each. The (1/70) yields [lb. per plot = (1/70) acre obtained are given in the following table.

Blocks	Yields (lbs per plot)			
i	(1) 23	K 25	P 22	KP 38
ii	P 40	(1) 26	K 36	KP 38
iii	(1) 29	K 20	PK 30	P 20
iv	KP 34	K 31	P 24	(1) 28

Analyse the data and give your conclusions.

2. Viva-Voce.   4

3. Record.   3

V-4-0.1   ☐☐

2018
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) An experiment was carried out to determine the effect of claying the ground on the field of barley grains; amount of clay used were as follows :

      A : No Clay

      B : Clay at 100 per acre

      C : Clay at 200 per acre

      D : Clay at 300 per acre.

   The yields were in plots of 8 meters by 8 meters and are given in the following table :

Column → Row ↓	I	II	III	IV	Row totals (R_i)
I	D 29.1	B 18.9	C 29.4	A 5.7	83.1
II	C 16.4	A 10.2	D 21.2	B 19.1	66.9

[Turn Over

	A	D	B	C	
III	5.4	38.8	24.0	37.0	105.2
	B	C	A	D	
IV	24.9	41.7	9.5	28.9	105.0
Column totals (C_j)	75.8	109.6	84.1	90.7	360.2

i) Perform the ANOVA and Calculate the critical difference for the treatment mean yields.

ii) Calculate the efficiency of the above Latin Square Design over (i) R.B.D. and C.R.D.

iii) Yield under 'A' in the first column was missing. Estimate the missing value and carry out the ANOVA.

b) Construct a 2^5-design in blocks of 8 plots each in a replicate, confounding the interactions ABC and BDE. Also identify any other effect which is confounded in this layout.

c) Consider the results given in the following table for an experiment involving six treatments in four randomised blocks. The treatments are indicated by numbers within parenthneses.

Blocks	Yield for a randomised block experiment treatment and yield					
	(1)	(3)	(2)	(4)	(5)	(6)
1	24.7	27.7	20.6	16.2	16.2	24.9
	(3)	(2)	(1)	(4)	(6)	(5)
2	22.7	28.8	27.3	15.0	22.5	17.0
	(6)	(4)	(1)	(3)	(2)	(5)
3	26.3	19.6	38.5	36.8	39.5	15.4
	(5)	(2)	(1)	(4)	(3)	(6)
4	17.7	31.0	28.5	14.1	34.9	22.6

Test whether the treatments differ significantly. Also

i) determine the critical difference between the means of any treatments.

ii) obtain the efficiency of this design relative to its layout as C.R.D.

d) An experiment was planned to study the effect of sulphate of potash and super phosphate on the yield of potatoes. All the combinations of 2 levels of super phosphate [0'cent (P_0) and 5 cent (P_1)/acre] and two levels of sulphate of potash ['0'cent (K_0) and 5 cent K_i/acre] were studied in a randomised block design with 4 replications for

VI-UG-Geol(DSE)-III (Pr)

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Draw the Earthquake zones of India in the outline map of India. 6

2. Draw the volcanic zones of India in the outline map of India. 6

3. Draw the soil type in the map of Odisha. 6

4. Lab. Record. 3

5. Viva-Voce. 4

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Perform any *one* of the experiment :   15
    a) Determine Specific Rotation of Sugar solution using Polarimeter.
    b) Study the Phenomenon of Reflection of Micro waves and prove the law of reflection.
    c) Study the phenomenon of Refraction of Microwaves and prove the law of Refraction.
    d) Study the phenomenon of Polarisation in Microwaves.
    e) Stuy the interference pattern in Microwaves (using double slit).
    f) Verify Stefan's Law of Radiation and determine Stefan's Constant.
    f) Determine the wave length and velocity of Ultrasonic waves in the given liquid.

2. Record.   4

3. Viva-Voce.   6

V-7-0.5

2018

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) To study and separate the plant pigments by paper chromotography.
    b) To study the effect of light intensity on the rate of photosynthesis
    c) To study the effect of CO_2 on the rate of photosynthesis.
    d) To study the effect of different wavelength of light on the rate of photosynthesis.

2. Demonstration experiments :   6

    Demonstration of fluorescence by isolated chlorophyll pigments.   6

3. Viva-Voce.   5

4. Class Record.   2

V-9-0.5

VI-UG-Chem(CC)-XIII (Pr)

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Identify 3 anions and 3 cations present in the supplied salt mixture No_____.   15

2. Viva-Voce.   6

3. Record.   8

VI-UG-Phy(CC)-XIV (Pr)

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Using a suitable programme in Scilab plot any *one* of the following :   15

   a) Planck's law of black-body radiation at different temperatures.

   b) Debye's results of specific heat at different temperatures.

   c) Maxwell-Boltzmann distribution function versus temperature.

   d) Fermi-Dirac distribution function versus temperature.

   e) Bose-Einstein distribution function versus temperature.

2. Record.   4

3. Viva-Voce.   6

2018

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 :   7½ × 2

   a) Write a 'C' program for Breadth First Search.

   b) Write a 'C' program for Depth First Search.

   c) Write a procedure for A* Search.

2. Record and Attendance.   4

3. Viva-Voce.   6

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. To determine the blood group of your own blood.   12
   (ABO group and Rh factor)

2. Describe with labelled diagrams the lymphoid organs
   given in the slides/microphotographs.   6
   (Any two organs my be set)

3. Practical Record.   3

4. Viva-Voce.   4

VI-UG-Chem(CC)-XIV (Pr)

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Analyse and Identify the supplied organic compound
   No._____ .   15

2. Viva-Voce.   6

3. Record.   4

VI-UG-Zool(CC)-XIV (Pr)

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

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

   a) Study of fossil evidences from plaster cast
      models and pictures.

   b) Study of homology and analogy from suitable
      specimens/pictures.

   c) Demonstration of changing allele frequencies
      with and without selection.

   d) Construction of cladogram based on
      morphological characteristics.

   e) Construction of phylogenetic tree with bio
      informatics tools (Clustal X and Phylip).

   f) Interpretation of phylogenetic trees.

2. Practical Record.   3

3. Viva-Voce.   4

VI-UG-Bot(CC)-XIV (Pr)

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Isolate the Protoplast by enzymatic method.   8

2. Describe the steps for production of Bt cotton / Golden rice / Flavr Savr tomato.   8

3. Viva-Voce.   7

4. Record.   2

V-20-0.5   □□

VI-UG-Geol(CC)-XIV (Pr)

2018

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 Aerial Photograph. (To be given)   3

3. Interprete the Satellite Imagery given.   6

4. Solve the problem related to Remote Sensing. (To be given)   3

5. Lab. Record.   3

6. Viva-Voce.   4

V-23-0.5   □□

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Answer any *two* of the followings : 7½ × 2

   a) Write a program in C or C++ to implement insertion sort.

   b) Write a program in C or C++ to implement heap sort.

   c) Write a program in C or C++ to implement quick sort.

   d) Write a program in C or C++ to implement merge sort.

2. Record and Attendance. 4

4. Viva-Voce. 6

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Determine the free acidity in ammonium sulphate fertilizer. 15

   OR

   Determine the percentage of Cu or Zn in the supplied sample.

   OR

   Estimate the amount of Calcium in CAN fertiliser.

   OR

   Determine the composition of dolomite by complexometric method.

2. Viva-Voce. 6

3. Record. 4

VI-UG-Bot(DSE)-III (Pr)

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. To conduct the sterilization procedures as per the instrucions given by the examiners. 6

2. To prepare a liquid / solid medium for bacterial culture. 6

3. Identify with comments on the given spots I to IV. (Microbes). 6

4. Practical Record. 3

5. Viva-Voce. 4

V-30-0.5 ☐☐

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Prepare solid media (Potato dextrose agar (PDA). 8

2. Demonstrate the various methods of sterilisation techniques. 8

3. Viva-Voce. 7

4. Record. 2

V-29-0.5 ☐☐

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

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

    a) What are the services provided by Google App Engine ?

    b) What are the Cloud Deployment Models ?

    c) Describe the architecture and services of Microsoft Windows Azure ?

    d) What are the facilities Amazon Compute Cloud (EC2) provides to its users ?

    e) Describe the Cloud Service Models ?

    f) What is Service Level Agreements (SLAs) in Cloud Computing ?

2. Practical Record and Attendance.   4

3. Viva-Voce.   6

□□

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. What is the purpose of visiting an educational administrative unit. What experience you gain in visiting such unit.   10

OR

State the functions of Regional office of CHSE.

2. Record.   10

3. Viva-Voce.   3

□□

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Assess the marital relationship of two couples (Age 25-30) administering Lerner's Couple's adjustment scale.   12

OR

Collect the case history of a Highschool student with problem behaviour in the standard format and submit the report.

2. Record.   5

3. Viva-Voce.   8

□□

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Measure the level of happiness of four adults from different income groups with the help of 'Oxford Happiness Questionnaire".   12

OR

Assess the spiritual intelligence of 4 adults using "King's spiritual Intelligence Questionnaire".

2. Record.   5

3. Viva-Voce.   8

□□

VI-UG-Edn(CC)-XIV (Pr)

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. What are the issues relating to midday meal programme in our state.   10

OR

Write your views on the functioning of SSA in our district.   10

2. Record.   10

3. Viva-Voce.   5

VI-UG-Edn(DSE)-III (Pr)

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Write a visiting report on IGNOU / SOU study centre of F.M. (Auto) College, Balasore.   10

OR

Wrie a report about the functioning of IGNOU / SOU study centre.   10

2. Record.   10

3. Viva-Voce.   5

2018
Full Marks - 25
Time - 6 Hours
The figures in the right-hand margin indicate marks
Answer *all* questions

1. Write down the procedure of taking latest print and make a ridge counting. 5

2. Write down the procedure of identifying blood stain. 5

3. Identify the given skeletal part and write down where it is located and its use. 5

4. Viva-Voce. 5

5. Record. 5

□□

2018
Full Marks - 50
Time - 6 Hours
The figures in the right-hand margin indicate marks
Answer *all* questions

1. Study the velocity of ultrasonic waves of various liquids at different temperatures. 30

    OR

    Determine the velocity of ultrasonic waves in different mediums using ultrasonic interferometer.

    OR

    Determine the concentration of supplied unknown solution using spectro photometer.

    OR

    Determine the magnetic susceptibility by Quinck's method.

    OR

    Study the dispersion relation of a diatomic lattice.

2. Viva-Voce. 12

3. Record. 8

□□

IV-UG-Geog(CC)-XIII (Pr)

2018
Full Marks - 25
Time - 6 Hours
The figures in the right-hand margin indicate marks
Answer *all* questions

1. Prepare a diagram showing Central Business District Zone.   6

2. Construct a diagram representing different agricultural regions in one frame.   6

3. Show different planning regions with a suitable delimiting method.   8

4. Practical Record.   2

5. Viva-Voce.   3

V-3-0.2   □□

VI-UG-Anth(CC)-XIV (Pr)

2018
Full Marks - 25
Time - 6 Hours
The figures in the right-hand margin indicate marks
Answer *all* questions

1. Identify various traits of a tribe.   10

2. Write down the contibutions of any one contemporary Indian Anthropologists.   5

3. Record.   5

4. Viva-Voce.   5

V-13-0.2   □□

VI-UG-Geol(CC)-XIII (Pr)

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Identify the given ore-forming minerals megascopically. (M_1 to M_3)　　6

2. In the map of Odisha, show the Iron ore occurances.　　6

3. In the map of Odisha, show the manganese ore occurances.　　6

4. Lab. Record.　　3

5. Viva-Voce.　　4

VI-UG-Anth(DSE)-III (Pr)

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Measure Weight and height of your friend and write down the daily nutritional intake (intake of total callories per day).　　10

2. Write down a special food preference of a population and its reason behind it.　　5

3. Viva-Voce.　　5

4. Record.　　5

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Generate a profile for your (subject/self) motivational factor with respect to achievement need, power, need for power and need for affiliation using suitable questionnaire or test.   12

OR

To assess the personality adjustment of the 'S' by using personality adjustment inventory.

2. Record.   5

3. Viva-Voce.   8

c) Determine an initial basic feasible solution for the following transportation. Using least cost method.

	D_1	D_2	D_3	D_4	Supply
O_1	6	4	1	5	14
O_2	8	9	2	7	16
O_3	4	3	6	2	5
Demand	6	10	15	4	35

d) A travelling salesman has to visit 5 Cities. He wishes to start from a particular city, visit each city once and then return to his starting point. Cost of going from one city to another is shown below. Find the least cost route.

To City

		A	B	C	D	E
	A	∞	4	10	14	2
	B	12	∞	6	10	4
From city	C	16	14	∞	8	14
	D	24	8	12	∞	10
	E	2	6	4	16	∞

2. Viva-Voce.   4

3. Record.   3

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer **all** questions

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

a) Solve the LPP :

$$\text{Max } z = 3x_1 + 2x_2$$

$$\text{subject to} \quad 4x_1 + 3x_2 \leq 12$$

$$4x_1 + x_2 \leq 8$$

$$4x_1 - x_2 \leq 8$$

$$x_1, x_2 \geq 0.$$

b) Use two-phase simple method to solve :

$$\text{Maximize} \quad z = 5x_1 + 3x_2$$

$$\text{subject to} \quad 2x_1 + x_1 \leq 1$$

$$x_1 + 4x_2 \geq 6$$

$$x_1, x_2 \geq 0.$$

Determine the relative ranks of the three students A, B and C, who have scored the marks with three examiners E_1, E_2 and E_3 as given in adjoining table.

Student	Marks given by examiner		
	E_1	E_2	E_3
A	25	62	73
B	48	51	35
C	78	25	50

2. Viva-Voce.   4

3. Record.   3

V-15-0.1   □□

2018

Full Marks - 25

Time - 6 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

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

a) The demand function for a commodity X is given by :

$$x = 300 - 0.5P_x^2 + 0.02P_0 + 0.05y$$

where x is the quantity demanded of X, P_X the price of X, P_0 the price of a related commodity and y is the constant income.

Compute :

i) The price elasticity of demand for X.

ii) The income elasticity of demand for X.

iii) Cross elasticity of demand for X, w.r.t. P_0 when $P_x = 12$, $P_0 = 10$, and y = 200.

b) Letter grades A, B, C, D, E (A being the highest and E the lowest) are assigned by two teachers

X and Y to the students of class for Honesty. The following table gives the distribution of the proportion of individuals in each rating.

Honesty / Teacher	A	B	C	D	E
X	0.10	0.15	0.50	0.20	0.05
Y	0.20	0.40	0.20	0.10	0.10

Find the numerical scores corresponding to each grade and each teacher.

c) Below are given the year (t), the yearly per capita consumption of butter in Kg(d_t) and the real price, (P_t), i.e. the nominal price divided by the consumer price index during the years 1 to 19.

t	d_t	P_t	t	d_t	P_t
1	12.16	19.92	11	18.44	1.25
2	12.63	1.62	12	18.85	1.21
3	13.46	1.76	13	18.77	1.27
4	14.12	1.74	14	19.11	1.40
5	14.94	1.67	15	19.91	1.34
6	15.34	1.51	16	20.38	1.30

7	15.65	1.47	17	20.44	1.42
8	17.04	1.44	18	2.20	1.46
9	17.62	1.37	19	20.44	1.48
10	18.04	1.30			

Fit a demand curve of the form : $d_t = CP_t^{-\alpha}$ ___* and calculate the price elasticity of demand.

d) A number of students were examined in a subject by three examiners E_1, E_2 and E_3 independently. The standards of marking of the examiners are reflected in the percentage frequency distribution of scores given in adjoining the following table.

Marks	Percentage frequency distributon of		
	E_1	E_2	E_3
0-10	5	10	5
10-30	15	20	25
30-50	50	60	50
50-70	24	8	10
70-90	5	2	8
90-100	1	--	2

2. Discuss Rousseau's concept of 'General Will'. 12½

3. Evaluate Rousseau as a democrat. 12½

4. Mary Wollstone Craft was a critique of Rousseau's ideas of education. 12½

5. Examine the alternations made by J.S. Mill in Utilitarianism. 12½

6. Examine the democratic ideas of J.S. Mill. 12½

7. Critically discuss Marx's theory of Dialectical Materialism. 12½

8. "The history of all the hitherto existing society is the history of class struggle". Examine the statement. 12½

9. Describe the ideas of Alexandra Kollontai on Proletarian Woman. 12½

▉▉

2018

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

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

a) Discuss on the development of Modern Political Ideas.

b) Rousseau's views on self-Government.

c) Examine Mary Wollstonecraft's ideas on legal rights.

d) J.S. Mill's views on rights of minority.

e) J.S. Mill's ideas on Liberty.

f) Evaluate Marx's contribution to the evolution of Political thought in the 19th and 20th Centuries.

g) Karl Marx's views on Alienation.

h) Examine Alexandra Kollontai's views on Socialisation of house work.

2018

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

୧. ଯେ କୌଣସି *ଚାରିଟିର* ଉତ୍ତର ଦିଅ :   ୭.୫ × ୪

କ) କୃଷ୍ଣଚନ୍ଦ୍ର ପାଣିଗ୍ରାହୀଙ୍କ ରଚିତ ଚାରିଟି ପୁସ୍ତକର ନାମ ଲେଖ ।

ଖ) ଭେରିଆର ଏଲଓ୍ଇନ୍‌ଙ୍କ ପରିଚୟ ପ୍ରଦାନ କର ।

ଗ) ସଂଘମ୍ ସାହିତ୍ୟ କହିଲେ କ'ଣ ବୁଝ ?

ଘ) ରାଜଶେଖର କବିଙ୍କୁ କେତେ ଭାଗରେ ବିଭକ୍ତ କରିଛନ୍ତି ଓ କ'ଣ କ'ଣ ?

ଙ) କବି ମାତ୍ରେ ହିଁ ଚିରକାଳ ଅଧମର୍ଣ୍ଣ କହିଲେ କ'ଣ ବୁଝ ?

ଚ) ରାଜାଧିରାଜ ମୁହୂର୍ତ୍ତକେ ସିଂହାସନଚ୍ୟୁତ କାହିଁକି ହୋଇଛନ୍ତି ?

ଛ) ବିଜ୍ଞାନର ପ୍ରଭାବ ଧର୍ମଶାସ୍ତ୍ର ଉପରେ ପଡ଼ିବା ଦ୍ୱାରା କ'ଣ ହେଉଛି ?

ଜ) ଫକୀରମୋହନଙ୍କ ଶାରୀରିକ ସ୍ୱରୂପକୁ ଲେଖକ ଭଗତଙ୍କୁ କିପରି ଚିହ୍ନାଇଛନ୍ତି ?

୨. ଏକ ସାର୍ଥକ ଆମ୍ଭଜୀବନୀ ରୂପେ 'ମୋ ସମୟର ଓଡ଼ିଶା'ର ମୂଲ୍ୟାୟନ
କର ।   ୧୨.୫

ଅଥବା

ପଠିତାଂଶ ଭିତ୍ତିରେ 'ମୋ ସମୟର ଓଡ଼ିଶା'ରୁ ତତ୍କାଳୀନ ସାମାଜିକ
ଚେତନାର ସ୍ୱରୂପ ବିଶ୍ଳେଷଣ କର ।

୩. ପଞ୍ଚପାଣ୍ଡବଙ୍କ ଦେଶରେ ଲେଖକ ଯେଉଁ ଅନୁଭୂତି ସଂଗ୍ରହ କରିଛନ୍ତି ତାହା
ଉଲ୍ଲେଖ କର ।   ୧୨.୫

ଅଥବା

ଭ୍ରମଣ କାହାଣୀର ଉପାଦେୟତା ଦୃଷ୍ଟିରୁ 'ଦୁଇଦିଗନ୍ତର ଆକାଶ' ଏକ
ସଫଳ ସୃଷ୍ଟି – ଏହାର ଯଥାର୍ଥତା ପ୍ରତିପାଦନ କର ।

୪. କାବ୍ୟ ରଚନା କ୍ଷେତ୍ରରେ ପ୍ରତିଭା ଓ ବ୍ୟୁତ୍ପତ୍ତିର ସମସଂଯୋଗ ଶ୍ରେୟସ୍କର
– ଉକ୍ତିଟିର ତାତ୍ପର୍ଯ୍ୟ ଲେଖ ।   ୧୨.୫

ଅଥବା

ରସସୃଷ୍ଟିରେ ଉପେନ୍ଦ୍ରଙ୍କ ଅପେକ୍ଷା ବାଣଭଟ୍ଟ ଜଣେ ଉଚ୍ଚକୋଟିର କଳାକାର
– ଉକ୍ତିଟିର ସତ୍ୟତା ପ୍ରମାଣ କର ।

୫. 'ମୁଁ କ୍ଷେତ୍ରଯିବି'ରୁ ଲେଖକଙ୍କ ଚିନ୍ତାଧାରା ବିଶ୍ଳେଷଣ କର ।   ୧୨.୫

ଅଥବା

''ମୁହୂର୍ତ୍ତକରେ ମୋତେ କହିଦିଅ ଭଗତେ, ଏ ବିଶାଳ ମନ୍ଥନର କେନ୍ଦ୍ରରେ
ସେ କିଏ ? – ଲେଖକଙ୍କ ବିଶୁଦ୍ଧ ଆଧ୍ୟାତ୍ମିକ ଚେତନା ଭିତରେ ବାରମ୍ବାର
ଉଙ୍କି ମାରୁଥିବା ଏହି ପ୍ରଶ୍ନର ତାତ୍ପର୍ଯ୍ୟ ବିଶ୍ଳେଷଣ କର ।

୬. ପରିବର୍ତ୍ତନ ବିନା ଉନ୍ନତି ସମ୍ଭବ ନୁହେଁ ବୋଲି ପ୍ରାବନ୍ଧିକ କହିବାର ତାତ୍ପର୍ଯ୍ୟ
ପଠିତ ପ୍ରବନ୍ଧକୁ ଭିତ୍ତିକରି ଆଲୋଚନା କର ।   ୧୨.୫

ଅଥବା

'ପ୍ରଳୟ ସଙ୍କେତ'ରୁ ପ୍ରାବନ୍ଧିକଙ୍କ ଦୃଷ୍ଟିଭଙ୍ଗୀର ପରିଚୟ ଦିଅ ।

□□

2. Explain according to John Hick the nature of Philosophy of religion. 12½

3. Give an account of the Judaic Christian concept of God as infinite and self-existent. 12½

4. Examine the ontological argument in favour of the existence of God. 12½

5. Is teleological argument for the existence of God free from Criticisms ? Discuss. 12½

6. Explain the sociological theory of religion as a ground for disbelief in God. 12½

7. Examine Process theodicy. 12½

8. Discuss after Hick the theory of reincarnation. 12½

9. Discuss the Vedantic view of Karma. 12½

2018

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

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

   a) Explain breifly God as Creator.

   b) What is agape ? Explain.

   c) Name the five ways of proving divine existence after Thomas Aquinas.

   d) Explain the First Form of moral argument.

   e) Religion is a 'return of the repressed' – Explain.

   f) Analyse the status of the miracle stories from theological point of view.

   g) What is the Irenaean theodicy ?

   h) What is the doctirne of resurrection of the dead ?

