of 'g' by bar pendulum. 15

Record	04
Viva-voce	06

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***two*** of the following : 9×2

   a) The table below gives the distribution of a sample of 50 people according to weight. Calculate median.

Weight in Kg	*Frequency*
45-50	2
50-55	3
55-60	5
60-65	7
65-70	9
70-75	11
75-80	7
80-85	2
85-90	3
90-95	1

b) Calculate the first four moments of the following distribution about the mean and hence find β_1 and β_2.

x	0	1	2	3	4	5	6	7	8
f	1	8	28	56	70	56	28	8	1

c) Calculate :

i) Quartile deviation (Q.D)

ii) Mean deviation (M.D)

from mean, for the following data :

Marks	*No. of students*
0-10	6
10-20	5
20-30	8
30-40	15
40-50	7
50-60	6
60-70	3

d) Calculate the mean and standard deviation for the following table giving the age distribution of 542 members :

Age (in year)	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of members	3	61	132	153	140	51	2

2. Viva-Voce. 4

3. Record. 3

6. Write a programme in C/C++ to find the largest of given 3 numbers. 15

7. Write a programme in C/C++ to arrange the numbers 20, 2, 10, 6, 52, 31, 0, 45 in ascending and descending order. 15

8. Write a programme in C/C++ to find sum of a list of positive integers. 15

Record	04
Viva-Voce	06

❐❐

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Write any ***one*** programme and Execute

1. Write a programme in C/C++ to find area of a circle. 15

2. Write a programme in C/C++ to determine area of a square. 15

3. Write a programme in C/C++ to find out volume of a sphere. 15

4. Write a programme in C/C++ to determine value of π. 15

5. Write a programme in C/C++ to find the solution of the equation : 15

$$\frac{dy}{dx} + \frac{x}{y} = 0 .$$

Scheme for Valuation

For 1(a)	Standard solution preparation	04
	Titration	08
	Calculation	03
For 1(b)	Standardisation	04
	Titration	08
	Calculation	03

❐❐

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. a) Estimate the amount of Iron in grams present in the supplied solution using standard $K_2Cr_2O_7$ solution to be prepared by you. 15

OR

b) Determine the amount of carbonate and hydroxide in grams present in the supplied solution. Standard sodium carbonate solution of strength ..... $\frac{N}{10}$ is supplied to you.

2. Viva-Voce. 6

3. Record. 4

b) Write recursive functions to find the

i) Factorial of a number

ii) a to the power b (a^b)

iii) To multiply two nos m and n.

c) Write a program using function that returns the index of the largest value stored in an double dimensional array.

3. Answer any ***one*** of the following : 5

a) Create a structure that stores name, rollno, and branch of a student. Accept data of 20 students and find out the no. of students in each of the branches.

b) Write a program mycalc.c using command line arguement that works like a mini command line calculator. 5

c) Write a program mytype.c that displays the contents of a file. The file name should be taken as input from the user.

4. Record and attendance 4

5. Viva-Voce. 6

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***one*** of the following : 5

a) Write a program that accept student roll no. and average mark from user and print the result and grade of the student as pass if average is greater than 35 and grade as 'A' for >=85, 'B' for >=60 and <85, 'C' for >=50 and <60 else 'D'.

b) Write a program to print all prime numbers from 1 to N.

c) Write a program to sort an integer array using bubble sort.

2. Answer any ***one*** of the following : 5

a) Write a program using function mystrlen( ) to find the length of a string, mystrcpy( ) to copy a string to another string, mystrcat( ) to concatenate two string and myrev( ) to reverse a string. The function should be called according to user's choice.

Scheme of Valuation

For (a) and (b)

Density determination	04
Surface tension / Viscosity	08
Calculation	03

For (c)

Solution Preparation	06
pH for each one	03 × 3 = 09

❐❐

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. a) Determine the surface tension of the supplied liquid/solution by drop number method. 15

OR

b) Determine the Viscosity aqueous solution of ethanol supplied to you at room temperature.

OR

c) Prepare Sodium acetate-acetic acid buffer solutions pH 5.16, 4.10 and 4.54.

2. Viva-Voce. 6

3. Record. 4

b) Using MATLAB software write a program to trace an Ellipse. 5

4. Record. 4

5. Viva-Voce. 6

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. a) Using MATLAB software, write a program to plot the graph of the function log (2x + 3). 5

OR

b) Using MATLAB software, write a program to plot the graph of cos (2x + 5). 5

2. a) Using MATLAB software, write a program to plot the graph of the polynomial

$p(x) = 3x^4 + 4x - 2$, $p'(x)$ and $p''(x)$. 5

OR

b) Using MATLAB software sketch the parametric curve cycloid. 5

3. a) Using MATLAB software write a program to trace a parabola. 5

OR

MS-Excel

2. Prepare Excel sheet and enter the following data : 5

	A	B	C	D	E	F	G	H	J	K
1	Ecode	Name	Basic	DA	HRA	TA	IT	Gross	Ded	Net
2	E01	Jay	12000							
3	E02	Ramesh	20000							
4	E03	Sunil	30000							
5	E04	Kumar	25000							
6	E05	Lata	28000							

b) Calculate the missing cells value using formula.

c) Show all the records whose Basic is greater than 20000.

d) Sort the above database name wise in ascending order.

e) Protect the sheet.