2. निम्नलिखित प्रश्नों में से किन्हीं **चार** का उत्तर दीजिए : 12½ × 4

क) साहित्यिक पत्रकारिता की परिभाषा पर आलोचना करते हुए उसके स्वरूप पर आलोचना कीजिए ।

ख) साहित्वक पत्रकारिता के उद्भव और विकास पर आलोचना कीजिए ।

ग) पत्रकार के रुप में भारतेन्दुजी का परिचय देतेहुए भारतेन्दु युगीन पत्रकारिता की विशेषताओं का उल्लेख कीजिए ।

घ) भारतेन्दुयुगीन और द्विवेदीयुगीन साहित्यिक पत्रकारिता की प्रबृत्तियों का तुलनात्मक लेख प्रस्तुत कीजिए ।

ङ) प्रेमचंदयुगीन साहित्यिक पत्रकारिता का सामान्य परिचय दीजिए ।

च) स्वातंत्र्यौतर हिन्दी साहित्यिक पत्रकारिता की सामान्य प्रबृत्तियों पर आलोचना कीजिए ।

छ) साहित्यिक पत्रकारिता में अनुवाद के महत्व पर आलोचना कीजिए ।

ज) छायावाद युगकी साहित्यिक पत्रकारिता के स्वरुप पर आलोचना करते हुए उसकी प्रबृत्तियों का वर्णन कीजिए ।

2018
Full Marks - 80
Time - 3 Hours
The figures in the right-hand margin indicate marks
Answer *all* questions

1. निम्नलिखित प्रश्नों में से किन्हीं **चार** का उत्तर दीजिए : 7½ × 4

क) साहित्यिक पत्रकारिता की अवधारणा स्पष्ट कीजिए ।

ख) भारतेन्दुयुगीन कुछ प्रमुख पत्रकारों का परिचय दीजिए ।

ग) द्विवेदी युगीन पत्रकारिता में द्विवेदीजी के योगदान पर आलोचना कीजिए ।

घ) साहित्यिक पत्रकारिता मे प्रेमचंदजी के योगदान पर आलोचना कीजिए ।

ङ) पत्रकारिता और साहित्यिक पत्रकारिता के भीतर एक तुलनाम्तक लेख प्रस्तुत कीजिए ।

च) छायावादयुगीन पत्रकारिता पर छायावादी काव्य प्रबृतियां की आलोचना कीजिए ।

छ) समकालीन साहित्यिक पत्रकारिता की अवधारणा स्पष्ट कीजिए ।

ज) छायावादयुगीन पत्रकारिता की विशेषताओं पर आलोचना कीजिए ।

2. Describe the scope and applications of Forensic Anthropology.   9

3. Identification of human and nonhuman skeletal remains.   9

4. Describe the discovery and techniques for recovering skeletonized human remains.   9

5. Describe any four methods of Identification in living persons.   9

6. What is Serology ? Describe the patterns of blood stains.   9

7. What is forensic odontology ? Describe the tooth structure and growth.   9

8. Describe about DNA profiling ?   9

9. Describe about how Bite marks, Tattoo marks, Deformities help in identification in living persons.   9

2018

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

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

6 × 4

a) Forensic Anthropology

b) Facial reconstruction

c) Forensic odontology

d) Serology

e) Somatoscopy

f) Semen and Saliva

g) Semen and Saliva

h) Human skeletal remains.

2. Write the concept, characteristics and types of regions. 9

3. Elaborate Friedman's concept of regional development. 9

4. Discuss Myrdal's theory of regional development. 9

5. Give a brief note on methods of regionalisation. 9

6. Describe the agro-climatic zones of India. 9

7. Elucidate the IADP programme in India. 9

8. Explain the problems and prospects of development of hilly regions. 9

9. Critically examine the IRDP programme in India. 9

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2018

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

1. Give brief notes on any *four* of the following :

6×4

a) Composite region

b) Regional concept in Geography

c) Growth pole theory

d) Dynamic region

e) National Capital Region

f) DVC

g) Causes of regional disparity

h) DPAP

[Turn Over

6. What is a treatment contrast ? When are two such contrasts said to be orthogonal ? Show that in 2^3 experiment the main effects and interactions are mutually orthogonal. 9

7. For the one-way classified fixed effect model find the estimates of the parameters used and hence obtain the expectations of various sum of squares. 9

8. Explain the principle of confounding in design of experiments. Suppose we have a 2^3 experiment with three factors each at two levels. Let there are three replicates each devided into 2 blocks, each block of 4 units. Show how you will confound ABC. 9

2018

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

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

   a) Discuss the meaning of Analysis of variances and give its uses. State the basic assumptions in the analysis of variance.

   b) Distinguish between (i) fixed effect models and random effect models in analysis of variance.

   c) Describe the following fundamental principles :

      i) Randomisation

      ii) Replication

      iii) Local Control.

d) Explain the difference between partial confounding and total confounding in factorial experiments.

e) Explain the concepts of interactions, main effects and confounding. Why normally the higher order interactions are confounded and not the lower order interactions ?

f) Discuss the advantages and disadvantages of confounding and state how the disadvantages can be partially overcome.

g) Give notes on the following :

i) Uniformity trials

ii) Experimental error.

h) Discuss the advantages and disadvantages of randomised block design.

2. What is meant by a randomised block design ? Give the analysis of variance for the design, stating clearly the mathematical model and the underlying assumptions.   9

3. Explain how missing plot technique can be used to estimate the missing yield of two plots in the case of randomised block design. Also write down the analysis of variance table.   9

4. How is the efficiency of a design measured ? Derive the expressions to measure the efficiency of Latin Square Design over a Randomised Block Design when rows rules are used as blocks.   9

5. Describe the factorial method of experimentation. Explain the situation where it could be used. Hence state the advantages of a factorial experiment over a simple experiment.   9

2. Explain the nature of educational planning. What are its objectives ? 4½+4½

3. Explain cost benefit analysis of educational planning. 9

4. Describe the process of planning for development of a school. 9

5. Discuss the democratic type of educational administration. 9

6. State the functions of OPEPA as regards educational administration in our state. 9

7. Discuss centralised Vs. decentralised type of educational management. 9

8. 'Educational expenditure is an investment'. Elaborate. 9

9. Elaborate private cost and social cost of education. 4½+4½

□□

2018
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

1. Answer any *four* of the following :

   a) What is educational planning ? What are its scope ? 3+3

   b) Explain how educational plans are formulated. 6

   c) What are the objectives of educational administration ? 6

   d) Explain the directing and controlling functions of educational administration. 3+3

   e) Give the structure of state level educational administration in Odisha. 6

   f) Explain the concept 'educational management'. 6

   g) What is mean by Capital Cost of Education ? 6

   h) Explain financing by parents for the education of their children. 6

h) Find out the advantage counselling for alcohol and drug abused persons.

2. Describe the importance of education and training for a counsellor. 9

3. What is Counselling ? Discuss the process of Cunselling. 9

4. Counselling emphasizes people's ability to develop their human potential and to choose how they create their existencies– Discuss. 9

5. Examine the role of Yoga and meditation in behaviour modification. 9

6. Describe the role of counsellors for college students. 9

7. Describe the models and methods of family counselling. 9

8. In time counselling with the persons having suicidal tendency prevents suicide. – Discuss. 9

9. Describe the different factors influencing counselling. 9

2018
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

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

a) Describe the scope of counselling in India.

b) What are the characteristics of a good counsellor.

c) What is client centered approach of counselling.

d) Discuss the objectives of rational emotive therapy.

e) To maintain a good relationship between client and counsellor is the key of successful counselling. Discuss.

f) Why is it necessary of counselling for adolescents in schools.

g) Discuss the application of counselling in marriage and family life.

2018

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

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

   a) Briefly describe gauge transformations in electromagnetic theory of Maxwell.

   b) Explain the necessity of introducing the displacement current into the curl equation for magnetic field.

   c) Explain how the transverse nature of plane EM waves emerges from Maxwell's equations.

   d) What is plasma frequency of an ionised medium ? Explain its significance for ionospheric propagation.

[Turn Over

e) Write down the boundary conditions for the electric and magnetic field components parallel and perpendicular to the interface between two media characterized by $(\in_1, \mu_1)$ and $(\in_2, \mu_2)$ respectively.

f) Explain single mode and multiple mode fibres.

g) Explain Circular polarization of an electromagnetic wave with diagram.

h) Define optical rotation and explain Biot's laws for rotatory polarization.

2. State and prove Poynting's theorem and interpret the Poynting vector.   9

3. Derive the wave equations for plane electromagnetic waves through vacuum and get the expression for wave impedance. Why is it called so ?   9

4. Derive the Fresnel formulae for parallel polarization of electromagnetic waves incident on a boundary between two dielectric media.   9

5. Explain evanescent waves in case of metallic reflection for normal incidence on a metal surface.   9

6. Derive the Fresnel formulae for Biaxial crystals. 9

7. What is a Babinet Compensator ? Explain its construction, working and uses.   9

8. Explain how elliptically polarized electro-magnetic waves can be produced and detected.   9

9. Give a detailed account of Fresnel's theory of optical rotation and derive the expression for angle of rotation.   9

8. Discuss the following industrial processes and their mechanism : 3×3

   a) Synthesis of Gasoline.

   b) Hydroformyllation

   c) Alkene hydrogenetion.

V-49-0.5 □□

2018

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

1. Answer any *four* of the following :

   a) What is meant by solubility product ? How is the principle applied in the qualitative analysis of Group-II Basic radicals ? 2+4

   b) Explain common ion effect with an example. Discuss one of its applications. 3+3

   c) Why are organometallic compounds more reactive than Grignard's reagents ? How does organolithium compound react with (i) CO_2 and (ii) HCHO ? 2+4

   d) Discuss the properties and bounding in alkyl compounds of Aluminium and Magnesium. 6

   e) Discuss the structure of ferrocene. 6

f) Compare the aromaticity and reactivity of ferrocene with that of benzene. 6

g) Define and explain Catalyst with an example. Discuss alkene hydrogenation process in detail. 2+4

h) Write notes on the following : 3+3

   i) Wacker process

   ii) Synthesis of gas by metal carbonyl complexes.

2. a) Name the basic radicals of Gr-III A and Gr-III B of qualitative analysis. What are the group reagents of these groups ? Also name the precipitates formed in each case. 2+2+2

   b) Discuss the principle involved in the separation of cations into groups and choice of group reagents. 3

3. Discuss the tests for the acid radicals fluorides, borates, oxalates and phosphates. Give equations. 9

4. a) Explain organometallic compounds with examples. How are they classified ? 2+4

   b) State and explain Effective Atomic Number (EAN) rule as applied in organometallic compounds with an example. 3

5. Explain the preparation, structure and bonding in $Fe(CO)_5, Mn_2(CO)_{10}$. $4\frac{1}{2} \times 2$

6. a) Define π-acid ligands. 2

   b) Write notes on the following :

   i) Role of trimethylaluminium in polymerisation of ethane. 2

   ii) Species present in ether solution of Grignard reagent and their structures. 5

7. Discuss the kinetics and mechanism of the following reactions : $4\frac{1}{2} \times 2$

   a) Substitution reactions in square planar complexes.

   b) Substitution reactions in octahedral complexes.

[Turn Over

3. Discuss the mechanism of Carbon assimilation in Calvin Cycle.   9

4. Give a brief account of the structure and physiological role played by various photosynthetic pigments.   9

5. Describe the biochemical reactions during Glycolysis along with the enzymes involved in the process.   9

6. Explain the process of Electron transport chain and oxidative photophosphorylation found in aerobic respiration.   9

7. Give a brief classification of Lipids. Explain the synthesis of triglycerides under the following headings :   9
   i)   Synthesis of Fatty acids
   ii) Formation of Glycerol

8. Why Nitrogen is essential for plants ? Name some available source of Nitrogen to the plants. Describe Nitrate Assimilation in higher plants.   9

9. What is Nitrogen fixation ? Describe the mechanism of symbiotic Nitrogen fixation in Leguminous plants.   9

2018

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
Draw labelled diagrams wherever necessary

1. Write notes on any *four* of the following :   6 × 4
   a)   Isoenzyme
   b)   Induced fit model
   c)   Photo oxidation of water
   d)   Photo system-I and II (only diagram)
   e)   Significance of ATP
   f)   Gluconeogenesis
   g)   Ammonifying bacteria
   h)   Signal transduction.

2. Explain the role of enzymes in regulating metabolic activities through Allosteric and Covalent modulation.   9

3. Describe the structure of antibody and discuss the mechanism of antigen-antibody interaction. 9

4. Describe the structure and functions of different classes of immunoglobins. 9

5. Discuss how our body fights against invading pathogens. 9

6. What is Vaccination ? How it is done ? What are the recent development in it. 9

7. Describe the process of cell mediated immunity. 9

8. Describe innate immunity and humoral immunity. 9

9. Comment on thymus dependent and thymus independent immuntiy. 9

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2018

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

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

a) Active immunity

b) Hypersensitivity

c) Structure and function of I_gG

d) Complement system

e) Cytokines

f) Haptens

g) Monoclonal antibodies

h) Autoimmunity.

2. What is immunity ? Give an account of different types of immunity in man. 9

6. a) Differentiate between Top-down and Bottom-up Parsing techniques. Parse the sentence in bottom up parsing. 5

   "The big tree shades the old house by the stream"

   b) Convert the following sentencs is to FOPL : 4

   i) Everybody likes somebody.

   ii) Every even number is divisible by 2.

7. Write short notes on the following : 9

   i) Syntactic Analysis

   ii) Planning Graphs

   iii) Reasoning.

8. What is Planning ? What are the different components of Planning ? Describe different types of Planning. 9

9. What are the components of a Script ? Write a Script on Restaurant. 9

□□

2018

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

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

   a) Suppose you are given 3 jugs of capacities 8, 5, 3 litres respectively but none of them are calibrated. The first jug filled with milk. By the method of pouring back and forth among the three jugs, divide the 8 litres in to two equal parts.

   b) Differentiate between script and frame. Create an instantiated person frame for an individual Rakesh who is 60 years old doctor, lives in Baripada, Odisha with his wife Neha and two children Aman and Aryan.

   c) Differentiate between CNF and DNF. Translate the following into Disjunctive Normal Form and Conjunctive Normal Form.

   $$\sim (X \rightarrow Y) \rightarrow Z.$$

d) Write short notes on the following :

   i) Neural Networks

   ii) Logical Agent

   iii) Machine Translation.

e) Express the following statement as a conceptual graph :

   "Mohan takes soup with a spoon at Romi-restaurant".

f) Write down the syntax and semantics of FOPL.

g) Differentiate between informed and non-informed search techniques. Write the procedure for A* search technique.

h) Write short notes on the following :

   i) Decision Trees

   ii) Knowledge Representation

   iii) Adversarial Search.

2. Determine the starting state, goal state and legal moves and draw the state space for the well-known missionaries cannibal problem, listed below :

   There are three missionaries, three cannibals and a boat on the left bank of a river. All the six persons to

be transported to the right hand bank using a boat. The boat carries only two persons at least one person should bring back the boat. If the cannibals outnumber the missionaries on either side of the bank, they will eat the missionaries. 9

3. Given the following information for a database :

   i) If x is on the top of y, y supports x.

   ii) If x is above y and they are touching each other, x is on the top of y.

   iii) A cup is above a book.

   iv) A cup is touching a book.

   Using Resolution Principle to show that SUPPORTS (book, cup) is true. 9

4. Compare and contrast between Conventional system and Expert system. Explain the detailed rule based archicture of an expert system. 9

5. What is meant by Natural Language Processing ? Parse the sentence through ATN. 9

   "The book is kept on the table".

2. Discuss the meaning and nature of urban sociology. 12½

3. Discuss the specific traits of Rural World Vrs. Urban World. 12½

4. Explain the Concentric Zone theory of patterns of city growth. 12½

5. Explain caste pattern in Urban Modern India. 12½

6. Discuss the major social problems i.e. crime and juvenile delinquency. 12½

7. What is a slum ? Discuss the slum development programmes. 12½

8. Discuss the urban development programmes in India. 12½

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□□

2018

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

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

   a) Discuss rural-urban differences.

   b) Importance of urban sociology.

   c) Explain multiple nuclei theory.

   d) Discuss kinship in Urban India.

   e) Write a note on urban politics and urban economy.

   f) Write a note on Beggary in India.

   g) Write a note on slums.

   h) Urban basic service - Discuss.

2. Describe the mineralogy, mode of occurence and distribution of copper deposits in India.   9

3. Describe the mineralogy, mode of occurence and distribution of Pb-Zn deposits in India.   9

4. Write a note on the East Coast Bauxite deposits in India.   9

5. Describe briefly the heavy minerals found in Odisha coast.   9

6. Write a note on manganese deposits of Jamda-Koira valley.   9

7. Describe the petroliferous basins of India.   9

8. Describe the mode of occurrence and distribution of mica deposits in India.   9

9. Briefly describe the Sukinda Chromite belt.   9

2018

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

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

a) Outline the various uses of manganese and copper.

b) Write a note on distribution of lead and zinc in India.

c) How is graphite used in industry ? Also outline the uses of mica.

d) Write a short note on gemstonos of Odisha.

e) What are mineral based industries ?

f) Mineralogy of Iron ore.

g) Various types of Petroleum traps.

h) Insitu-theory of origin of coal.

6. Find the value of the integral $I = \int_C \bar{Z}\, dz$

   when C is the right hand half,

   $$Z = 2e^{i\theta}\left(-\frac{\pi}{2} \le \theta \le \frac{\pi}{2}\right)$$

   of the circle $|Z| = 2$ from $Z = -2i$ to $Z = 2i$.   12½

7. Let (X, d) be a metric space, $G \subset X$ and $G = A \cup B$ where A and B are separated sets. Then prove

   i)   If G is open, then A and B are open.

   ii) If G is closed, then A and B are closed.   12½

8. Let (X, d) be a metric space and $A \subset X$. Then prove that $x \in X$ is a limit point of A if and only if $\exists$ a sequence $\{x_n\}$ of points in A., none of which equals x, such that $\lim\limits_{n \to \infty} x_n = x$.   12½

9. Let (X, d) and (Y, p) be metric spaces and $f : X \to Y$ be a function. Then prove that f is continuous if and only if $f\left(\bar{A}\right) \subset \overline{f\left(A\right)}$, for every subset A of X.   12½

2018

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

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

   a) In C[0, 1] determine the values of $d_\infty(x, y)$ and $d_1(x, y)$ when

       $x(t) = t^3 + t + 1$ and $y(t) = t^3 + t^2 + \frac{1}{2}t + 1$.

   b) Let (X, d) be a metric space and $x \in X$,. Let $\mathbb{N}_x$ be the collection of all nbds of x. Then prove that

       i) $M, N \in \mathbb{N}_x \Rightarrow M \cap N \in \mathbb{N}_x$

       ii) $N \in \mathbb{N}_x$ and $M \supset N \Rightarrow M \in \mathbb{N}_x$

   c) Let (X, d) be a metric space. Then prove that for every pair of distinct points x and y in X, $\exists$ disjoint open sets U and V such that $x \in U$ and $y \in V$.

d) Let $\{x_n)$ be a sequence in a metric space (X, d) such that $\lim_{n \to \infty} x_n = x.$ Let A be the range of the sequence $\{x_n\}$. Then prove that

   i) If A is a finite set, then $x_n = x$, for finitely many n.

   ii) If A is an infinite set, then x is the limit point of A.

e) Let $f : R \to R$ be the function given by

$$f(x) = \begin{cases} 1, & x \text{ is rational} \\ 0, & x \text{ is irrational} \end{cases}$$

Then prove that f is discontinuous at every point of R.

f) Let (X, d) be a metric space and A, B $\subset$ X be disjoint sets. Then prove that

   i) If A, B both are closed, then A and B are separated.

   ii) If A, B both are open, then A and B are separated.

g) Sketch the following set and determine the domain : $|2z +3| > 4$.

h) Show that $\log(1-i) = \dfrac{1}{2} \ln 2 - \dfrac{\pi}{4} i.$

2. If $f'(z) = 0$ everywhere in a domain D, then prove that $f(z)$ must be constant throughout D. 12½

3. In each case determine the singular points of the function and state why the function is analytic everywhere except at those points : 12½

  a) $f(z) = \dfrac{2z+1}{z(z^2 +1)}$

  b) $f(z) = \dfrac{z^3 +i}{z^2 - 3z + 2}$

  c) $f(z) = \dfrac{z^2 +1}{(z+2)(z^2 + 2z + 2)}$

4. Show that $\log e = 1 + 2n\pi i$ ($n = 0, \pm 1, \pm 2, ...$) 12½

5. Evaluate the following integrals : 12½

  a) $\displaystyle\int_1^2 \left(\dfrac{1}{t} - i\right)^2 dt$

  b) $\displaystyle\int_0^{\pi/6} e^{i2t} dt$

[2]

h) Explain the main arguments in favour of social responsibilities of business.

2. Discuss briefly the subsidiary objects of audit. 12½

3. How would you verify the following : 12½

   a) Goodwill

   b) Plant and Machinery

   c) Trade-mark.

4. Discuss the rights of a company auditor. 12½

5. Explain the civil liabilities of a company auditor. 12½

6. What is cost audit ? What are its objectives ? 12½

7. What is Management Audit ? Discuss its scope and need in present age. 12½

8. Discuss the importance of good corporate governance. 12½

9. Explain responsibility of business towards employees and consumers. 12½

2018

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

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

   a) What are the advantages of Continuous Audit ?

   b) What are the special points to which an auditor must pay special attention in vouching Receipts (Debit side of Cash Book)

   c) Explain the procedure for appointment of first auditor of a company.

   d) State the important contents of an Audit Report.

   e) State the provisions regarding appointment, qualifications and disqualifications of Cost Auditor.

   f) Distinguish between Financial Audit and Management Audit.

   g) What are the recommendations of Narayan Murthy Committee on Corporate Governance ?

h) Explain the main arguments in favour of social responsibilities of business.

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   a) Goodwill

   b) Plant and Machinery

   c) Trade-mark.

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6. What is cost audit ? What are its objectives ?   12½

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8. Discuss the importance of good corporate governance.   12½

9. Explain responsibility of business towards employees and consumers.   12½

2018
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

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

   a) What are the advantages of Continuous Audit ?

   b) What are the special points to which an auditor must pay special attention in vouching Receipts (Debit side of Cash Book)

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   d) State the important contents of an Audit Report.

   e) State the provisions regarding appointment, qualifications and disqualifications of Cost Auditor.

   f) Distinguish between Financial Audit and Management Audit.

   g) What are the recommendations of Narayan Murthy Committee on Corporate Governance ?

2. What do you mean by 'Research' ? Explain its significance in modern times. 12½

3. Describe the different types of research, clearly pointing out the differences between an experiment and a survey. 12½

4. Define the term 'Practical Criticism' and how can we use it in various forms of literature ? Explain it in your own words. 12½

5. What is 'Term Paper' ? Discuss its various steps for writing a suitable topic in a text book. 12½

6. What is 'Conceptualization' ? Discuss how can we write various proposals for a good research work ? 12½

7. What is the difference between references and a bibliography ? Discuss it in your own words. 12½

8. What is a Research Proposal ? Discuss the various primary elements for preparing a research work. 12½

9. What is Bibliography ? Discuss its various types of Bibliography with suitable examples as a research scholar can use it for his research work. 12½

2018

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

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

   a) Define the term, 'Research Methodology'.

   b) What is the difference between Practical and Literary Criticism ?

   c) What elements do you necessiate for a 'Term Paper' ?

   d) How do you organise the basic ideas for a research paper ?

   e) What are the elements of a research proposal ?

   f) What is the main purpose in education ?

   g) What is the data of research ?

   h) How can we define the concepts– Notes, References and Bibliography ?

3. Write a note on Depression with reference to crisis in Capitalism. 12½

4. Write a note on New Deal Policy of President F.D. Roosevelt. 12½

5. Discuss the causes of Spanish-American war. 12½

6. Write a note on the American Policy of expansion in the Far East. 12½

7. Discuss the factors responsible for the rise of low well Factory System. 12½

8. What is Mass culture in the 1920s ? 12½

9. Discuss the career and achievements of Booker T. Washington as the dominant leader of the African-American Community. 12½

2018
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

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

   a) Carpetbaggers

   b) Causes of labour movements

   c) Woodrow Wilson's Fourteen Points

   d) Causes of Agrarian Crisis

   e) Bombing of Hiroshima and Nagasaki

   f) Marcus Garvey

   g) Niagra movement and the founding of NAACP.

   h) Who were the Quakers ? What did they believe ?

2. Discuss the role of the conservatives and the Radicals in bringing political changes and economic transformation in the United States of America between C 1776-1945. 12½

3. Discuss 'The Coase Theorem' in relation to environmental issues. 12½

4. Examine the Pigovian taxes and subsidies in correcting the problems arising out of environmental externalities. 12½

5. Suggest some policies to control transboundary pollution. Examine their effectiveness. 12½

6. Examine the environmental issues of the globe related to international trade. 12½

7. What are the various measures used for measurement of Sustainable development. 12½

8. Discuss the methods used for measuring the benefits of environmental improvements. 12½

9. Discuss the various environmental policies adopted in India over the years. What are the limitations to successful implementation of our environmental policies. 12½

□□

2018
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

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

   a) Issues in environmental economics.

   b) Natural resources and its management.

   c) Enviornmental externalities.

   d) Pigovian taxes and fees for environment pollution.

   e) Climate change.

   f) Sustainable development.

   g) Common Property Rights.

   h) Benefits of environmental improvements.

2. What is 'Environmental Economics' ? Distinguish between environmental economics and resource economics. 12½

2. Discuss the family system among the Muslims and its impacts of Social Legislation on marriage. 12½

3. Write an essay on 73rd Constitutional Amendment Act on empowerment of woman. 12½

4. Discuss the achievements of women in various fields. 12½

5. Discuss the strategies for the protection of women's rights and rehabilitation of women in India. 12½

6. Discuss the characteristics of violence against women. 12½

7. Give a short history of women's movement in India. 12½

8. Discuss on the social consequences of women's employment in modern India. 12½

9. Bring out the remedies to reduce gender discrimination. 12½

2018

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

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

   a) Discuss the main differences between Patriarchal and Matriarchal joint families.

   b) Bring out the social causes of sex-gender differences in the society.

   c) Discuss the factors for the disintegrating Hindu Joint-Family.

   d) Examine the role of women in Indian Family.

   e) Elaborate the rights of a girl child.

   f) Sources of Political Power for women in India.

   g) Give a brief history of Feminist movement.

   h) Discuss the increasing violence against women within and outside family.

2. State and explain the Buddhist theory of Causation. 12½

3. Discuss Brahman as 'Satchidananda' following Sankara. 12½

4. Give an account of Sankhya theory of Prakriti. 12½

5. Explain Ramanuja's concept of mukti. 12½

6. Examine Sankara's concept of soul. 12½

7. State and explain Aristotle's concepts of form and matter. 12½

8. What is dualism ? What are the objections to it ? 12½

9. What is realism ? Explain its different forms. 12½

V-85-0.3 ☐☐

2018

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

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

a) What is Satkaryavada ? How does it differ from Asatkaryavada.

b) How according to Jaina reality is manifaceted ?

c) What are the distinctive features of the Visistadviatavada ?

d) What is Nirvana ? Does it mean nothingness ?

e) Write a note on pre-established harmony.

f) Give an explanatory note on Plato's theory of ideas.

g) 'Physical objects are families of sense experience' – Explain.

h) Elucidate Conceptualism.

2018

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

1. अधोलिखितेषु **चतुर्णां** प्रश्नानाम् उत्तरं लिखत :   7½ × 4

क) मन्त्रभेदः कथं भवेत् ?

ख) विना वाक्येन कथं मन्त्रभेदो भवति ?

ग) कथं राजपुरुषेभ्ये मन्त्राणां प्रकटं भवति ?

घ) कः ब्रह्मावर्त्तः ?

ङ) कः चूडाकरणसंस्कारः ?

च) के व्रात्याः भवन्ति ?

छ) किं तावत् रोगस्य कारणम् ?

ज) किं श्रेष्ठवैद्यस्य लक्षणम् ?

V-40   [Turn Over

2. मन्त्रसिद्धये आचार्य विशालाक्षस्य मतम् उपस्थापयत ?   12½

3. आचार्यः पिशुनः मन्त्ररक्षणार्थं किम् उक्तवान् ?   12½

4. मन्त्ररक्षणाय आचार्यकौटिल्येन किं विधिनिषेधं निर्धारितम् ? 12½

5. मनुस्मृतेः वेदमूलकत्वं प्रतिपादयत ।   12½

6. धर्मस्य लक्षणं मनुस्मृत्यानुसारं लिखत ।   12½

7. नवजातकस्य नामकरणसंस्कारः वर्णनीयः ।   12½

8. चरकसंहितानुसारं रसस्य लक्षणं भेदान् गुणान् च वर्णयत।   12½

9. वातपित्तश्लेष्मणः गुणान् प्रशमनोपायान् च शास्त्रदिशा लिखत ।   12½

୨. ଯେ କୌଣସି *ଚାରିଟିର* ଉତ୍ତର ପ୍ରଦାନ କର :   ୧୨.୫ × ୪

କ) ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ ରଚନାଧାରା ସମ୍ପର୍କରେ ଆଲୋକପାତ
    କର ।

ଖ) ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସରେ ଥିବା ବିଭିନ୍ନ ଯୁଗର ନାମୋଲ୍ଲେଖ
    କରି ଓ ବିଭିନ୍ନ ଯୁଗର କେତେକ ବିଶିଷ୍ଟ ସ୍ରଷ୍ଟାଙ୍କ ନାମ ତାଲିକା
    ପ୍ରସ୍ତୁତ କର ।

ଗ) ଓଡ଼ିଆ ଅନୁବାଦ ସାହିତ୍ୟର ଇତିହାସ ବିଶ୍ଳେଷଣ କର ।

ଘ) ସ୍ୱାଧୀନତା ପୂର୍ବବର୍ତ୍ତୀ ଓଡ଼ିଆ ପ୍ରବନ୍ଧ ସାହିତ୍ୟର ବିକାଶଧାରା ଦର୍ଶାଅ ।

ଙ) ସତ୍ୟବାଦୀ ଯୁଗୀୟ କାବ୍ୟ କବିତାରେ ଜାତୀୟ ଚେତନା କିପରି
    ପ୍ରତିଫଳିତ ଆଲୋଚନା କର ।

ଚ) ଓଡ଼ିଆ ପଦ୍ୟ ସାହିତ୍ୟର ଇତିହାସରେ 'ସବୁଜ ଯୁଗ'ର ସ୍ୱାକ୍ଷର
    କିପରି ଭାସ୍ୱର - ଆଲୋକପାତ କର ।

ଛ) ଓଡ଼ିଆ କଥା ସାହିତ୍ୟର ବିକାଶଧାରାରେ ମନୋଜଦାସଙ୍କ ଭୂମିକା
    ନିରୂପଣ କର ।

ଜ) ସ୍ୱାଧୀନତା ପୂର୍ବବର୍ତ୍ତୀ ଓଡ଼ିଆ ନାଟକର ବିକାଶଧାରା ଦର୍ଶାଅ ।

2018
Full Marks - 80
Time - 3 Hours
The figures in the right-hand margin indicate marks
Answer *all* questions

୧. ଯେ କୌଣସି *ଚାରୋଟିର* ସଂକ୍ଷିପ୍ତ ଉତ୍ତର ପ୍ରଦାନ କର : ୭.୫ × ୪

କ) ଓଡ଼ିଆ ସାହିତ୍ୟର ଇତିହାସ ରଚନରେ ଯୁଗର ବିଭାଗୀକରଣର
    ଆବଶ୍ୟକତା ନିରୂପଣ କର ।

ଖ) ଅନୁବାଦ ସାହିତ୍ୟ କହିଲେ କ'ଣ ବୁଝ ? ଅନୁବାଦ କେତେ ପ୍ରକାରର
    ଓ କ'ଣ କ'ଣ ?

ଗ) ଯେ କୌଣସି ଦୁଇଜଣ ଓଡ଼ିଆ ସାହିତ୍ୟର ଅନୁବାଦକଙ୍କ ନାମ ଲେଖ,
    ପ୍ରତ୍ୟେକଙ୍କ ଦୁଇଟି ଲେଖାଏଁ କୃତିର ନାମ ଲେଖ ।

ଘ) ଓଡ଼ିଆ ପ୍ରବନ୍ଧ ସାହିତ୍ୟର ପ୍ରକାର ଭେଦ ଦର୍ଶାଅ ।

ଙ) ରୀତିଯୁଗର ଶ୍ରେଷ୍ଠକବି ଓ ତାଙ୍କ କାବ୍ୟ ମଧ୍ୟରୁ ତିନୋଟି କାବ୍ୟର
    ନାମ ଉଲ୍ଲେଖ କର ।

ଚ) କବି ସଚିରାଉତରାୟଙ୍କ କବିତା ସମ୍ପର୍କରେ ସ୍ୱମତ ପ୍ରଦାନ କର ।

ଛ) ଫକୀରମୋହନଙ୍କ କଥା ସାହିତ୍ୟ ସୃଷ୍ଟିର ପରିଚୟ ପ୍ରଦାନ କର ।

ଜ) କାଞ୍ଚକାବେରୀ ନାଟକର ବିଷୟବସ୍ତୁ ସମ୍ପର୍କରେ ଆଲୋଚନା କର ।

2. वैदिक रुद्रस्य स्वरुपं वर्णयत ।   12½

3. वाक्सूक्तस्य महत्वं विशदयत ।   12½

4. वैदिक वरुणदेवस्य परिचयं लिखत ।   12½

5. बृहती, पङ्क्ति छन्दसः लक्षणम् उदाहरणेन सह दीयत ।   12½

6. महर्षि वसिष्ठस्य आख्यानं लिखत ।   12½

7. वैदिकसाहित्यं प्रति गौतमक्रषे अवदानं लिखत ।   12½

8. सोमस्य स्वरुपं यथावेदं वर्णयत ।   12½

9. त्रिष्टुप्, जगती छन्दसः लक्षणम् उदाहरणं च लिखत ।   12½

V-88-0.5   □□

2018

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

1. अधोलिखितेषु *चतुर्णां* प्रश्नानाम् उत्तरं देयम् :   7½ × 4

   क) वेदआधारेण विश्वामित्रस्य उपाख्यानाम् वर्णयत ।

   ख) महर्षि भरद्वाजस्य कथां ग्रन्थानां परिचयं चलिखत ।

   ग) वैदिकअग्नेः स्वरुपं वर्णयत ।

   घ) स्त्रीदेवता रुपेण उषसः वैशिष्ट्यं लिखत ।

   ङ) वेदं प्रति कण्वस्य अवदानं विचारयत ।

   च) गायत्री छन्दसः परिचयम् उदाहरणं च दीयत ।

   छ) वैदिकअनुष्टुप् छन्दसः वैशिष्ट्यं लिखत ।

   ज) मन्त्रद्रष्टारुपेण गृत्समद मुनेः अवदानं वर्णयत ।

ज) सप्रसंग व्याख्या कीजिए :

वह उसे प्रेम की वस्तु नहीं सम्मान की वस्तु समझती थी। उनसे भागती फिरती, उनको देखते ही उसकी प्रफुल्लता पलायन करजाती थी।

2. निम्नलिखित प्रश्नों में से किन्ही **चार** का उत्तर दीजिए : 12½ × 4

क) हिन्दी उपन्यास के उद्भव और विकास पर एक आलोचनात्मक लेख प्रस्तुत कीजिए ।

ख) निर्मला उपन्यास नारी चरित्र प्रधान उपन्यास है । उपन्यास में वर्णित नाती समस्या पर आलोचना कीजिए ।

ग) प्रेमचंद द्वारा लिखित 'कर्बला' नाटक नाट्य कला की दृष्टि से एक सफल नाटक है - आलोचना कीजिए ।

घ) समस्यामूलक उपन्यासकार के रुप में प्रेमचंद लिखिए उपन्यासों के आधार पर आलोचना कीजिए ।

ङ) 'साहित्य का उद्देश्य' निबन्ध के आधार प्रेमचंदजी की साहित्यिक मान्यताओं का परिचय दीजिए ।

च) कहानी कला की दृष्टि से 'पूस की रात्' कहानी की समीक्षा कीजिए ।

छ) 'शरतरंज के खिलाडी' कहानी के आधार पर प्रेमचंदजी की राजनैतिक चिंताधारा पर आलोचना कीजिए ।

ज) 'पंच के पद पर बैठकर न कोई किसी का दोस्त होता है, न दुश्मन ।' पठित कहानी के आधार पर प्रमाणित कीजिए ।

2018

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

1. निम्नलिखित प्रश्नों में से किन्ही **चार** का उत्तर दीजिए :   7½ × 4

क) प्रेमचंद लिखित कुछ प्रमुख उपन्यासों का संक्षिप्त परिचय प्रदान कीजिए ।

ख) चरित्र चित्रण की दृष्टि से 'निर्मला' उपन्यास की आलोचना कीजिए ।

ग) 'कर्बला' नाटक के आधार पर हूसैन का चरित्र चित्रण कीजिए ।

घ) निबन्धकार के रुप में प्रेमचंद की विशेषताओं पर आलोचना कीजिए ।

ङ) उद्देश्य की दृष्टि से 'पूस की रात' की समीक्षा कीजिए ।

च) शतरंज के खिलाडी में तात्कालिक राजनैतिक स्थिति का वास्तविक चित्र वर्णित है - आलोचना कीजिए ।

छ) 'पर आज मुझे ज्ञात हुआ कि पंच के पद पर बैठकर न कोई किसीका दोस्त होता है, न दुश्मन । न्याय के सिवा उसे और कुछ नहीं सूझता'' उपरोक्त गद्यांश की सप्रसंग व्याख्या प्रस्तुत कीजिए ।

2. Discuss the scope of Industrial Sociology. 12½

3. Define industrial sociology and discuss its nature. 12½

4. Discuss the theory of Max Weber in industrial thought. 12½

5. Explain the need theory of Maslow. 12½

6. Write an essay on industrial evolution in India. 12½

7. Discuss the origin and function of informal organisation. 12½

8. Write an essay on industrial relations in India. 12½

2018
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

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

   a) Significance of industrial sociology in India.

   b) Explain the Classical theory of Adam Smith in Industrial Sociology.

   c) Explain the sociological theory of Herzberg.

   d) Write a note on the guild system in the development of industry.

   e) Discuss the nature and features of formal organisation.

   f) Explain the informal organisation of Management.

   g) What is International Labour Legislation. Explain.

   h) Explain Worker's Participation in Management (WPM).

4. What are the environmental effects on physical performance ?   9

5. What are training techniques and physiological effects ?   9

6. Describe about body composition and Athletes.   9

7. Describe about human biological variability.   9

8. Describe the physiologic implications of food across time, space and society.   9

9. Describe how health and nutrition are related ?   9

□□

2018
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

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

6×4

   a) Anthropology of sports

   b) High attitude on physiological response

   c) Sports selection

   d) Health and nutrition

   e) doping

   f) Physical performance

   g) Monitoring

   h) Body composition.

2. What are the components of Physical fitness.   9

3. What is the Anthropology of sports ?   9

[2]

2. Discuss the meaning and nature of resources.   9

3. Give a critical account of the impact of population pressure on resource use and development.   9

4. Describe the distribution and utilisation of iron ore.   9

5. Highlight the distribution, use and conservation of petroleum resource.   9

6. Discuss the distribution of forest resources.   9

7. Write the distribution and conservation of water resource.   9

8. Elucidate the global resource crisis.   9

9. Elaborate the concept of sustainable resource development.   9

2018

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

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

     6 × 4

a) Renewable resource

b) Human resource

c) Natural resource management

d) Problems of resource utilisation

e) Distribution of coal resource

f) Conservation of soil resource

g) Resource scarcity hypothesis

h) Misuse of resources.