MS-Powerpoint

3. Create five slides, each with different layout and animations about meaning, causes, effects and solutions of global warming. Make a self-running presentation of these slides. 5

Record and Attendance 4

Viva-Voce 6

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

MS-Word

1. Answer the following : 5

a) Write the steps to insert header and footer in a document.

b) What are hyperlinks ? How would you insert a hyperlink in a word document.

c) Write the steps involved to go to a particular page directly in a multipage document.

d) Create a file resume containing the details of your name, parents name, age, email, phone, educational qualification in the form of table and hobbies.

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***two*** of the following : 9×2

   a) The ranks of same 16 students in Mathematics and Physics are as follows. Two numbers within brackets denote the ranks of the students in Mathematics and Physics :

   (1, 1), (2, 10), (3, 3), (4, 4), (5, 5), (6, 7), (7, 2), (8, 6), (9, 8), (10, 11), (11, 15), (12, 9), (13, 14), (14, 12), (15, 16), (16, 13).

   Calculate the rank correlation Co-efficient for proficiencies of this group in Mathematics and Physics.

   b) Fit a straight line to be fill following data :

X	1	2	3	4	6	8
Y	2.4	3	3.6	4	5	6

c) From the data given below, find :

i) The two regression co-efficients.

ii) The two regression equations.

iii) The Co-efficient of correlation between the marks in Economics and Statistics.

Marks in Economics	*Marks in Statistics*
25	41
28	46
35	49
32	41
31	36
36	32
29	31
38	30
34	33
32	39

d) Obtain the equations of two lines of regression for the following data. Also obtain the estimate of X for Y = 70 :

X	65	66	67	67	68	69	70	72
Y	67	68	65	68	72	72	69	71

2. Viva-Voce. 4

3. Record. 3

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. What is the importance of Book review ? Describe the steps in reviewing a book. 10

OR

Prepare a report on Book review. 10

2. Record. 10

3. Viva-Voce. 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Administer a psychological test on intelligence by using Raven's programme Matrix. 10

OR

Write the importance of any psychological test and describe the procedure of scoring and interpreting of the scores of the list. 10

2. Record. 10

3. Viva-Voce. 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Study and describe the life stages of the given human parasite as per the instructions of the examiners. 8

2. Identify with comments on the spots I to VI. 1½ × 6 (3 museum specimen and 3 permanent slides as per the syllabus).

3. Practical Record. 4

4. Viva-Voce. 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

Give labelled diagrams wherever necessary

1. Make temporary prepration of the supplied material 'A' and 'B'. Draw neat labelled diagram and identify with reasons. 3½ × 2

2. Make temporary preparation of the supplied material 'C' following Gram staining procedure. Identify with reasons. 5

3. Draw labelled diagram and identify with reasons of the prepared permanent slides/line drawings/ photographs of Specimens 'D', 'E' and 'F' on the spot. 3 × 2

4. Viva-Voce. 5

5. Class Practical Record. 2

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer any ***one*** question

1. Determine the length/diameter of the supplied cylinder using vernier calipers and screw gauge. Also determine the diameter of a wire using travelling microscope. 15

2. Determine the moment of inertia of a Flywheel. 15

3. Determine the co-efficient of viscosity of water by capillary flow method (Poiseuille's). 15

4. Determine Young's modulous of the given wire by Maxwell's needle. 15

5. Determine 'g' by Bar pendulum. 15

6. Determine 'g' by Kater's pendulum. 15

Practical Record	04
Viva-Voce	06

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. To determine the population density in a given community by Quadrat method. 8

2. Conduct one of the following experiments of the aquatic ecosystem as per the instruction of the examiners. 8

   a) Determine the Dissolved Oxygen content by Winkler's method.

   b) Estimate the free CO_2 concentration in the water.

3. Practical record and sessional preparation. 4

4. Viva-Voce. 5

I-UG-Edn(GE-A)-I (Pr.)

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Prepare a term paper on the educational ideas of any Indian thinkers. 10

OR

Prepare a term paper on any contemporary issues on Education. 10

2. Record. 10

3. Viva-Voce. 5

I-UG-Bot(CC)-II (Pr.)

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Make a temporary cytological preparation of the supplied material 'A'. Find out at least two stages of cell division. Draw neat labelled diagrams and identify with reasons. 8

2. Make a qualitative test of the supplied biochemical 'B'. Identify the biochemical with reasons. 4

3. Draw labelled diagrams and identify with reasons of the prepared slide / bichemicals – C, D, E. 6

4. Viva-Voce. 5

5. Class Record. 2

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. To estimate Calcium in the given food by titrimetry. 8

2. To detect adulteration in two of the following items as per the instruction of the examiners. 4 × 2

   a) Gree

   b) Sugar

   c) Tea leaves

   d) Turmeric.