2018

Full Marks - 60

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *four* questions from each of the sections

SECTION - A

1. Describe the simplex algorithm by explaining clearly the steps taken for the computation of an optimum solution of an LPP. 6

2. Solve the following LPP : 6

   Max $z = 3x_1 + 2x_2$

   subject to $\quad 4x_1 + 3x_2 \leq 12$

   $\qquad\qquad 4x_1 + x_2 \leq 8$

   $\qquad\qquad 4x_1 - x_2 \leq 8$

   $\qquad\qquad x_1, x_2 \geq 0.$ 6

[Turn Over

3. Use two phase method to solve the following LPP : 6

Maximize $z = 5x_1 - 2x_2 + 3x_3$

subject to $2x_1 + 2x_2 - x_3 \geq 2$

$3x_1 - 4x_2 \leq 3$

$x_2 + 3x_3 \leq 5$

$x_1, x_2, x_3 \geq 0.$ 6

4. Write the dual of the following primal LPP :

Min $z = 4x_1 + 5x_2 - 3x_3$

subject to $x_1 + x_2 + x_3 = 22$

$3x_1 + 5x_2 - 2x_3 \leq 65$

$x_1 + 7x_2 + 4x_3 \geq 120$

$x_1, x_2 \geq 0$

and x_3 is unrestricted 6

5. Use duality theory to solve the following LPP :

Max. $z = 3x_1 + 4x_2$

subject to $x_1 - x_2 \leq 1$

$x_1 + x_2 \geq 4$

$x_1 - 3x_2 \leq 3$

$x_1, x_2 \geq 0.$ 6

6. Explain the meaning of transportation model as used in LPP. 6

7. Give a brief note with examples on

a) North West Corner rule

b) Least Cost method. 6

8. Draw network diagram from following activities and find critical path and total slack of activities. 6

Job	A	B	C	D	E	F	G	H	I	J	K
Jobtime	13	8	10	9	11	10	8	6	7	14	18
Immediate Prececessor		A	B	C	B	E	D,F	E	H	G,I	J

SECTION - B

9. Solve the L.P.P. : 9

Minimize $z = 4x_1 + x_2$

subject to $3x_1 + x_2 = 3$

$4x_1 + 3x_2 \geq 6$

$x_1 + 2x_2 \leq 3$

$x_1, x_2 \geq 0$

10. A company sells two different products A and B. The selling price and incremental cost information are as follows :

	Product 'A'	Product 'B'
Selling Price	Rs.60	Rs.40
Variable Cost	Rs.30	Rs.10

The products are produced in a common production process and are sold in two different markets. The production process has a capacity of 30,000 man hours. It takes 3 hours to produce a unit of A and one hour to produce a unit of B. The market has been surveyed and the company officials feel that the maximum number of units of A that can be sold is 6000 and maximum for B is 12000 units. Subject to these limitations two products can be sold in any combination. Formulate and solve to maximise contribution using simplex method.   9

11. Write down the dual of the following L.P.P. and solve it. Hence or otherwise write down the solution of the primal.

$$\text{Max } z = 4x_1 + 2x_2$$
$$\text{subject to } x_1 + x_2 \geq 3$$
$$x_1 - x_2 \geq 2$$
$$x_1, x_2 \geq 0 \qquad\qquad 9$$

12. Solve the following transportation problem to maximise the profit.   9

Destination

Source	A	B	C	D	Supply
1	15	41	42	33	23
2	80	42	26	81	44
3	90	40	66	60	33
Demand	23	31	16	30	100

13. The following table shows the jobs of a project with their duration in days. Draw the network and determine the critical path. Also calculate all the floats.   9

Jobs	1-2	1-3	1-4	2-5	3-7	4-6
Duration	10	8	9	8	16	7

Jobs	5-7	5-8	6-7	6-9	7-10	8-10
Duration	7	7	8	5	12	10

Jobs	9-10	10-11	11-12
Duration	5	8	5

14. The investment required for introducing a new product is Rs.10,000. The probability estimate for variable cost, selling price and annual sales volume are given below :

Variable Cost		Selling Price		Annual Volume	
Value (Rs.)	Probability	Value(Rs.)	Prob.	Value(Rs.)	Prob.
1	0.2	3	0.2	4,000	0.2
2	0.5	4	0.6	6,000	0.5
3	0.3	5	0.2	8,000	0.3

Simulate the situation by generating random number to find out selling price, variable cost and the annual sales volume.　　　9

15. The following data is observed in a tea serving counter. The arrival is for one minute interval.

No. of persons arriving	0	1	2	3	4	5
Probability	0.05	0.15	0.4	0.2	0.15	0.05

The service is taken as 2 persons for one minute interval. Using the following random numbers simulate for 15 minutes period. 09, 54, 94, 01, 80, 73, 20, 26, 90, 79, 25, 48, 99, 25, 89. Calculate also the average number of persons waiting in the queue for minute.　　　9

16. A company makes three products X, Y, Z out of three raw materials A, B and C. The material requirement is given below :

Raw material	*No. of units raw materials required to produce one unit of product*		
	X	Y	Z
1	1	2	1
2	2	1	4
3	2	5	1

The unit profit contributions of the products X, Y and Z are Rs.40, Rs.25 and Rs.50 respectively. The number of units of raw materials available are 36, 60 and 45 respectively.

i) Determine the product mix that will maximize the total profit.

ii) Through the final simplex table write the solution to the dual problem.　　　9

h) Explain ICT support for distant learning with example. 6

2. Explain the distance education system prevalent now in India. 9

3. Discuss the importance of preparing study materials and supplying the same to the distant learners. 4½+4½

4. What is meant by self-instructional material ? Give your plan for the preparation of self-instructional material with examples. 3+6

5. Discuss the steps to be taken for the distant learners to facilitate their learning. 9

6. Describe the different student support services for the distant learners. 9

7. Describe the function of IGNOU as a distance education system in our country. 9

8. Discuss the different correspondence courses conducted in our country. 9

9. Discuss the aims and objectives of distance education in our country. 9

2018

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

1. Answer any *four* of the following :

   a) State what purposes does distance education serve. 6

   b) Explain the personal contact programme in distance learning system. 6

   c) What problems do the distant learners face during distant learning ? 6

   d) State the importance of self-instructional materials in distant learning with examples. 6

   e) What is meant by 'assignment' ? State the need and importance of assignment in distant learning. 2+2+2

   f) What are open schools and open universities ? 3+3

   g) What are virtual universities ? 6

h) Suggest the Psychological processes to promote mental health of defense personnels.

2. Discuss the strategies adopted by community Psychologists in arousing community consciousness. 9

3. Find out the effective rehabilitation activities for mentally, socially challenged and old persons. 9

4. Helping the disadvantaged emphasizes on educating and motivating them – Discuss. 9

5. Discuss the Psychological consequences in development of IT. 9

6. What is achievement motivation and how does it help in economic development. 9

7. Discuss the Psychological effect of population explosion and high population density. 9

8. Describe the different issues of discrimination. 9

9. Critically examine the various Psychological tests for defense personnel. 9

2018
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

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

a) Write notes on the concept of community Psychology.

b) Briefly discuss the different Psychological programmes of rehabilitation.

c) What is meant by disadvantaged and deprivation.

d) Describe the role of Psychology in development of IT.

e) Discuss the effective means for consumer awareness.

f) What are the different measures of motivation for small family norms.

g) Find out the possible ways for management of diversity.

2018

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

1. Answer any *four* of the following : $7\frac{1}{2} \times 4$

   a) Explain various living state interactions involving electric and thermal interactions.

   b) Define a living system. Give an account of the various biomolecules essential to such systems.

   c) What is the mechanism of heat transfer in biomaterials ? Explain Joule heating of tissue using the heat equation.

   d) Explain protein folding and unfolding in living tissue.

   e) What is chemical potential of a system ? Explain how Grand Canonical Ensemble is used for deriving thermodynamics of such system with open boundaries.

[Turn Over

f) Explain the structure and function of Haemoglobin in blood.

g) Explain active and passive transport in membranes.

h) Explain the process of light absorption in biomolecules with reference to photosynthesis.

2. Explain thermodynamic equilibrium. Show how 1st law of thermodynamics is a statement of the law of conservation of energy. 12½

3. What are Casimir interactions ? Derive the Casmir contribution to free energy of a living system and state its significance. 12½

4. Explain Enthalpy and Gibbs free energy as essential thermodynamic potentials for living systems. Give illustrative examples of their use in determining activation constant and rate constant. 12½

5. Derive the Maxwell-Boltzmann distribution for statistics of many particle systems. 12½

6. Derive Fick's law of diffusion. Explain sedimentation of cell cultures on the basis of Fick's law. 12½

7. Set up Navier Stokes equation for fluid flow and discuss the nature of flow velocity for law Reynold's number transport. 12½

8. Distinguish between Laminar and turbulent flow of fluids. Derive the Bernoulli equation and the equation of continuity. 12½

9. Write notes on the following :

a) Vibrational spectra of biomolecules. 6

b) ATP synthesis in mitochondria. 6½

□□

9. a) Discuss the preparation and uses of the following : 3 × 2

    i) Super Phosphate of lime

    ii) Potassium Sulphate.

  b) Write a note on high technology ceramics and their applications. 3

□□

2018

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

1. Answer any *four* of the following :

  a) What is the chemical formula of glass ? Write down different raw materials used in the manufacture of glass. 2+4

  b) Discuss setting of cement. 6

  c) What are ceramics ? Name the basic raw materials used in making ceramic products. 2+4

  d) What is a mixed fertiliser ? Explain what do you mean by 28-28-0 ? Name four mixed fertilisers. 2+2+2

  e) Explain with example : 2 × 3

    i) Toners

    ii) Thinners

    iii) Oil paint.

[Turn Over

f) What are primary and secondary batteries ? Discuss the characteristics of batteries.　　3+3

g) Define and explain alloys with example. How are they classified ? What is the difference between alloys and amalgams ?　　2+2+2

h) What is an explosive ? Discuss the preparation and explosive properties of lead azide.　2+2+2

2. Describe different steps adopted to obtain soda lime glass. Discuss the composition and properties of borosilicate glass.　　5+4

3. Name the ingredients used in the manufacture of cement. Write the role played by these ingredients. Describe how cement is manufactured from the above ingredients.　　2+2+5

4. a) What do you mean by CAN ? Describe how is CAN manufactured at Rourkela.　　1+5

   b) Write the constituents and uses of urea.　1+2

5. a) What is the objective of coating surfaces ? How will you classify surface coatings ?　　2+2

   b) Write notes on the following :　　2½ × 2

      i) Heat resistant paints

      ii) Eco-friendly paints.

6. What is the composition of steel ? How is steel manufactured by SAIL in Odisha ?　　1+8

7. a) What is meant by catalyst ? Explain with example the following catalysis and their industrial uses.　　1

      i) Homogeneous Catalysis.　　2½

      ii) Heterogeneous Catalysis.　　2½

   b) Write note on Phase trasfer catalysis.　　3

8. a) Describe the preparation and explosive properties of :　　3 × 2

      i) RDX

      ii) PETN

   b) Write a note on Solar Cells ?　　3

3. Define enzyme immobilization. What are the advantages ? Briefly describe methods of enzyme immobilization. 9

4. Write the uses of Citric Acid in our everyday life with the help of a flow chart. Describe the commercial production of Citric Acid. 9

5. Give a concise account of aero-micro flora of inside and outside of a dwelling house. Describe various sampling methods of air-borne microorganisms. 9

6. What is sewage ? Discuss in brief the biological process of treatment of Municipal sewage. 9

7. What do you understand by 'Coliform' bacteria ? Describe the Coliform Test Technique to determine water potability. 9

8. Define soil remediation. Discuss various techniques used for soil remediation. 9

9. What is mutualism ? Give an elaborate account of mutualism in different mycorrhizal association. 9

2018

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

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

   a) Flocculation

   b) Solid state fermentation

   c) Culture media

   d) Lyophilization

   e) Soil microflora

   f) BOD

   g) Eutrophication

   h) Root nodulating bacteria.

2. What is a fermentor (Bio reactor) ? Name various types of bioreactors used in microbial industry. Describe different parts of a bioreactor. 9

3. Describe the general structure of bacteriophase and add a note on lysogenic cycle of bacteriophase.   9

4. Describe the role of applied microbiology in the field of food, agriculture, industry and environment.   9

5. Give an account of general characters of bacteria and add a note on significance of bacteria.   9

6. Explain the economic importance of bacteria.   9

7. Give an account of the classification and identification of microbes.   9

8. What is antibiotics and other chemotherapeutic agents ? Enlist the names of antibiotics and other chemotherapeutic agents.   9

9. Give an account of epidemiology of infertious diseases with reference to human hosts.   9

2018

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

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

   a) Transformations

   b) Transductions

   c) General Characters and significance of Fungi

   d) Hepatitis

   e) Gram-negetive bacteria

   f) Contribution of Louis Pasteur

   g) Plasmid

   h) Physiological singnifance of fermentation.

2. Describe the structure of bacteria (E.Coli). Add a note on conjugation in bacteria.   9

2018

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

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

   a) What is Cloud Computing ? Discuss about the Pros and Cons of cloud computing.

   b) Explain the activities on cloud computing for the corporation.

   c) Draw and explain Microsoft Windows Azure.

   d) Discuss different barriers of cloud computing.

   e) List and explain various cloud computing security issues.

   f) Draw a neat sketch of Google cloud platform and explain.

   g) How does cloud computing help to reduce the times to market applications and to cut down capital expenses ?

h) Draw and explain Amazon cloud computing infrastructure.

2. Explain the architecture of cloud computing in detail.   9

3. Write short notes on the following :   9

   i) Grid computing

   ii) Distributed Computing

   iii) Cluster Computing.

4. Explain the types of cloud service development in details.   9

5. Write a brief note on cloud security design principle.   9

6. Explain in detail about understanding the cloud storage.   9

7. State and explain service models of cloud computing with architecture.   9

8. Write short notes on the following :   9

   i) Economics of Scaling

   ii) Platform as a Service

   iii) Community Cloud.

9. a) What is Hadoop ? Explain the architecture of Hadoop in detail.   6

   b) Write a note on History of cloud computing.   3

2018

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

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

   a) State and prove Serret-Frenet formulae.

   b) Prove that $\vec{b}'' = \vec{r}\left(K\vec{t} - \tau\vec{b}\right) - \tau'\vec{n}$

       and find similar expression for $\vec{b}'''$.

   c) Prove that the tangent to a helix is inclined at a constant angle to a fixed direction.

   d) Find the equations of the normal at the point (x, y, z).

   e) Prove that the envelope of the family of paraboloids $x^2 + y^2 = 4a(z - a)$ is the circular cone $x^2 + y^2 = z^2$.

   f) Prove that the surface $xy = (z - c)^2$ is a developable.

g) If the parametric curves are orthogonal, show that the differential equation of lines on the surface cutting the curves u = const. at a constant angle β is

$$\frac{du}{dv} = \tan \beta \sqrt{\frac{G}{E}}$$

2. Prove that the only curve whose curvature and torsion are both constant is the circular helix.   12½

3. For the curve $x = a(3u - u^3)$, $y = 3au^2$, $z = a(3u + u^3)$

Show that $k = r = \dfrac{1}{3a\left(1+u^2\right)^2}$ 12½

4. If ψ is the angle between the two directions given by $Pdu^2 + Qdudv + Rdv^2 = 0$,

Show that $\tan \psi = \dfrac{H\sqrt{Q^2 - 4PR}}{ER - FQ + GP}$ 12½

5. On the right helicoid given by

$x = u\cos\phi$, $y = u\sin\phi$, $z = c\phi$.

Show that the parametric curves are circular helices and straight lines.   12½

6. Determine the principal curvature at any point on a curve.   12½

7. State and prove Euler's theorem on normal curvature.   12½

8. Prove that the necessary band sufficient conditions that the parametric curves be asymptotic lines are $L = 0$, $N = 0$, $M \neq 0$.   12½

9. If K, r are the curvature and torsion of a geodesic prove that $r^2 = (K - Ka)(K_b - K)$. Also if the surface is developable ($K_a = 0$). Show that $K = r\tan\psi$.   12½

2018

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

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

    a) Distingusih between 'Tax Planning' and 'Tax Evasion'.

    b) Explain the provisions of law regarding "Company in which public are substantially interested".

    c) How is the residential status of a company determined ?

    d) The total income of Phulera Ltd., a domestic company, computed under the normal provisions of Income Tax Act is ₹2,50,000 (Tax rate 30%). However, the Book profits of the company (calculated as per section 115 JB) amount to ₹12,25,000. Calculate the tax liability of company for the Assessment Year 2017-18.

[Turn Over

e) Explain the provisions of 'Alternative Minimum Tax' applicable to a Hindu Undivided Family U/S 115 JEE(1)

f) Explain the tax effects of leasing for lessor and lessee.

g) Discuss the provisions of law relating to Double Taxation Relief available to a person if he has income from a country with which no agreement exists between India and that country.

h) Discuss the tax benefits that accrue in case of conversion of a partneship firm into a company.

2. What is 'Tax Planning' ? Discuss its implications. 12½

3. Discuss the provisions of law relating to 'Tax on distributed profits' of a company U/S 115(0) of Income Tax Act, 1961.   12½

4. You are going to set up a new sole trading business. What are the various tax concessions available as per Income Tax Act for such purpose ?   12½

5. "The capital structure of a company should be decided taking into account the income-tax law". Do you agree ? Give example to illustrate your point.   12½

6. Discuss the tax planning measures available to an employer while paying remuneration to employees.   12½

7. Discuss the tax treatment of various types of insurance compensation received by a business house.   12½

8. Explain Tax Provisions relevant for non-resident individuals.   12½

9. What incentives have been provided to amalgamating company and its shareholders under the Income-tax Act, 1961 ?   12½

2018

Full Marks - 80

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Write a note on the growth of Indian English novel. 12½

OR

Write a short essay on the adventures of Swami and his friends.

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

   a) What were the reasons of animosity between Mani and Rajam ?

   b) 'Swami is Rajam tail' – Do you agree ?

3. Identity and language are the key themes in Anita Desai's In Custody – Discuss. 12½

OR

What makes Deven the true custodian of the Urdu language ?

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

   a) Explain the line : "The Wound is the place where the light enters you".

   b) How does Anita Desai show the social and cultural repercussions of Politically independent India in the novel In Custody ?

5. Comment on the theme of Kamala Das's "My Grandmother's House" or S. Nagargon's "A Poem for my mother".   12½

OR

Write a short essay on the Aesthetics of Indian English Poetry after your study of selected poems.

6. Give short answer on any *one* of the following : 7½

   a) Do you think the poem "The Orphan Girl" has a message ? Give a reasoned answer.

   b) Write a brief note on the images in "The Night of the Scorpion".

7. Discuss the symbolism in Mistry's 'Swimming Lesson'.   12½

OR

Write a note on the role and status of Indian Women in British Colonial India after your study of Anand's "Two Lady Rams".

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

   a) Give a brief character sketch of Ramani.

   b) How does Despande present the plight of her woman protagonist in the story "The Intrusion" ?

□□

2. Explain how adverse selection of borrowers brings risk and increase in Non-performing Assets in banking business at present. 12½

3. Discuss about international financial markets functioning at present.

4. Critically examine Joan Robinson's Golden Rule of capital accumulation.

5. Explain the endogenous growth models.

6. Discuss about various instruments of monetary policy.

7. What is underemployment equilibrium ? Examine the views of classical economists and Keynes on this issue.

8. Explain the real business cycle model of new Keynesian economics.

2018

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

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

a) Banks Asset Portfolio

b) Global financial crisis

c) Flexible exchange rates

d) Purchasing Power Parity theory

e) Natural growth rate

f) Goals of Macroeconomic Policy

g) Crowding-out hypothesis

h) Sticky Price Model.

2. Write an essay on the origin, aims and achievements of the United Nations Organization. 12½

3. Discuss the objectives and functions of UNESCO. 12½

4. Critically examine the different phases of the Cold War. 12½

5. Write a note on Globalization and narrate its effects. 12½

6. Write a note on Human Rights Movement in North and South. 12½

7. Write a note on Modernity and Cultural Transformation on Media and consumption. 12½

8. Discuss in detail about the ecological movement. 12½

2018

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

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

7½ × 4

a) SanFrancisco conference

b) Truman Doctrine

c) Functional Agencies of United Nation Organisation.

d) Objectives of Non-Alinged Movement

e) Colonization in Africa

f) Objectives of Feminist Movement

g) Economic Globalisation

h) Non-Alignment Movement.

h) Explain the important tasks of Social Welfare Administration.

2. Discuss briefly the Public Policy Process in India. 12½

3. Describe the evolution of Local Self Government in India. 12½

4. Analyse the hindrances for the successful working of Panchayati Raj In India. 12½

5. Explain the different stages of the preparation of Budget in India. 12½

6. Write an essay on E-Governance. 12½

7. Examine the different approaches of Social Welfare. 12½

8. Define Food Security and discuss the policies and programmes for realising Right to Food. 12½

9. Explain the role and importance of accountability mechanisms in delivery of Public Services. 12½

2018

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

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

a) Explain the different models of Public Policy.

b) Define Decentralization and discuss the types of Decentralization.

c) "Budget is a tool of Legislative Control". Discuss.

d) Examine the role of the Citizen's charter as a means of the redressal of public grievances.

e) Explain the features of Right to Education Act.

f) Describe briefly the composition and funtions of Municipal Corporation.

g) Discuss the different types of Budget.

2. Analyse the principles and objectives of the United Nations Organization. 12½

3. Discuss the powers, functions and role of the General Assembly. 12½

4. Explain the composition and functions of the Economic and Social Council. 12½

5. Discuss the structure and functions of the World Health Organization (WHO). 12½

6. Write an essay on the United Nations Environment Programme. 12½

7. Examine the role of the UN in peace keeping with special emphasis on the peace keeping operations. 12½

8. What are the Millenium Development Goals ? Comment on the performance of the states in respect of the goals. 12½

9. Make an assessment of the UN and discuss the imperatives for its reform. 12½

2018

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

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

7½ × 4

a) What are the functions of the ILO ?

b) Comment on the role of UNO in the Korean Crisis.

c) Explain the structure of the UN High Commissioner for Refugees (UNHCR)

d) What is "Uniting for Peace Resolution" ?

e) What are the functions of the UNDP ?

f) What was the Balkan crisis ?

g) Explain the structure of the International Court of Justice.

h) What is the significance of 'Responsibility to Protect' ?

2. Explain the nature of Ethics. How Ethics is related to Politics ? Discuss. 12½

3. Explain the different stages of voluntary action. 12½

4. Discuss the nature of desire. How desire is related to appetite, wish and will. 12½

5. Critically explain Phychological Hedonism as Ultimate Standard of Morality. 12½

6. Give an account of Individual and society relation. 12½

7. Discuss briefly about Deterent and Retribute theory of Punishment. 12½

8. Why is the protection of nature so important ? Explain. 12½

9. Explain Kant's three postulates of morality. 12½

2018

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

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

   a) Discuss the scope of Ethics.

   b) What do you mean by Moral Action ?

   c) Distinguish between factual and moral judgement

   d) Explain Ethical Hedonism

   e) What do you mean by Grass Egoistic Hedonism ?

   f) Reformative theory of Punishment.

   g) Bio-Centrism Environmental Ethics.

   h) Animal rights.

2. Define marriage and analyse its functions. 12½

3. Define family and discuss its various types. 12½

4. Write a note on types of Clan. 12½

5. Write a note on complementary filiations. 12½

6. Analyse Kinship organization in Northern India. 12½

7. Analyse the features of joint family in India. 12½

8. Write a note on changes in joint family in the Indian context. 12½

9. Discuss the causes of divorce in the Indian context. 12½

2018

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

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

   a) Discuss Marriage as a Social Institution.

   b) Discuss briefly monogamy as a form of marriage.

   c) Discuss briefly any three functions of family.

   d) Write a brief note on totemism.

   e) Discuss briefly kinship organization in Southern India.

   f) Write a brief note on genealogical mthods.

   g) Discuss briefly any three changes in joint family system in India.

   h) Discuss briefly any three factors affecting the institution of marriage in India.

2018

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

1. अधोलिखितेषु केषाञ्चित् *चतुर्णा* मुत्तरं देयम्   7½ × 4

   क) वारणार्थानामीप्सितः - सूत्रं व्याख्यात ।

   ख) षष्ठी हेतुप्रयोगे - सूत्रं व्याख्यात ।

   ग) रुजार्थानां भाववचनानामज्वरे - सूत्रं व्याख्यात ।

   घ) व्यवहृपणोः समर्थयोः - सूत्रं व्याख्यात ।

   ङ) आधारोऽधिकरणम् - सूत्रव्याख्यां कुरु ।

   च) यतश्च निर्धारणम् - सूत्रव्याख्यां कुरु ।

छ) संस्कृतेन अनुवादं कुरु :

बृहत् संहिता बराह मिहिर रचना करिथिଲେ । ସୂର୍ୟ୍ୟସିଦ୍ଧାନ୍ତ ତାଙ୍କର ଅନ୍ୟତମ ପୁସ୍ତକ । ତାଙ୍କର ସବୁ ସିଦ୍ଧାନ୍ତ ଗଣିତ ଓ ବିଜ୍ଞାନ ଉପରେ ଆଧାରିତ ।

Varaha Mihira composed *Vrhat Samhita*. *Surya Siddhanta* is his another book. All his theories are based on Mathematics and Science.

ज) विष्णोः दशनामानि अमरकोष आधारेण लिखित ।

2. सूत्रं सोदाहरणं व्याख्यात :   12½

अन्तर्धौ येनादर्शनमिच्छति,
आख्यातोपयोगे ।

3. सूत्रं सोदाहरणं व्याख्यात :   12½

द्वारान्तिकार्थेभ्यो द्वितीया च,
ज्ञोऽविदर्थस्य करणे ।

4. सूत्रं सोदाहरणं व्याख्यात :   12½

उभयप्राप्तौ कर्मणि,
साधुनिपुणाभ्यामर्चायां सप्तम्यप्रतेः ।

5. संस्कृतेन अनुवादं कुरुत :   12½

କାକ କଳା । କୋଇଲି କଳା । କାକ ଓ କୋଇଲି ମଧ୍ୟରେ ଭେଦ ସହଜରେ ଜଣାପଡ଼େ ନାହିଁ । କିନ୍ତୁ ବସନ୍ତ ରତୁ ଆସିଲେ କୋଇଲିର ମଧୁର ସ୍ୱରରୁ ତା'ର ପରିଚୟ ମିଳେ । ସେହିପରି ଭଲ ମଣିଷର ପରିଚୟ ଠିକ୍ ସମୟରେ ମିଳିଥାଏ ।

Crow is black. Cuckoo is black. Difference between crow and cuckoo is not easily comprehended. But at the advent of Spring the identity of Cuckoo is in known by its sweet tone. Similarly the identity of a noble man is known at right time.

6. लक्ष्म्याः दशनामानि गणेशस्य दशनामानि च लिखत ।   12½

7. अपायो विश्लेषः । तस्मिन् साध्ये - ध्रुवमवधिभूतं कारकमपादानं स्यात् - इमां वृत्तिं व्याख्यात ।   12½

8. सत्य क्रियया क्रियान्तरं लक्ष्यते ततः सप्तमी स्यात् । अस्याः वृत्ते आशयम् उपवृंहयत ।   12½

2018

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

୨. ଉପନ୍ୟାସର ଗଠନ ରୀତି ପ୍ରକାଶ କର ।   ୧୬.୫

୩. କବିତାର ପ୍ରକାରଭେଦ ସଂପର୍କରେ ଆଲୋଚନା କର ।   ୧୬.୫

୪. 'ରସ ହିଁ କାବ୍ୟର ଆତ୍ମା' - ଏ ମତଟି ପରୀକ୍ଷା କର ।   ୧୬.୫

୫. ଶୈଳୀ ତାତ୍ତ୍ୱିକ ସମୀକ୍ଷା ସଂପର୍କରେ ସମ୍ୟକ ସୂଚନା ଦିଅ ।   ୧୬.୫

୬. ତୁଳନାତ୍ମକ ସାହିତ୍ୟର ପରିଭାଷା ଓ ଉପଯୋଗିତା ସନ୍ଧାନ କର ।   ୧୬.୫

୭. ଅନୁବାଦର ପ୍ରଭାରଭେଦ ଲେଖ ।   ୧୬.୫

୮. ଆଧୁନିକତା କହିଲେ କ'ଣ ବୁଝ ? ଓଡ଼ିଆ ସାହିତ୍ୟରେ ଏହାର ପ୍ରୟୋଗ ଦର୍ଶାଅ ।   ୧୬.୫

୯. ଅନୁବାଦକର ଅତ୍ୟାବଶ୍ୟକ ଯୋଗ୍ୟତାଗୁଡ଼ିକ ଆଲୋଚନା କର ।   ୧୬.୫

୧. ଯେ କୌଣସି *ଚାରୋଟିର* ସଂକ୍ଷିପ୍ତ ଉତ୍ତର ପ୍ରଦାନ କର :   ୭.୫ × ୪

କ) କବିତାର ସଂଜ୍ଞା ଓ ସ୍ୱରୂପ ପ୍ରକାଶ କର ।

ଖ) ଉପନ୍ୟାସର ପ୍ରକାର ଭେଦ ଲେଖ ।

ଗ) ଓଡ଼ିଆ ଆତ୍ମଜୀବନୀ ସାହିତ୍ୟର ଉନ୍ମେଷ ଓ ବିକାଶ ଦର୍ଶାଅ ।

ଘ) ଉପନିବେଶବାଦୀ ସାହିତ୍ୟର ସୂଚନା ଦିଅ ।

ଙ) ପ୍ରାୟୋଗିକ ସମୀକ୍ଷା କ'ଣ ? ଉଦାହରଣ ସହ ଆଲୋଚନା କର ।

ଚ) ତୁଳନାତ୍ମକ ସାହିତ୍ୟର ପରିଭାଷା ପ୍ରଦାନ କର ।

ଛ) ଅନୁବାଦ କଳାର ସଂଜ୍ଞା ବିବେଚନା କର ।

ଜ) ସାହିତ୍ୟ ଚର୍ଚ୍ଚାରେ ଅନୁବାଦର ଭୂମିକା ଦର୍ଶାଅ ।

2. 'Auditing is a luxury, while accountancy is a necessity'. Explain. 12½

3. What steps should be taken in order to trace an error and difference in the books by an auditor ? 12½

4. What is continuous audit ? Explain the merits and demerits of continuous audit. 12½

5. What do you understand by verification of Assets and Liabilities ? How far is an auditor responsible for the verification of assets appearing in the Balance Sheet ? 12½

6. Discuss the rights, duties and liabilities of the auditor of a company. 12½

7. What is Auditor's Report ? Discuss the various types and contents of Auditor's Report. 12½

8. What is Tax Audit and what are its objectives ? What general matters are to be considerate while conducting Tax Audit ? 12½

9. Define Cost Audit and state its advantages and criticisms. 12½

2018

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

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

a) What are the basic concepts of auditing ?

b) Write the essential qualities of an Auditor.

c) State the importance of internal audit.

d) Distinguish between 'internal check' and 'internal control'.

e) Explain the importance of vouching.

f) State the importance of audit report.

g) Discuss the working methods of management audit.

h) What do you mean by Electronic Data Processing Audit ?

ज) 'धरती धन न अपना' उपन्यास के आधार पर काली के चरित्र की प्रमुख विशेषताओं को संक्षेप में लिखिए ।

2. किन्हीं **चार** प्रश्नों के उत्तर दीजिए :   12½ × 4

क) हिन्दी उपन्यास साहित्य को प्रेमचंद के महत्वपूर्ण योगदान पर प्रकाश डालिए ।

ख) उपन्यास-कला के आधार पर 'कर्मभूमि' उपन्यास की समीक्षा कीजिए ।

ग) 'कर्मभूमि' उपन्यास की प्रमुख समस्याओं पर प्रकाश डालिए ।

घ) दलित साहित्य की अवधारणा को स्पष्ट करते हुए भीमराव आम्बेदकर के विचारों को स्पष्ट कीजिए ।

ङ) नारी विमर्श की व्याख्या करते हुए नारी मुक्ति आन्दोलन के सिलसिले में भारतीय विचारकों के मनों का समीक्षा कीजिए ।

च) 'आपका बंटी' उपन्यास की कथावस्तु की समीक्षा कीजिए ।

छ) 'धरती धन न अपना' उपन्यास में वर्णित घोड़ेवहा गाँव के दलित चमारों की विविध समस्याओं पर चर्चा कीजिए ।

ज) 'धरती धन न अपना' उपन्यास की कथावस्तु की समीक्षा करते हुए उसके शीर्षक की सार्थकता स्पष्ट कीजिए ।

IV-UG-Hindi(CC)-IX

2018
Full Marks - 80
Time - 3 Hours
The figures in the right-hand margin indicate marks
Answer *all* questions

1. निम्नलिखित प्रश्नों में से किन्हीं **चार** प्रश्नों के संक्षिप्त उत्तर दीजिए :
                                                              7½ × 4

क) प्रेमचंद के उपन्यासों में वर्णित समस्याओं में से किसी एक प्रमुख समस्या पर प्रकाश डालिए ।

ख) राष्ट्रीय आन्दोलन के संदर्भ में प्रेमचंद के उपन्यासों का महत्व स्पष्ट कीजिए ।

ग) 'कर्मभूमि' उपन्यास में वर्णित सुखदा की चारित्रिक विशेषताओं को संक्षेप में लिखिए ।

घ) स्त्री विमर्श की अवधारणा को स्पष्ट कीजिए ।

ङ) दलित साहित्य क्या है ? उसके स्वरूप पर प्रकाश डालिए ।

च) 'आपका बंटी' उपन्यास में नारी मनोभावनाओं की सार्थक अभिव्यक्ति पर प्रकाश डालिए ।

छ) 'धरती धन न अपना' उपन्यास में दलित जीवन की त्रासद स्थिति पर प्रकाश डालिए ।

ज)   'पिता' कहानी में बाप-बेटे के चिंतन और विचारों में क्या अंतर दिखाई देता है और क्यों ?

2.   'उसने कहा था' कहानी के आधार पर लहना सिंह का चरित्र-चित्रण कीजिए ।   12½

3.   'कफन' कहानी के कथा-शिल्प की विशेषताएँ लिखिए ।   12½

4.   'आकाश दीप' कहानी की कथावस्तु का विवेचन करते हुए उसके नामकरण की सार्थकता पर विचार कीजिए ।   12½

5.   '' 'लालपान की बेगम' एक सफल आंचलिक कहानी है ।'' – इस बात की सत्यता पर प्रकाश डालिए ।   12½

6.   बाल मनो विज्ञान के आधार पर 'पाजेब' कहनी की समीक्षा कीजिए ।   12½

7.   'दो पहर का भोजन' कहानी में वर्णित निम्न-मध्य वर्गीय परिवार की त्रासद स्थिति पर आलोचना कीजिए ।   12½

8.   'सिक्का बदल गया' कहानी के आधार पर शाहनी की चारित्रिक विशेषताओं को स्पष्ट कीजिए ।   12½

9.   'हार की जीत' कहानी की कथावस्तु की समीक्षा करते हुए उसके नामकरण के औचित्य पर विचार कीजिए ।   12½

2018

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

1.   निम्न प्रश्नों में से किन्हीं **चार** प्रश्नों के उत्तर संक्षेप में लिखिए :

7½ × 4

क)   'कफन' कहानी के शीर्षक की सार्थकता पर विचार कीजिए ।

ख)   'आकाशदीप' कहानी में चंपा के मानसिक द्वन्द्वों पर प्रकाश डालिए ।

ग)   'लाल पान की बेगम' कहानी के आधार पर बिरजू की माँ के व्यक्तित्व का रेखांकन कीजिए ।

घ)   सिद्धेश्वरी देवी कौन हैं ? एक निम्न मध्यवर्गीय परिवार में उनकी महत्वपूर्ण भूमिका पर विचार कीजिए ।

ङ)   'हार की जीत' कहानी का उद्देश्य स्पष्ट कीजिए ।

च)   'पिता' कहानी की भाषा-शैली पर लिखिए ।

छ)   'सिक्का बदल गया' कहानी में चित्रित देश विभाजन की पीड़ा का वर्णन कीजिए ।

2. What is growth ? Discuss the evolutionary perspective on human growth.   9

3. Discuss the development, differentiation and maturation of human growth.   9

4. Briefly discuss the difference between pre-natal and post-natal growth ?   9

5. Give an account of the patterns of normal growth curve ?   9

6. Write the genetic and social factor influence the patterns of growth ?   9

7. Elaborately discuss on the impact of malnutrition with suitable examples ?   9

8. Explain the gender and ethnic difference of somatotyping and human physique with special reference to Sheldon.   9

□□

2018

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

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

6×4

a) Post-natal

b) Human growth

c) Fossil Primate

d) Normal Growth Curve

e) Ethnic and gender difference

f) Ecological factor

g) Body Mass Index

h) Malnutrition.

2. Discuss scales of measurement of phenomena.   9

3. Explain the importance of tabulation and grouping of data.   9

4. Describe the construction and uses of frequency curve.   9

5. Elucidate the calculation and uses of mode.   9

6. Discuss the calculation and uses of standard deviation.   9

7. Write in detail the purposive and random sampling.   9

8. Describe product moment correlation co-efficient.   9

9. Discuss the calculation and use of regression analysis.   9

□□

2018

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

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

   a) Secondary data

   b) Significance of statistical methods in Geography

   c) Histogram

   d) Mean

   e) Sampling

   f) Correlation

   g) Dispersion

   h) Concept of empirical analysis.

2. Describe four levels of measurement scale.   9

3. Explain the importance of the blue-print and describe the steps involved in the development of blue-print.   9

4. Discuss the principles of constructing multiple choice test items.   9

5. Explain the meaning and types of validity with example.   9

6. Discuss the importance of teacher-made test. How is it different from standardized test ?   9

7. Describe the relationship of evaluation procedure with objectives.   9

8. Explain project method as a technique of assessment.   9

9. Describe the importance and types of Interview.   9

2018

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

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

   a) Differentiate between placement and summative evaluation.

   b) Explain objective-based test items with examples.

   c) Describe different stages of observation.

   d) Discuss the concept and purpose of concept-mapping.

   e) Distinguish between measurement and evaluation.

   f) Explain usability as a characteristic of a good test.

   g) Discuss importance of try-out in test construction.

   h) Describe advantages of essay-type test items.

2. Elaborate and evaluate Vygotsky's theory of cognitive development with its limitations.   9

3. Discuss different objectives of learning with examples.   9

4. Evaluate different motivational techniques in classroom teaching.   9

5. How can a positive learning environment be created ? Cite examples to support your answer.   9

6. Evaluate different theories of creativity.   9

7. Discuss different techniques of measuring aptitudes.   9

8. Suggest some methods for teaching children suffering from attention deficit hyperactive disorder.   9

9. Write short notes on any *two* of the following : 2 × 4½

   a) Intrinsic Motivation

   b) Test Standardization

   c) Mental Retardation

   d) Effective Teacher.

2018
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

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

   a) Discuss different principles of Educational Psychology.

   b) Elaborate Bruner's theory of cognitive development with its limitations.

   c) Point out different approaches for understanding classroom motivation.

   d) Discuss different goals of classroom management.

   e) What is creativity ? Discuss its nature and characteristics.

   f) Define aptitude. Describe different types of aptitudes.

   g) Discuss the limitations of aptitude and achievement tests.

   h) How creativity can be fostered among children ?

2018

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

1. Answer any *four* of the following :

    a) Briefly discuss about the Compton effect.   6

    b) Describe about the Frank-Hertz Experiments.   6

    c) Write down the limitations of Rutherford's atomic model and the postulates of Bohr's model of H atom.   2+4

    d) Prove the Heisenberg's uncertainty principle through the experimental demonstration.   6

    e) Explain de Broglie wave length and find the de Broglie wave length of a 46 gm golf ball with velocity 30 m/s.   6

    f) Explain the non-existence of an electron in the nucleus in the light of uncertainty principle.   6

g) Calculate the energy released by fission of 1kg of U-235 in kwh, given that 200 MeV of energy is released per fission and that Avogardo's number is 6.023×10^{23}. 6

h) Briefly discuss about the interaction of slow neutron with U-235. 6

2. Discuss the inadequate of classical physics in explaining the phenomenon of black body radiation with suitable diagram. 9

3. Explain Rutherford's alpha particle scattering experiment and derive the expression for the Rutherford's scattering formula. 9

4. Deduce and give the diagrammatic representation of the series spectrum of hydrogen atom in the light of Bohr's theory. 9

5. Estimate the ground state energy of a Harmonic oscillator. 9

6. Derive semi-empirical mass formula along with the discussion of significance of each term. 9

7. Distinguish between nuclear fission and nuclear fusion. Give at least two examples for each case. 6+1½+1½

8. Describe the principle and working of a nuclear reactor with suitable diagram. 9

9. Write notes on the following : 4½ × 2

i) N-Z graph

ii) Nuclear shell model.