3. Practical Record. 4

4. Viva-Voce. 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Estimate the amount of Fe(II) present in the supplied solution using standard $K_2Cr_2O_7$ solution of strength_____. 10

   OR

   Estimate the amount of Cu(II) present in the supplied solution using standard $Na_2S_2O_3$ solution of strength_____. 10

2. Identify the extra element present in the unknown organic compound. 5

3. Viva-Voce. 6

4. Record. 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Experimentally find out the R.L. for two point tactual sensation on volar surface of the **'S'**s right forearm by the method of limits. 12

OR

Find out experimentally the D.L. of the **'S'** for lifted weight by the method of constant stimuli. 12

2. Record. 5

3. Viva-Voce. 8

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Make temporary preparations of any two components of the supplied mixture 'A'. Draw labelled diagram. Comment and identify with reasons. 3 × 2

2. Make temporary preparation of the supplied Specimen 'B'. Draw labelled diagram and identify with reasons. 6

3. Make temporary preparation of the supplied specimen 'C'. Draw labelled diagram and identify with reasons. 6

4. Draw and identify the material/micro-slide on Spot 'D', 'E' and 'F'. 3

5. Viva-Voce. 2

6. Record. 2

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Find out experimentally the longitudinal two point tactual threshold in the volexsurface of the **'S'**s right forearm by the method of limits. 12

OR

Experimentally determine the **'S'**s D.L. for lifted weights by the method of constant stimuli. 12

2. Record. 5

3. Viva-Voce. 8

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Assess the locus of control of four college students (2 boys and 2 girls) and find out the gender difference in locus of control by Rotter's locus of control scale. 12

OR

Examine the influence of age on the development of Emotional Intelligence (EI) during adolescence using 'The Schuttle Self-report Emotional Intelligence Test (SSEIT)'. 12

2. Record. 5

3. Viva-Voce. 8

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Draw the topographic profile of the given map. Describe the topography of the area. 6

2. Represent the following landforms with the help of contour diagram : 6

   a) Escarpment

   b) Ox-bow lake.

3. find out the stream order and biforcation ratio of the given drainage basin. (Map to be given). 6

4. Lab. Record. 3

5. Viva-Voce. 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Draw a graph showing interrelation between wet bulb temperature and relative hurmidity of a certain location. 8
   (Data to be dupplied by the examiner)

2. Construct a max. and min. thermometer and explain its uses. 6

3. Construct a barometer and write its uses. 6

4. Practical Record. 2

5. Viva-Voce. 3

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Interprete the Aerial photograph given. (Photo-pair to be given) 6

2. Solve the numerical problem related to scope of Photogrpah. (To be given) 6

3. Draw the tectonic elements in India map. 6

4. Lab Record. 3

5. Viva-Voce. 4

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Construct a diagonal scale of R.F $\frac{1}{6250}$ to read upto 1 kilometers and to read meters on it. 6

2. Draw a conical map with one standard parallel. (Data to be supplied by Examiner) 6

3. Draw a polar zenithal stereographic projection. (Data to be supplied by Examiner). 8

4. Practical Record. 2

5. Viva-Voce. 3

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Take the given measurements of your subject. Write down the procedure, instrument and the landmarks : 7½

   a) Maximum head length

   b) Bigonial breadth.

2. Take the somatoscopic observation of your subject : 7½

   a) Eye Colour

   b) Nose form.

3. Record. 5

4. Viva-Voce. 5

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***three*** of the following questions : 5 × 3

   a) What is an observation technique ?

   b) What are the different types of Interview technique ?

   c) Distinguish between questionnaire and schedule.

   d) Write a short note on Case Study Method.

   e) What is life history method ?

2. Viva-Voce. 5

3. Practical Record. 5

c) Ten Competitors in a beauty contest are ranked by three judges as follows :

	Competitors									
Judges	1	2	3	4	5	6	7	8	9	10
A	6	5	3	10	2	4	9	7	8	1
B	5	8	4	7	10	2	1	6	9	3
C	4	9	8	1	2	3	10	5	7	6

Discuss which pair of judges has the nearest approach to common tastes of beauty.

d) From the following data obtain the two regression equation :

Sales	91	97	108	121	67	124	51	73	111	57
Purchases	71	75	69	97	70	91	39	61	80	47

2. Viva-Voce. 4

3. Record. 3

2017

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer ***all*** questions

1. Answer any ***two*** of the following : 9 × 2

a) Calculate the mean and standard deviation for the following table giving the age distribution of 542 members.

Age (in years)	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of members	3	61	132	153	140	51	2

b) Fit a second degree parabola to the data :

X	0	5	10	15	20	25
Y	12	15	17	22	24	30

by method of least square.