6. a) Explain :

   i) Pyridine is more basic than pyrrole.　　2

   ii) Electrophilic substitution in pyrrole takes place at 2-position whereas in pyridine it is at 3-position.　　3

   iii) The aromaticity of pyrrole.　　2

   b) Discuss the electrophilic substitution in Pyridine.　　2

7. a) Give the principal product of reaction of pyrrole with the following reagents.　　2×3

   i) SO_2 and pyridine.

   ii) Benzene diazonium chloride.

   ii) $CrO_3 +$ Conc. H_2SO_4.

   b) Electrophilic attack in pyridine occurs in position-3. Explain.　　3

8. Elucidate the structure of citral. Discuss its synthesis.　　7+2

9. Establish the structure of hygrine. Give its synthesis.　　7+2

2018

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

1. Answer any *four* of the following :

   a) i) Explain the reduction of nitrobenzene in alkaline and neutral media.　　2+2

   ii) How can you prepare benzene from benzene diazonium chloride ?　　2

   b) i) Write a note on Carbylamine reaction.　　2

   ii) Give two methods of preparation of anthracene.　　4

   c) i) Discuss the mechanism of electrophilic aromatic substitution reaction in aniline.　　4

   ii) P-nutroaniline is less basic than aniline. Explain.　　2

   d) i) What happens when methylamine is treated with chloroform in the presence of alcoholic KOH solution ?　　2

ii) Explain with mechanism the nucleophilic substitution reactions of nitro benzene.   4

e) i) What happens when naphthalene reacts with succinic anhydride ?   2

ii) Give the reaction of pyrrole with hydroxylamine.   2

iii) How is furan prepared from dicarbonyl compound ?   2

f) What happens when pyradine is treated with (i) KOH (ii) Na/alc (iii) peracetic acid ? 2×3

g) i) What happens when furan is heated with mercuric Chloride in presence of sodium acetate ?   2

ii) Give the reaction of Thiophene with Conc.H_2SO_4.   2

iii) Write the medicinal importance of morphine.   2

h) Elucidate the structure of quinoline.   2

2. a) Explain the basicity order of

$(CH_3)_2 NH > CH_3NH_2 > (CH_3)_3N.$ 3

b) How does $C_2H_5NH_2$ react with CH_3COCl and $CHCl_3$ in presence of KOH ?   4

c) Methylamine is a weaker base than ethylamine. Explain.   2

3. a) How is nitorbenzene prepared from benzene ? Give its mechanism.   4

b) Discuss the reduction of nitrobenzene in acidic medium.   2

c) Explain Hofmann bromamide reaction. Write one of its application.   3

4. Elucidate the structure of Naphthaline and confirm it by one method of synthesis.   7+2

5. a) Discuss Skraup's synthesis of quinoline.   3

b) What happens when _____ ? 3×2

i) Naphthalene is subjected to sulphonation at 160^0C.

ii) Naphthalene is subjected to Ozonolysis followed by hydrolysis.

2. Define synecology and discuss some of its important aspects.   9

3. Discuss briefly the different components of soil with a special reference on the role of micro-organisms in soil.   9

4. Describe hydrological cycle as operating in Planet-Earth and add a note to the importance of 'Water table'   9

5. Give a broad outline of various types of interactions found among organisms with suitable examples.   9

6. Define a population. Give a concise account of various characteristics of a population of organisms.   9

7. Name the major ecosystems of the world. Siting pond as an example describe the structure of a fresh water ecosystem.   9

8. What are ecosystem energetics ? Describe the energy flow through a typical ecosystem with the help of a model.   9

9. Describe briefly the characteristic features of major terrestrial Biomes in the Earth.   9

□□

2018

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

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

   a) Heliophytes

   b) Ecotypes

   c) Ecads

   d) Ecological speciation

   e) Detritus food chain

   f) Carbon Cycle

   g) Biological Potential

   h) Endemism

[Turn Over

2018

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

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

   a) Mycoplasma

   b) Plasmodesmata

   c) Peroxisomes

   d) Semi autonomous nature of Mitochondria

   e) Chromosomal DNA and its packaging

   f) Virus

   g) Apoptosis

   h) Metastasis.

2. Describe the 'Fluid Mosaic Model' of the Plasmamembrane. On the basis of this model explain the different functions of Plasma membrane.   9

3. What is Endoplasmic Reticulum ? Describe the types, structures and functions of ER.   9

4. What are Lysosomes ? Describe their origin, structures and function.   9

5. What is Cytoskeleton ? Write the structure and functions of microtubules microfilaments and intermediate filament.   9

6. Write an essay on Golgi apparatus and their secretion.   9

7. Describe the characteristics of Cancer Cells and possible causes of Carcinogenesis.   9

8. Explain the physiology of Regulaton of Cell cycle and add a note on significance of mitosis.   9

2. Discuss linguism as a threat to national integration. 12½

3. Write a note on Political Unity and religious unity in the context of Indian Society. 12½

4. Explain the doctrine of Karma and discuss its present relevance. 12½

5. Discuss the traditional forms of Hindu marriage. 12½

6. Discuss the functions of the caste system in rural India. 12½

7. Distinguish between Caste and Class with suitable examples. 12½

8. Define Westernization and discuss its characteristics. 12½

9. Examine the impact of modernization on Indian Society. 12½

□□

2018

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

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

a) Discuss the ethnic composition of Indian Society.

b) Discuss Communalism as a threat to national integration.

c) Write a short note on Varna.

d) Discuss briefly Hindu marriage as a sacrament.

e) Write a brief note on the dominant caste.

f) Discuss any three changes in the castse system.

g) Discuss any three characteristics of Secularisation.

h) Discuss any three characteristics of Sanskritisation.

2. What is National Income ? Explain different concepts of national income. 12½

3. Explain the income method of measuring national income. Point out various difficulties in estimating national income. 12½

4. Describe the process of circular flow of income and expenditure in a four sector open economy. 12½

5. Critically explain the Cash Transactions approach of quantity theory of money. 12½

6. What is Monetary Policy ? Discuss different tools of monetary policy. 12½

7. What are the causes of inflation ? Explain the anti-inflationary measures. 12½

8. What is Index Number ? How it is used to measure changes in the value of money ? 12½

9. Discuss the IS-LM model of general equilibrium analysis. 12½

□□

2018

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

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

7½ × 4

a) Distinguish between Micro and Macro Economics.

b) Distinguish between equilibrium and disequilibrium.

c) Relation between National Income and National Welfare.

d) Functions of Money.

e) Stagflation

f) Social Costs of Inflation.

g) Investment function

h) Aggregate effective demand.

[Turn Over

ज) क्षुद्र निबन्धं लिखत - द्वादशवाक्यैः

  कालिदासस्य सर्वस्वमभिज्ञानशाकुन्तलम् ।

2. उपहारवर्मणः जन्मवृत्तान्तं लिखत ।   12½

3. पुष्पोद्भवस्य जन्मकालीनविपत्तिं वर्णयत ।   12½

4. का तारावली ? वसुमतीं सा किम् उक्तवती ?   12½

5. सोमदत्तस्य जन्मकथां लिखत ?   12½

6. शुकनासोपदेशस्य सारम् उपस्थापयत ।   12½

7. विद्या ददाति विनयम् - अस्या उक्तेः संप्रसारणं कुरुत ।   12½

8. *एकस्य* संस्कृतेन निबन्धं लिखत :   12½

  क) महाकविः कालिदासः

  ख) संस्कृत भाषयाः गौरवम् ।

IV-UG-Sans(CC)-X

2018

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

1. अधोलिखितेषु *चतुर्णां* प्रश्नानामुत्तरं देयम् :   7½ × 4

  क) कः राजहंसः ? किं तस्य परिचयः ?

  ख) मगधराजदूतस्य गूढाचारभावं वर्णयत ।

  ग) राजहंसस्य पराजयः वनवासश्च कथमभवत् ?

  घ) वामदेवः राजहंसं किम् उक्तवान् ?

  ङ) कथं लक्ष्मी चञ्चला ? कादम्बरी आधारेण वर्णयत ।

  च) अनुवादं कुरु :

  यौवनारम्भे च प्राय शास्त्रजलपक्षालन निर्मलापि कालुष्यमुपयाति वुद्धिः ।

  छ) भावं संप्रसारय - द्वादशवाक्यैः

  शरीरमाद्यं खलुधर्मसाधनम् ।

2. Explain the modern interpretations of the history of Mughal India. 12½

3. Find out the significance of fire-arms, military technology and warfare in the victory of Babur in India. 12½

4. Give an account of the main administrative reforms of Sher Shah. 12½

5. Point out the salient features and the merits of Mansabdari System. 12½

6. Narrate the power and position of the Zamindars in rural economy during the period C 1550-1605. 12½

7. Explain the agricultural production and crop patterns in Mughal India. 12½

8. Discuss the rise of Surat as an important trade centre during Akbar's reign. 12½

9. Write about the 'Inclusive Political Ideas', its theory and practise in Mughal period. 12½

2018

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

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

7½ × 4

a) Humayun-Namah

b) Effects of First Battle of Panipat

c) Sher Shah's Policy for promotion of Trade and Commerce.

d) Results of Mughal-Rajput Alliance.

e) Objectives of 'Madad-i-Maash'.

f) Pattern of internal commerce

g) Sulh-i-Kul

h) The Chisti Silsila.

h) What is Cluster Sampling ? Write the two stage sampling with equal first stage units.

2. Explain the principal steps in a sample survey.   9

3. Write notes on the following :   9

   a) Population and Sample

   b) Sampling Error

   c) Parameter and Statistic.

4. Obtain the variance of sample mean in SRSWOR technique.   9

5. Explain Stratified Random Sampling. Show that in Stratified Random Sampling Sample mean provides an unbiased estimate of population mean.   9

6. Define Systematic Sampling and obtain the sampling variance of mean.   9

7. Define Ratio method of Estimation and estimate the value of mean and variance.   9

8. Define Cluster Sampling and estimate the value of variance.   9

2018

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

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

   a) Write the advantages of sampling over Census.

   b) What is Non Sampling Error and how can it be controlled.

   c) Show that in SRSWOR technique the sample mean provides an unbiased estimate of population mean.

   d) What are the advantages of Stratified Random Sampling over Simple Random Sampling.

   e) What is Systematic Sampling ? Write its merits and demerits.

   f) Compare between SRSWR and SRSWOR.

   g) Write the regression method of estimation

ज) अनुवादं कुरु :

न तद् भासयते सूर्यो न शशाङ्को न पावकः ।
यद्गत्वा न निवर्त्तन्ते तद् धाम परमं ममे ॥

2. रुद्रदाम्नः गिर्णारशिलालेखस्य ऐतिहासिक महत्त्वं पर्यालोचयत ।   12½

3. समुद्रगुप्तस्य प्रयागस्तम्भ शिलालेखस्य काव्यिक सौन्दर्यं विमृशत ।   12½

4. टिप्पणी लिखत :   12½

आर्यावर्त्तः, लिच्छवि, मिहिरकुलनृपः ।

5. सप्रकरणं व्याख्यां कुरु :   12½

प्रदान भुजविक्रम प्रशम शास्त्रवाक्योदयै
रूपर्य्युपरि-सञ्चयोच्छितमनेकमार्ग यशः ।
पुनाति भुवनत्रयं पशुपतेर्जटान्तर्गुहा
निरोध-परिमोक्ष-शीघ्रमिव पाण्डुगाङ्गं (पयः) ॥

6. कठोपनिषदः प्रथमाध्यायस्य सारं लिखत ।   12½

7. श्रेयप्रेयविद्ययोः स्वरूपं वैशिष्ट्यं कठमाश्रित्य लिखत ।   12½

8. भगवत्गीतायाः पुरुषोत्तमयोगस्य सारं विवृणुत ।   12½

9. सप्रसङ्गं व्याख्यां कुरुत :   12½

यस्मात् क्षरम् अतीतोऽहम् अक्षराद् अपि-चोत्तम ।
अतोऽस्मि लोके वेदे च प्रथितः पुरुषोत्तमः ॥

2018

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

1. अधोलिखितेषु केषाश्चित् *चतुर्णां* प्रश्नानामुत्तरं देहि :   7½ × 4

क) रुद्रदामन् नरपतेः गुणावलीन् किम् आसन् ?

ख) कः यवनराज तुषास्फः ?

ग) किं हरिषेणस्य वैशिष्ट्यम् ?

घ) सप्रसङ्गं व्याख्यात :

उत्तिष्ठत जाग्रत प्राप्य वरान्निबोधत
क्षुरस्य धारा निशिता दुरत्यया ॥
दुर्गं पथस्तत् कवयो वदन्ति ।

ङ) अनुवादः कार्यः

नायमात्मा प्रवचनेन लभ्यो
न मेधया न बहुना श्रुतेन ।
यमेवैष वृणुते तेन लभ्य
स्तस्यैव आत्मा विवृणुते तनूंस्वाम् ॥

च) कठोपनिषदि प्रतिपादितं अग्निविद्यायाः महत्त्वं विवृणुत ।

छ) आत्मज्ञानस्य कृते का योग्यता आवश्यकी ?

2. किन्हीं **चार** प्रश्नों के उत्तर दीजिए : 12½

क) भाषा परिवर्तन के आभ्यन्तर कारणों पर चर्चा कीजिए ।

ख) भाषा विज्ञान क्या है ? उसके विविध अंगों का परिचय दीजिए ।

ग) वाग्ययंत्र का चित्र खींचकर भिन्न-भिन्न अंगों की संक्षिप्त जानकारी दीजिए ।

घ) स्थान और प्रयत्न के आधार पर हिंदी व्यंजनों का वर्गीकरण कीजिए ।

ङ) वाक्य की परिभाषा देते हुए उसके अनिवार्य तत्वों का विवेचन कीजिए ।

च) वाक्य किसे कहते हैं ? उसके प्रकारों पर चर्चा कीजिए ।

छ) अर्थ परिवर्तन के प्रमुख कारणों को स्पष्ट कीजिए ।

ज) एक आदर्श लिपि के रूप में देवनागरी लिपि की विशेषताओं पर चर्चा कीजिए ।

2018

Full Marks - 80

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. किन्हीं **चार** प्रश्नों के उत्तर संक्षेप में दीजिए : 7½ × 4

क) भाषा क्या है ? उसके स्वरूप पर प्रकाश डालिए ।

ख) ध्वनि विज्ञान किसे कहते हैं ? उसकी उपादेयता पर प्रकाश डालिए ।

ग) स्वनिम क्या है ? उसकी विशेषताएँ स्पष्ट कीजिए ।

घ) रूपिम की परिभाषा देते हुए उसके स्वरूप पर विचार कीजिए ।

ङ) स्वर और व्यंजन में अंतर स्पष्ट कीजिए ।

च) वाक्य परिवर्तन के प्रमुख कारणों को उल्लेख कीजिए ।

छ) अर्थ संकोच से क्या अभिप्राय है ? सोदाहरण लिखिए ।

ज) देवनागरी लिपि में सुधार के लिए कियेगये प्रयासों को संक्षेप में लिखिए ।

3. Outline briefly the various impact of river valley projects. 9

4. What do you understand by alternative sources of energy ? What are their advantages and how do you foresee their contribution to future energy needs of our country ? 9

5. Describe how mining causes environmental degradation and suggest some mitigation strategies. 9

6. What are the various types of radioactive wastes and suggest measures for their safe disposal ? 9

7. Explain how a Tsunami occur and suggest some strategies for minimising loss of life and property. 9

8. What steps would you suggest to reduce the problem of floods. 9

9. Write briefly about seismic zoning and their risk assessment in India. 9

⬜⬜

2018

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

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

a) Write a note on desertification

b) Water withdrawl in excess– its consequences.

c) Municipal waste disposal

d) Hazards of earthquake.

e) Cyclones

f) Landslides

g) Role of geologist in environmental planning

h) Natural disasters.

2. Describe the various types of soil and add a note on their conservation. 9

b) Write notes on the following :   3 × 2

   i) Monetary Aspects

   ii) Innovation Prospects.

OR

Discuss in detail : Inflation in terms of demand pull and cost push factors.   14

□□

2018
Full Marks - 40
Time - 3 Hours
The figures in the right-hand margin indicate marks
Answer *all* questions

1. Explain the Laws of Production with two variable input factors.   13

OR

Discuss in detail the estimation of production functions in the context of managerial application. 13

2. Explain in detail the cost theory and its estimation. 13

OR

Discuss in detail the Economic value analysis and it's impact and effect the managerial purposes.   13

3. a) Discuss the nature and phases of business cycles.   8

b) Discuss the meaning and role of Political Communication in a democracy.

c) Caste as a factor of Social Stratification.

d) Types of Social Mobility.

□□

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. a) What is Political Sociology ? Point out the development of Political Socialisation.   12

OR

b) Discuss the Theories of Political Participation.

2. a) Examine Class and Status as bases of Social Stratification.   12

OR

b) What is Power ? Discuss the theories of Political Power.

3. Write short notes on any *two* :   8 × 2

a) Discuss the meaning and significance of Political Culture.

[Turn Over

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

୧. ଚିତ୍ରସହ ବାଗ୍‌ଯନ୍ତ୍ରର ବିଭିନ୍ନ ଅଂଶର ପରିଚୟ ଦିଅ ।   ୧୬

ଅଥବା।

ଧ୍ୱନି ଉତ୍ପନ୍ନରେ ବାଗ୍‌ଯନ୍ତ୍ର କିପରି ସହାୟକ ହୁଏ - ଆଲୋଚନା କର ।

୨. ଉଚ୍ଚାରଣର ପ୍ରକୃତି ଦୃଷ୍ଟିରୁ ବ୍ୟଞ୍ଜନ ଧ୍ୱନିର ବର୍ଗୀକରଣ କର ।   ୧୬

ଅଥବା।

ଓଡ଼ିଆ ଓ ଇଂରାଜୀ ସ୍ୱରଧ୍ୱନିର ତୁଳନାମ୍ୱକ ବିଚାର କର ।

୩. ଯେ କୌଣସି **ଦୁଇଟିର** ସଂକ୍ଷିପ୍ତ ଟିପ୍ପଣୀ ଲେଖ :   ୪ × ୨

କ) ସ୍ୱରତନ୍ତ୍ରୀ

ଖ) କଣ୍ଠଧ୍ୱନି

ଗ) ସ୍ୱରତ୍ରିକୋଣ

ଘ) ସଘୋଷ ଧ୍ୱନି ।

b)   Marxian theory of State.

c)   "Gandhi Spiritualised Politics and Secularised religion". – Analyse.

d)   Mao's concept of Class Struggle.

□□

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1.   a)   Critically discuss Hegel's Theory of War.   12

OR

b)   Marx's views on history and class struggle.

2.   a)   Describe Gandhiji's concept of Satyagraha.   12

OR

b)   Examine Mao's theory of Cultural Revolution.

3.   Write notes on any *two* of the following :   8 × 2

a)   Hegel's views on the relationship between State and Individual.

5. a) Let $x_1, x_2, ..., x_n$ denote a random sample from a distribution that is

$n(\theta_1, \theta_2), -\infty < \theta_1 < \infty, 0 < \theta_2 < \infty.$

Find $\hat{\theta}_1$ and $\hat{\theta}_2$.

b) Let the observed value of the mean $\overline{X}$ of a random sample of size 20 from a distribution that is $n(\mu, 80)$ be 81.2. Find a 95 percent confidence interval for μ.

OR

c) Let $Y_1 < Y_2 < Y_3$ be the order statistics of a random sample of size 3 from the uniform distribution having p.d.f. $f(x;\theta) = \frac{1}{\theta}$, $0 < x < \theta$, $0 < \theta < \infty$, zero elsewhere. Show that $4Y$, $2Y_2$ and $\frac{4}{3}Y_3$ are all unbiased estimators of θ.

d) A random sample of size 15 from the normal distribution
$n(\mu, \sigma^2)$ yields $\overline{x} = 3.2$ and $s^2 = 4.24$.
Determine a 90 percent confidence interval for σ^2.

□□

1. a) Let the mutually stochastically independent random variables X_1, X_2, X_3 have the same p.d.f. $f(x) = 3x^2$, $0 < x < 1$, zero elsewhere. Find the probability that exactly two of these three variables exceed $\frac{1}{2}$.

b) If the random variable X has a Poisson distribution such that $P_r(X = 1) = P_r(X = 2)$, find $P_r(X = 4)$.

OR

c) If a fair coin is tossed at random five independent times, find the conditional probability of five heads relative to the hypothesis that there are at least four heads.

[Turn Over

d) Let Y be the number of successes throughout n indepenent repetitions of a random experiment having probability of success $p = \frac{1}{4}$. Determine the smallest value of n so that $P_r\left(1 \leq Y\right) \geq 0.70$.

2. a) If X has the moment-generating function $M(t) = (1 - 2t)^{-8}, \ t < \frac{1}{2}$, then show that X is $\chi^2(16)$.

b) Compute the measures of skewness and kurtosis of a gamma distribution with parameters α and β.

OR

c) Let X be n (μ, σ^2) so that $P_r(X < 89) = 0.90$ and $P_r(X < 94) = 0.95$. Find μ and σ^2.

d) Let X and Y have a bivariate normal distribution with parameters, $\mu_1 = 5, \mu_2 = 10, \sigma_1^2 = 1, \sigma_2^2 = 25$, and $\rho > 0$. If $P_r(4 < Y < 16|x = 5) = 0.954$, determine ρ.

3. a) Let x_1, x_2, x_3 be a random sample of size 3 from a distribution that is n(6, 4). Determine the probability that the largest sample item exceeds 8.

b) If the p.d.f. of X is $f(x) = 2xe^{-x^2}, 0 < x < \infty$, zero elsewhere, determine the p.d.f. of $Y = X^2$.

OR

c) If F has an F distribution with parameters $r_1 = 5$ and $r_2 = 10$, find a and b so that $P_r(F \leq a) = 0.05$ and $P_r(F \leq b) = 0.95$, and accordingly,
$$P_r(a < F < b) = 0.90.$$

d) Determine the constant c so that $f(x) = cx \ (3-x)^4, \ 0 < x < 3$, zero elsewhere, is a p.d.f.

4. a) Let Y, denote the first order statistic of a random sample of size n from a distribution that has the p.d.f. $f(x) = e^{-(x - \theta)}, \ \theta < x < \infty$, zero elsewhere. Let $Z_n = n \ (Y_1 - \theta)$. Investigate the limiting distribution of Z_n.

b) Let X_n have a gamma distribution with parameter $\alpha = n$ and β, where β is not a function of n. Let $Y_n = X_n/n$. Find the limiting distribution of Y_n.

OR

c) Let the random variable Y_n have a distribution that is b(n, p). Prove that $1 - Y_n/n$ converges stochastically to $1-p$.

d) Compute an approximate probability that the mean of a random sample size 15 from a distribution having p.d.f. $f(x) = 3x^2, 0 < x < 1$, zero elsewhere, is between $\frac{3}{5}$ and $\frac{4}{5}$.

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Discuss the deductions allowed from out of gross total income of a company according to the provisions of Income Tax Act 1961.   14

OR

In Indian Company carries on business in motor transportation. Its Profit and Loss Account for the previous year 2015 – 16 shows a net profit of ₹2,80,610. Find out Gross Total income and Tax liability of the company after taking into consideration the following particulars :

The Profit and Loss Account was debited with following expenses :

i)   ₹2,50,000 as depreciation.

ii) ₹18,750 as Bad Debt reserve.

iii) ₹10,000 spent to obtain a new licence and the company was able to get it.

iv) The engine of a very old bus was replaced by a new one by spending ₹60,000.

v) Mr. X, a retiring director, was paid ₹70,000 as gratuity in appreciation his services. In the past, the company never paid such a gratuity to any of its retriring directors and even the service conditions did not provide for the payment of such gratuity.

The Profit and Loss Account was found credited with following incomes :

i) Agricultural recepts of ₹65,000.

ii) ₹12,000 received as net interest from an Indian Co. on its debentures.

iii) Capital gain on sale of motor car ₹20,000 (Short Term)

iv) As per the rates applicable in the current year, the amount of depreciation comes to ₹1,65,000. Book profit as per Section 115 JB ₹6,00,000.   14

2. Discuss the power of Central Board of District Taxes regarding the collection, recovery and refunds of Tax.   13

OR

Write short notes on the following :   6½ × 2

a) Settlement of Appeals and Revisions.

b) Settlement of Penalties and Prosecutions.

3. State the provisions of Custom Act, 1962 for Levy collection of Custom Duty.   13

OR

Discuss the Duties of Custom Officers regarding appeals, offences and prosecutions for import of goods.   13

b) What is a white dwarf star ? Using the formula for the pressure of an ideal fermi gas show that such a star can not achieve equilibrium for masses larger than the limiting mass. Explain reasons for this.   4+10+2

3. a) Discuss and distinguish first order and second order phase transitions giving example in each case.   8

   b) Discuss the symmetry changes in a system during phase transition of second kind.   4

OR

Write Ising Hamiltonian. How does it differ from Heisenberg Hamiltonian ? Demonstrate that in one dimension there exists no spontaneous magnetisation for the Ising model.   2+2+8

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. a) Establish the equipartition theorem for energy.   6

   b) State and prove Liouville's theorem in classical statistics.   6

OR

   c) What is the difference between micro canonical, canonical and grand canonical ensemble ? Show that the grand canonical ensemble is equivalent to canonical ensemble.   3+5

   d) Find the energy fluctuation in the canonical ensemble.   4

2. a) Derive the equation of state for an ideal Bose gas and hence discuss Bose Einstein condensation.   8+8

OR

b) Discuss the polarisation Catostrophe and its significance relating to the understanding of ferrorelectric crystals. Give the theory of phase transitions that occur in these crystals.   4+4+4

3. a) Discuss how the electron-electron interaction leads to the formation of Cooper pairs. Hence find the binding energy of Cooper pair.   6+6

OR

b) Starting from BCS Hamiltonian discuss the super conducting ground state and obtain the gap equation at T = δK.   8+4

□□

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. a) Discuss the quantum theory of diamagnetism of core electrons. Show that it agrees with classical Langevin's results.   7+2

b) What is antiferromagnetic state ? Describe the two sub lattice model and hence determine an expression for magnetic susceptibility of antiferromagnetic substance.   1+6

OR

c) What are magnons ? Derive the Bloch $T^{3/2}$ law of magnons.   2+7

d) What are point defects ? Derive the statistics of Frankel defects.   1+6

2. a) Distinguish between macroscopic applied field and local electric field in a dielectric. Derive Clausius Mosotti equation relating dielectric constant and polarizability.   6+6

OR

b) The following table gives data on normal time-cost and crash time-cost for a project :   8

Activity	Normal		Crash	
	Time(days)	Cost(Rs.)	Time(days)	Cost(Rs.)
1-2	6	600	4	1000
1-3	4	600	2	2000
2-4	5	500	3	1500
2-5	3	450	1	650
3-4	6	900	4	2000
4-6	8	800	4	3000
5-6	4	400	2	1000
6-7	3	450	2	800

The indirect cost per day is Rs.100.

i) Draw the network and identify the critical path.

ii) What are the normal project duration and associated cost.

iii) Crash the relevant activities systematically and determine the optimum project completion cost and time.

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer **all** questions

1. a) When passing is not allowed, solve the sequencing problem giving an optimal solution :   8

Job	Machines (processing time in hours)			
	M_1	M_2	M_3	M_4
A	11	4	2	11
B	8	1	8	8
C	12	2	3	12
D	13	2	2	13

OR

[Turn Over

b) A and B play game in which each has three coins, a 5p, 10p and a 20p. Each selects a coin without the knowledge of the other's choice. If the sum of the coins is an odd amount, A wins B's coin. If the sum is even, B wins A's coin. Find the best strategy for each player and the value of the game. 8

2. a) Use dynamic programming to find the value of

Maximum $z = y_1 \cdot y_2 \cdot y_3$

subject to the constraints :

$y_1 + y_2 + y_3 = 5$

$y_1, y_2, y_3 \geq 0$. 8

OR

b) Use dynamic programming to solve the following L.P.P. : 8

Maximize $z = 3x_1 + 5x_2$

subject to the constraints :

$x_1 \leq 4, x_2 \leq 6, 3x_1 + 2x_2 \leq 18$ and $x_1, x_2 \geq 0$.

3. a) A project consists of light activities with the following relevant information : 8

Activity	Immediate predecessor	Estimated duration (days)		
		Optimistic	Most likely	Pessimistic
A	--	1	1	7
B	--	1	4	7
C	--	2	2	8
D	A	1	1	1
E	B	2	5	14
F	C	2	5	8
G	D,E	3	6	15
H	F,G	1	2	3

i) Draw the PERT network and find out the expected project completion time.

ii) What duration will have 95% confidence for project completion.

(For standard normal z = 1.645, area under the standard normal curve from 0 to z is 0.45)

OR

subject to the constraints

$$x_1 + 4x_2 \leq 4$$

$$x_1 + x_2 \leq 2$$

$$x_1, x_2 \geq 0.$$

OR

b) Use Beale's mthod to solve the QPP :   8

Minimize $f = x_1^2 + 3x_2^2 - 4x_1 - 6x_2$

subject to the constraints :

$$x_1 + 2x_2 \leq 4$$

$$x_1, x_2 \geq 0.$$

□□

4. a) Solve the NLPP :   8

Optimize $z = x_1^2 - 10x_1 + x_2^2 - 6x_2 + x_3^2 - 4x_3$

subject to constraints :

$$x_1 + x_2 + x_3 = 7$$

$$x_1 \geq 0$$

$$x_2 \geq 0$$

$$x_3 \geq 0.$$

OR

b) Use the Kuhn-Tucker conditions to solve the NLPP :   8

Maximize $z = 2x_1 - x_1^2 + x_2$

subject to the constraints :

$$2x_1 + 3x_2 \leq 6$$

$$2x_1 + x_2 \leq 4 \, x_1$$

$$x_2 \geq 0.$$

5. a) Use Wolfe's method to solve the QPP :   8

Maximize $z = 2x_1 + 3x_2 - 2x_1^2$

୨. ଜଗନ୍ନାଥ ଦାସଙ୍କ ଭାଗବତର ଲୋକପ୍ରିୟତାର କାରଣ ଉଲ୍ଲେଖ
କର । ୧୨.୫

୩. ରସକଲ୍ଲୋଳ କାବ୍ୟରୁ ଦୀନକୃଷ୍ଣଙ୍କ ଧର୍ମଧାରଣାର ପରିଚୟ ଦିଅ ।୧୨.୫

୪. ସଚ୍ଚିଦାନନ୍ଦ ରାଉତରାୟଙ୍କ କବିତାରୁ ପ୍ରଗତିବାଦୀ ଚେତନା ଅନୁସନ୍ଧାନ
କର । ୧୨.୫

୫. ଫକୀରମୋହନଙ୍କ ଗଳ୍ପରେ ଥିବା ସମାଜ ଚିତ୍ର ପ୍ରଦର୍ଶନ କର । ୧୨.୫

୬. ଗୋପୀନାଥ ମହାନ୍ତି ଆଦିବାସୀ ଜୀବନର ବାସ୍ତବ ଚିତ୍ରକାର- ଆଲୋଚନା
କର । ୧୨.୫

୭. ଜଗନ୍ମୋହନ ଲାଲଙ୍କ ସାହିତ୍ୟ କୃତିର ପରିଚୟ ପ୍ରଦାନ କର । ୧୨.୫

୮. ସମାଲୋଚକ ଦୃଷ୍ଟିରୁ ନଟବର ସାମନ୍ତରାୟଙ୍କ କୃତିତ୍ୱ ଆକଳନ
କର । ୧୨.୫

୯. ମହିମା ଧର୍ମ ପ୍ରଚାରକ ଭାବରେ ଭୀମଭୋଇଙ୍କ ସାରସ୍ୱତ ସୃଷ୍ଟିର ମୂଲ୍ୟାୟନ
କର । ୧୨.୫

□□

2018

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

୧. ଯେ କୌଣସି *ଚାରିଟିର* ସଂକ୍ଷିପ୍ତ ଉତ୍ତର ଲେଖ : ୭.୫ × ୪

କ) ଜଗନ୍ନାଥ ଦାସଙ୍କ ଅନୁବାଦ ପ୍ରତିଭାର ପରିଚୟ ଦିଅ ।

ଖ) 'ରସ କଲ୍ଲୋଳ' କାବ୍ୟରୁ ଦୀନକୃଷ୍ଣଙ୍କ ପଦଲାଳିତ୍ୟର ଉଦାହରଣ
ଦିଅ ।

ଗ) ଜଗନ୍ମୋହନ ଲାଲଙ୍କ ସତୀ ନାଟକର ପୃଷ୍ଠଭୂମି ବିଚାର କର ।

ଘ) 'ବାଜିରାଉତ' କବିତାରୁ ସ୍ୱଦେଶ ପ୍ରୀତିର ପରିଚୟ ଦିଅ ।

ଡ) 'ସଭ୍ୟ ଜମିଦାର' ଗଳ୍ପରୁ ଆଧୁନିକ ସଭ୍ୟତାର ଚିତ୍ର ପ୍ରଦାନ କର ।

ଚ) 'ଭୀମଭୋଇ'ଙ୍କ ଅନ୍ଧତ୍ୱ ସମ୍ପର୍କରେ ଆଲୋଚନା କର ।

ଛ) ରମେଶ ପ୍ରସାଦ ପାଣିଗ୍ରାହୀଙ୍କ କ୍ଷୁଦ୍ର ନାଟକଗୁଡ଼ିକ ଆକଳନ କର ।

ଜ) ଚିତ୍ତରଞ୍ଜନ ଦାସଙ୍କ ସମାଲୋଚନାୟକ ଦୃଷ୍ଟିଭଙ୍ଗୀର ପରିଚୟ ଦିଅ ।

 କ) ନାଭା ଜେଲରେ ନେହେରୁଙ୍କ ବନ୍ଦୀ ଜୀବନକୁ କାହାଣୀ ପରି ଲାଗେ ବୋଲି କାହିଁକି କୁହାଯାଇଛି ?

ଖ) ନେହେରୁଙ୍କ ଜେଲ ଜୀବନ କିପରି କଟୁଥିଲା ?

ଗ) ନେହେରୁଙ୍କ ପାଇଁ ପରମ ସୌଭାଗ୍ୟ ଓ ଗୌରବର ବିଷୟ କ'ଣ ଥିଲା ?

ଘ) କେଉଁମାନେ ଏହି ଦେଶକୁ ସ୍ୱାଧୀନତାର ଉଜ୍ଜ୍ବଳ ଆଲୋକ ବହି ଆଣିଥିଲେ ?

ଚ) ବର୍ତ୍ତମାନ ଆମର ଦାୟିତ୍ବ କ'ଣ ?

V-197-0.8 □□

2018

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

୧. ଯେ କୌଣସି *ଚାରିଗୋଟିର* ଉତ୍ତର ସଂକ୍ଷେପରେ ଲେଖ :   ୭.୫×୪

କ) ଢଗ

ଖ) ଗୀତି କବିତା

ଗ) ଗାଥା କବିତା

ଘ) ପ୍ରବନ୍ଧର ପ୍ରକାର ଭେଦ

ଙ) ପ୍ରବନ୍ଧର ଭାଷା

ଚ) ପାଞ୍ଚଟି ପ୍ରବଚନ

ଛ) ଶୁଦ୍ଧ ଲିଖନର ଆବଶ୍ୟକତା

ଜ) ଅବବୋଧ ପରୀକ୍ଷଣର ଆବଶ୍ୟକତା ।

୨. 'ମୁଁ ସତ୍ୟଧର୍ମା କହୁଛି' ପ୍ରବନ୍ଧର ନାମକରଣର ଯଥାର୍ଥତା ପ୍ରତିପାଦନ
    କର ।   ୧୨.୫

୩. 'ଅନନ୍ତ ପ୍ରେମ'ର ସାରମର୍ମ ଉଲ୍ଲେଖ କର ।   ୧୨.୫

୪. ଭବିଷ୍ୟତର ଦ୍ରଷ୍ଟା ଭାବେ କଞ୍ଜୁରୀର ଭୂମିକା ପଠିତ କବିତା ମାଧ୍ୟମରେ
    ପ୍ରକାଶ କର ।   ୧୨.୫

୫. 'ତିନୋଟି ସନେଟ୍' କବିତାରେ କବିଙ୍କ ଆଧ୍ୟାମ୍ବିକ ଚିନ୍ତାଧାରା କିପରି
    ପ୍ରତିଫଳିତ ହୋଇଛି, ବିଚାର କର ।   ୧୨.୫

୬. ୨୦୦ ଶବ୍ଦ ମଧ୍ୟରେ ଭାବ ସମ୍ପ୍ରସାରଣ କର :   ୧୨.୫

    ଚେଇଁ ଶୋଇଥ‍ିବ ଯିଏ, ତାକୁ ଉଠେଇବ କିଏ ?

                        ଅଥବା

    ପାପ ଧନ ପ୍ରାୟଶ୍ଚିତରେ ଯାଏ ।

୭. କ) ନିମ୍ନଲିଖ‍ିତ ଶବ୍ଦରୁ **ଛଅଟିର** ଶୁଦ୍ଧରୂପ ଲେଖ :   ୬

        ସାର୍ବଜନୀନ, ସଂକ୍ଷିପ୍ତରେ, ବିଷର୍ଣ୍ଣ, ପୁରସ୍କାର, ପରିସଦ, ପୂର୍ବାହ୍ନ,
        ଭୁଲ, ତ୍ରୁଟି ।

    ଖ) **ଛଅଗୋଟି** ବଚନଗତ ଅଶୁଦ୍ଧିର ଶୁଦ୍ଧ ରୂପ ଲେଖ :   ୬.୫
        ଅନେକ ଲୋକମାନେ, ଜଣେ ଛୋଟ ପିଲାଟିଏ, ଜନତାମାନଙ୍କର,
        ଶହେ ଛାତ୍ରମାନେ, ଅନେକ ଗୁଡ଼ିଏ କଥା, ଅଧ‍ିକାଂଶ ଲୋକେ,
        ପର୍ବତମାଳା ରାଜି, ବନ୍ଧୁବର୍ଗମାନେ ।

୮. ନିମ୍ନଲିଖ‍ିତ ଗଦ୍ୟାଂଶଟି ପଢ଼ି ଶେଷରେ ଦିଆଯାଇଥ‍ିବା ପ୍ରଶ୍ନଗୁଡ଼ିକର ଉତ୍ତର
    ଲେଖ :   ୧୨.୫

        ଏବେ ପୁଣି ମନେ ପଡ଼ନ୍ତି ପଣ୍ଡିତ ନେହେରୁ । ପଞ୍ଜାବର କେଉଁ ଏକ
    ଅନାମଧେୟ ନାଭା ଜେଲ୍‌ରେ ତାଙ୍କ ଉପରେ ହେଲା ଦାରୁଣ ଅତ୍ୟାଚାର ।
    ନିରନ୍ଧ୍ର ନିଭୃତ କୋଠରୀ, ମଶା, ମାଛି, ମୂଷାମାନଙ୍କର ଉପଦ୍ରବ । କୋଟିପତି
    ମୋତିଲାଲଙ୍କ ପୁତ୍ର ଜବାହର, ହାରୋ-ଏଟ୍‌ନ୍ଦର ରାଜକୁମାର ଜବାହର ।
    କାହାଣୀ ପରି ଲାଗେ ନାଭା ଜେଲ୍‌ରେ ଖାଲି ଭୂମିରେ ଶୟନ, ମୁହଁ ଉପରେ
    ମଶାମାନଙ୍କର ବେହରଣ । ଶୋଇବା ନ ହେଲା, ଉଠିବସି ଭାରତର
    ଭବିଷ୍ୟତ କଥା ଭାବିଲେ ଅମୃତପୁତ୍ର ଜବାହର । ବହୁବାର ଜେଲ
    ଜୋରିମାନାର ସମ୍ମୁଖୀନ ହୋଇ ଆଧୁନିକ ଭାରତର ଭାଗ୍ୟ ନିର୍ମାତା ବ୍ରିଟିଶ
    ଜଜ୍‌ମାନଙ୍କୁ ଯାହା ଶୁଣାଇଥ‍ିଲେ, ମନେ ପଡ଼ିଲେ ଅନ୍ତର ଆଜି ଗୌରବରେ
    ଭରିଯାଏ । ଥରେ କଚେରୀରେ ତାଙ୍କ ବିଚାର ଚାଲିଥ‍ିବାବେଳେ ଜଣେ
    ଜଜ୍‌ଙ୍କୁ ସେ ଶୁଣାଇଥ‍ିଲେ, ''ସ୍ୱାଧୀନତା ସଂଗ୍ରାମରେ ଭାରତର ସେବା
    କରିବାଠୁ ବଳି ସୌଭାଗ୍ୟ ଆଉକିଛି ହୋଇପାରେନା, ତା'ଛଡ଼ା
    ମହାମ୍ବାଗାନ୍ଧିଙ୍କ ପରି ନେତାଙ୍କ ନିର୍ଦ୍ଦେଶରେ କାମ କରିବା ଏକ ପରମ
    ସୌଭାଗ୍ୟ । ଦେଶର ପୂର୍ଣ୍ଣ ସ୍ୱାଧୀନତା ପାଇଁ ଲଢ଼ୁ ଲଢ଼ୁ ଦେଶପାଇଁ
    ଆୟୁବଳୀ ଦେବାଠାରୁ ଅଧ‍ିକ ଗୌରବ ଆଉ ମଣିଷର କ'ଣ ଥାଇପାରେ ?
    ଆଜି ଏସବୁ ଇତିହାସ । ଯେଉଁମାନେ ମୁହାଁମୁହିଁ ଠିଆ ହୋଇ ରକ୍ଷମାଂସର
    ଶରୀର ନେଇ ଏସବୁ ସହ୍ୟ କରିଥ‍ିଲେ, ସେମାନେ ଏବେ ଇତିହାସର
    କଥାବସ୍ତୁ । ସେହିମାନେ ଚରମ ତ୍ୟାଗର ମୂଲ୍ୟରେ ଏହି ଦେଶକୁ ବହି
    ଆଣିଥ‍ିଲେ ସ୍ୱାଧୀନତାର ଉଜ୍ଜ୍ୱଳ ଆଲୋକ । ଯେଉଁମାନେ ସ୍ୱାଧୀନତା
    ଆଣିଥ‍ିଲେ, ସେମାନେ ତାଙ୍କ କାମ ସାରିଦେଇ ଚାଲିଯାଇଛନ୍ତି । ତାକୁ
    ରକ୍ଷବାର ଦାୟିତ୍ୱ ବର୍ତ୍ତମାନ ଆମ୍ଭମାନଙ୍କର ।

2. केषांचित् *चतुर्णां* प्रश्नानां उत्तर लिखत :

क) मेघदूते नदीनां महत्वं वर्णयत   12½ × 4

ख) मेघदूते उज्जयिनी वर्णनं कुरुत ।

ग) मेघस्य दूतयोग्यतां वर्णयत ।

घ) मेघस्य मार्गनिर्णयं कुरुत ।

ङ) भर्तृहरेः शतकानि वर्णयत ।

च) वाणभट्टस्य काव्यकलां वर्णयत ।

छ) हितोपदेशस्य महत्वं वर्णयत ।

ज) जयदेवस्य काव्यकलां वर्णयत ।

2018

Full Marks - 80

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. केषांचित् *चतुर्णां* प्रश्नानां उत्तरं लिखत :   7½ × 4

क) व्याख्या कार्य्या *एकस्य* :

   रिक्तो सर्वः भवतिहि लघुः पूर्णता गौरवाय

ख) दशार्ण देशस्य शोभां वर्णय ।

ग) आम्रकुट पर्वतस्य महत्वं वर्णयत ।

घ) महाकाले शिवस्य आरधानां वर्णयत ।

ङ) प्राप्नेमिते भवति विमुखः किं पुनः तथा उच्चैः कथं वर्णयते ।

च) वासवदत्तायाः काव्यसौन्दर्य्यं वर्णयत ।

छ) मेघदूतस्य परिचयं वर्णयत ।

ज) वृहतकथायाः महत्वं वर्णयत ।

2. Discuss the importance of measurement and evaluation. 9

3. Explain the characteristics of cognitive, affective and psycho-motor domain. 9

4. Write down the principles of constructing any three objective type test items with examples. 9

5. Define interview. State its steps and merits. 9

6. Discuss the procedure of continuous and comprehensive evaluation. 9

7. Discuss the importance of norm-referenced and criterion referenced evaluation. 9

8. Describe the role of computer in Evaluation. 9

□□

2018

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

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

6×4

a) Differentiate between Measurement and Evaluation.

b) Differentiate between formative and diagnostic evaluation.

c) Characteristics of tests

d) Differentiate between check list and Rating Scale.

e) Features of Sociomatric Technique.

f) Grading system.

g) Methods of qualitative evaluation.

h) Credit system.

[Turn Over

2018

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

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

6×4

a) Distinguish between mutually exclusive and mutually exhaustive events with examples.

b) If A and B are two events and $B \subset A$ then prove that $P(B) \leq P(A)$.

c) If A and B are independent events show that $\overline{A}$ and B are independent and $\overline{A}$ and $\overline{B}$ are also independent.

d) For any three events A, B and C show that

$P(A \cup B/C) = P(A/C) + P(B/C) - P(A \cap B/C)$

e) A random variable has the following probability distribution :

Values of X, x: 0　1　2　3　4　5　6　7　8

　　　　　　p(x):　a　3a　5a　7a　9a　11a　13a　15a　17a

Find :

i) $P(X \geq 3)$

ii) $P(0 < X < 5)$

f) If X is a Poission variate such that

$P(X = 2) = 9\ P(X = 4) + 90\ P(X = 6)$

Find β, Coefficient of Skewness and Coefficient of variation.

g) The mean and variance of a Binomial distribution are 4 and $\frac{4}{3}$ respectively.

Find $P(X \geq 1)$ and Mode.

h) If X is normally distributed with mean 12 and standard deviation 4 then find $P(X \geq 20)$ and $P(0 \leq X \leq 12)$

2. Give the mathematical and statistical definition of probability. What are the objections raised in these definition. 9

3. State and prove multiplication law of Probability. 9

4. Write notes on the following : 9

a) Probability Mass function

b) Probability density function

c) Distribution function.

5. If X and Y are continuous random variable then show that

i) $E(X + Y) = E(X) + E(Y)$

ii) $E(XY) = E(X)\ E(Y)$

assuming X and Y independent in the second case and provided all expectations exists. 9

6. Define Poission distribution. Give examples of Poission variate. Show that mean and variance of Poission distribution are equal. 9

7. Define Normal distribution and what are its important characteristics. 9

8. Define continuous uniform distribution. Find the mean, variance and mean deviation about mean of the distribution. 9

2. Give an account of the summer season in India. 9

3. Discuss wheat cultivation in India. 9

4. Describe the climate of Odisha. 9

5. Give an account on mineral resources of India. 9

6. Highlight the factors influencing the uneven distribution of Population in India. 9

7. Discuss the types and importance of roadways in India. 9

8. Give an account on soils of Odisha. 9

9. Describe briefly the natural vegetation of India. 9

□□

2018

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

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

6×4

a) Literacy in India

b) Modernisation of railways

c) Coal Production

d) Odisha Coastal Plain

e) Karakoram range

f) Cotton textiles

g) Iron ore

h) Natural vegetation of India.

[Turn Over

h) Find out the differences between inductive and deductive reasoning.

2. With the help of a diagram describe the structure and function of human Eye. 9

3. Discuss in details, all about the figure and ground, perception constancies and illusions. 9

4. What is conditioning ? Discuss different paradisms of classical conditioning. 9

5. Discuss different causes of forgetting. 9

6. What is Communication ? Discuss different factors of influencing for effective communication. 9

7. What is thinking ? Discuss different factors responsible for decision making. 9

8. What is problem solving ? Elaborate different steps used in problem solving. 9

9. Define learning. Discuss the importance of observational learning in our life situation. 9

2018
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

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

a) Discuss, the structure and functions of the human Ear.

b) What is perception ? Discuss the perception of distance and depth.

c) What is learning ? Discuss different principles of operant conditioning.

d) What is memory ? Discuss episodic, semantic and procedural memory with examples.

e) Discusss different structure of language.

f) Define language. Discuss critical period controversy in language.

g) Elaborate different categories and prototypes of thinking.

2018

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

1. Distinguish between any *four* of the following :

7½× 4

a) Classifical Logic and Symbolic Logic

b) Ideograms and Phonograms

c) Logical form of the argument and its subject matter

d) Propositional Variables and Logical Constants

e) The Disjunctive Function and the Alternative Function.

f) Individual variables and Individual Constants.

g) The Particular Quantifier and the Universal Quantifier.

h) The complement class and the Universe of Discourse.

[Turn Over

2. Explain the importance of the distribution between inference and implication. Show whether logic is concerned with inference or implication.   10+2½

3. What is Stroke Function ? Reduce the conjunction and implication to Stroke Function.   4½+4+4

4. Explain Tautology, contradictory and the contingent formulae with examples.   4½+4+4

5. Reduce the following tautological formulae to their equivalent CNF :   3+3+3+3½

   a) $p \supset p$

   b) $\sim p \supset \sim p$

   c) $p \cdot q \supset p$

   d) $p \supset p \vee q$.

6. Derive the conclusion by the process of Equivalent Substitution :   6½ + 6

   a) $\sim p \supset q$

      $q \supset r$

      $\sim r$

      $\therefore p$

   b) $(p \vee q) \supset r$

      $\sim r$

      $\therefore \sim p$

7. Symbolize the traditional propositions (A, E, I, O) with the notations of the predicate calculus. 3+3+3+3½

8. Put the following Boolean expressions into normal forms :   6+6½

   a) $A + B + C$

   b) $AB + A'C' + B'C'$

2018

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

1. Write short answers of any *four* of the following :

6×4

a) If the vectors $\vec{A}, \vec{B}$ and $\vec{C}$ represent the three sides of a parallelopiped, then show that $\vec{A} \cdot \left(\vec{B} \times \vec{C} \right)$ represents its volume.

b) State Physically and Mathematically Gauss's divergence theorem. Using this obtain the value $\int \vec{r} \cdot d\vec{s}$ where $\vec{r}$ is the position vector.

c) State Gauss's theorem in electrostatics. Obtain the expression for electric field due to an infinite non-conducting plane charged sheet and draw the conclusion.

d) Deduce the expression for the electric potential at an axial point due to an electric dipole.

e) State and prove Ampere's circuital law. Obtain its differential form.

f) Obtain the expression for the capacitance of a parallel plate capacitor filled with a dielectric material of dielectric constant (K).

g) Deduce the wave equation in terms of $\vec{H}$ for a medium having finite value of permeability (μ) and permitivity ($\in$) but having no conductivity.

h) Define Poynting vector in terms of $\vec{E}$ and $\vec{H}$. Show that the direction of Poyning vector is along the direction of propagation of electro-magnetic wave.

2. a) Define curl of a vector and specify its Physical Significance. 1+3

b) Express curl of a vector in the form of a determinant in terms of Cartesian Co-ordinates. 5

3. Using Gauss's law in electrostatics obtain the expressions for the fields due to a spherically symmetric charge distribution at points lying (i) outside and (ii) inside it. 4+5

4. Obtain the relation $\vec{D} = \in_0 \vec{E} + \vec{P}$ where the symbols have their usual meanings. 9

5. Write Biot-Savart's law in vector form. Obtain the expression for magnetic induction at any point on the axis of a circular coil and hence obtain its value at its centre. 1+6+2

6. Deduce the expressions for instantaneous currents during the growth and decay of a circuit containing an inductance (L) and a resistance (R) connected to a source of emf(E). 5+4

7. Deduce Maxwell's electromagnetic wave equations. 9

8. What is Poynting vector ? Show that the surface integral of Poynting vector measures the rate of flow of electromagnetic energy. 2+7

9. Write notes on the following : 3×3

   a) Gattermann-Koch reaction

   b) Cannizzaro reaction

   c) Wolf Kishner reduction reaction.

V-207-1.6   ☐☐

1. Write short answers of any *four* of the following :

    a) i)   Define third law of thermodynamics and
             write its significance.   3

        ii) Define intensive and extensive properties.   3

    b) i)   What is meant by K_C and K_P ? How are the
             two related ?   3

        ii) How ΔG and ΔG^0 can be distinguished ?   3

    c) i)   Explain ionic product of water. What is the
             effect of temperature on it.   3

        ii) Determine the pH of $10^{-8}M$ HCl.   3

    d) i)   The Solubility of Ag_2CrO_4 and 85^0C is
             8.0×10^{-5} moles/litre. Find its solubility
             product.   3

[2]

   ii) What is buffer ? Why a solution of NaCl does not act as buffer ?   3

e) Complete the following reaction and name the products : 2×3

i)

$$\underset{HC}{\overset{HC}{\big\langle}}\underset{CH_2}{\overset{CH_2}{\big|}} + \underset{CH_2}{\overset{CH_2}{\|}} \xrightarrow[\mathrm{Cr_2O_3,\ V_2O_3}]{600\text{ - }700^0\mathrm{C}}$$

ii) $\underset{}{\overset{NH_2}{\bigcirc}} \xrightarrow{NaNO_2 + HCl} ? \xrightarrow{SnCl_2 / NaOH} ?$

iii) $\overset{CH_3}{\bigcirc} \xrightarrow[\mathrm{CCl_4}]{2CrO_2Cl_2} ? \xrightarrow{H_2O} ?$

f) Discuss the effect of substituents on the reactivity of aryl halides.   6

g) i) Write a note on Meerwein-Pondorff Verley reduction.   4

    ii) What happens when propanal is reduced with $liAlH_4$? Write Chemical equation.   2

h) Write a short note on Reimer Tiemann reaction.   6

[3]

2. Find out the expression for degree of hydrolysis, hydrolysis constant and pH for a salt of weak acid and weak base.   9

3. Explain the mechanism, Kinetics and Stereochemistry of SN_1 and SN_2 reaction with examples.   9

4. a) Distinguish primary, secondary and tertiary alcohols by lucas test.   6

    b) Explain the acidic strength in isomeric nitrophenols.   3

5. Write any three methods of preparation of Benzene. Write the nitration of benzene with mechanism.   6+3

6. State and explain le-Chatliers principle.   9

7. Define third law of thermodynamics. How this law is useful in calculation of absolute entropies of chemical substance at defined temperatures ?   9

8. Define and explain buffer solution. What are the different types of buffer solutions ? What do you know about buffer action ?   9

6. a) If H and K are finite subgroups of G of orders O(H) and O(K) respectively, then prove that

$$O(HK) = \frac{O(H)O(K)}{O(H \cap K)}$$

   6½

   b) The subgroup N of G is a normal subgroup of G iff every left coset of N in G is a right coset of N in G.   6

7. a) Prove that a finite integral domain is a field.   6½

   b) If φ is a homomorphism of R into R' with Kernel I(φ), then

   i) I(φ) is a subgroup of R under addition.

   ii) If a ∈ I(φ) and r ∈ R then both ar and ra are in I(φ).   6

8. a) Let two polynomials f(x) and g(x) ≠ 0 in F[x] then there exist two polynomials t(x) and r(x) in F[x] such that f(x) = t(x) g(x) + r(x) where r(x) = 0 or deg r(x) < deg g(x).   8

   b) If F(x), g(x) are non-zero elements on F[x] then deg f(x) ≤ deg (f(x) g(x)).   4½

2018

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

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

   7½ × 4

   a) Let S be a nonempty subset of a vector space V. Then [S] is a subspace of V.

   b) If U and W are subspaces of a vector space V, then U + W = {v ∈ V | v = u + w, u ∈ U, w ∈ W} is a subspace of V and U + W = [U ∪ W].

   c) Prove that the set {(1, 0, 1), (1, 1, 0), (1, −1, 1), (1, 2, −3)} is Linearly dependent.

   d) Let T : V → W be a linear map and W_1 be a subspace of W. Then prove that the set {v ∈ V | T(v) ∈ W_1} is a subspace of V.

e) Determine the eigen values and corresponding eigen space of the matrix

$$\begin{bmatrix} 1 & -1 & 2 \\ 0 & 1 & 0 \\ 1 & 2 & 1 \end{bmatrix}$$

f) Show that the intersection of two normal subgroup of G is a normal subgroup of G.

g) If U is an ideal of R. Let $r(U) = \{x \in R \mid xU = 0$ for all $u \in U\}$. Prove that $r(U)$ is an ideal of R.

h) If $F(x)$ and $g(x)$ are primitive polynomials then $F(x) \, g(x)$ is a primitive polynomial.

2. a) A nonempty subset S of a vector space V is a subspace of V iff the following conditions are satisfied

i)   If $u, v \in S$ then $u + v \in S$

ii) If $u \in S$ and α a scalar, then $\alpha u \in S$.   6½

b) Prove that the intersection of two subspaces of V is a subspace of V.   6

3. a) In a vector space V if $\{v_1, v_2, ..., v_n\}$ generates V and if $\{w_1, w_2, ..., w_m\}$ is L.I, then $m \leq n$.   8

b) Prove that the set $\{(1, 1, 0), (1, 0, 1), (0, 1, 1)\}$ is a basis for V_3.   4½

4. a) State and prove rank-Nullity theorem.   8

b) Let $T : V_3 \to V_2$ be defined by

$$T(x_1, x_2, x_3) = (x_1 - x_2, x_1 + x_3).$$

Prove that T is a linear map.   4½

5. a) Solve the following system of linear equation by using row-reduction method :   6½

$$2x - 3y + z = -1$$

$$3x + z = 6$$

$$x + 2y - 2z = -1.$$

b) Let $T : V_3 \to V_3$ be a linear map defined by $T(x_1, x_2, x_3) = (x_1 - x_2 + x_3, 2x_1 + 3x_2 - \frac{x_3}{2}, x_1 + x_2 - 2x_3)$. Let $B_1 = \{e_1, e_2, e_3\}$ be the standard basis for V_3.

Let $B_2 = \{(1, 1, 0), (1, 2, 3), (-1, 0, 1)\}$ be basis for V_3. Determine the matrix $(T : B_1, B_2)$.   6

3. Make an evaluation of planning in India. 12½

4. Discuss the role of institutions in the development of Indian economy after 1991. 12½

5. Discuss the causes of poverty in Indian economy. What steps being taken by the Government to eradicate poverty. 12½

6. Examine the role of technological factors in India's economic development. 12½

7. What do you mean by Public distribution system ? Discuss to what extent this system provides food security to the poor. 12½

8. Discuss the role of Public Sector in India's industrial growth. 12½

9. Explain the performance of India's foreign trade and balance of payments position at present. 12½

⬜⬜

2018

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

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

7½ × 4

a) Concepts of economic development and growth.

b) Composition of national income

c) Liberalisation

d) Pattern of asset ownership in agriculture

e) Unemployment in India

f) Green Revolution

g) Rate and Pattern of industrial growth

h) India and WTO.

2. Explain the main charactreristics of underdeveloped economics. 12½

c) What do you mean by Venture Capital ? Discuss its features.

d) What are the main contents of a project report ?

❑❑

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Answer any *two* of the following : 7½ × 2

   a) What is intrapreneurship ? What are its essential features ?

   b) What are the essential features of Micro, Small and Medium Enterprises ?

   c) Explain the various sources from where business ideas originate ?

   d) Discuss beifly the various preliminary contracts entered into by the new entrepreneur.

2. Answer any *two* of the following : 12½ × 2

   a) Discuss the essential features of Entrepreneurship.

   b) Discuss the importance of Micro, Small and Medium Enterprises in India.

[Turn Over

c) Describe the procedure for Opening and Closing of an account.

d) Define Financial System and describe the functions and importance of financial system in India.

V-211-0.8 □□

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Answer any *two* of the following : 7½ × 2

a) Discuss the basic banking skills.

b) Define KYC norms of banks.

c) Distinguish between RTGS and NEFT.

d) Distinguish between Money Market and Capital Market.

2. Answer any *two* of the following : 12½ × 2

a) What is e-banking ? How is it helpful in the smooth functioning of banks ?

b) Define cheque and describe different types of cheque.

b) Point out the functions of Archaeological Survey of India.

c) Discuss in detail the relationship between cultural heritage landscape, travel and recent trends.

d) Bring out the role of UNESCO in the protection of Heritage sites of India.

V-212-0.8 □□

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Answer any *two* of the following : 7½ × 2

   a) Briefly explain the meaning of 'Antiquity'.

   b) Throw light on some of the famous Archaeological sites of India.

   c) Explain in your own words how heritage and travel are related with each other.

   d) Write short notes on the following :

      i) Golden Temple Amritsar

      ii) Sun Temple at Konark.

2. Answer any *two* of the following : 12½ × 2

   a) Write a detail note on the meaning and definition of Heritage Management.

4. a) Examine the role of Executive in Law Making. 12½

OR

b) Explain the various procedures for approval of Budget in the Parliament.

□□

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. a) Examine the powers and functions of Members of Parliament. 7½

OR

b) Discuss how a Bill becomes Law.

2. a) Describe the Functions of Grampanchayat. 7½

OR

b) Analyse the role of Standing Committees of the Parliament in Reviewing the Bill.

3. a) Explain the composition and functions of Committee on Public undertaking. 12½

OR

b) Discuss the role of Civil Society in Law making.

[Turn Over

4. a) Examine the role of Executive in Law Making.   12½

OR

b) Explain the various procedures for approval of Budget in the Parliament.

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. a) Examine the powers and functions of Members of Parliament.   7½

OR

b) Discuss how a Bill becomes Law.

2. a) Describe the Functions of Grampanchayat.   7½

OR

b) Analyse the role of Standing Committees of the Parliament in Reviewing the Bill.

3. a) Explain the composition and functions of Committee on Public undertaking.   12½

OR

b) Discuss the role of Civil Society in Law making.

ଘ) ସଫଳ ବିଜ୍ଞାପନ ପାଇଁ କୌଶଳର ଆବଶ୍ୟକତା ରହିଛି –
ପ୍ରତିପାଦନ କର ।

ଙ) ବିଜ୍ଞାପନର ଆଇନଗତ ଦିଗକୁ ଆଲୋଚନା କର ।

☐☐

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

୧. ଯେ କୌଣସି *ଦୁଇଟିର* ସଂକ୍ଷିପ୍ତ ଉତ୍ତର ଲେଖ :   ୭.୫ × ୨

 କ) ବିଜ୍ଞାପନର ସଂଜ୍ଞା ଲେଖ ।

ଖ) ବିଜ୍ଞାପନର ପରମ୍ପରା ଦର୍ଶାଅ ।

ଗ) ବିଜ୍ଞାପନର କଳା ସମାଜକୁ ପ୍ରଭାବିତ କରେ – ଦର୍ଶାଅ ।

ଘ) ବିଜ୍ଞାପନର ଭାଷା କିପରି ହେବା ଆବଶ୍ୟକ ।

୨. ଯେ କୌଣସି *ଦୁଇଟିର* ଦୀର୍ଘ ଉତ୍ତର ଲେଖ :   ୧୨.୫ × ୨

କ) ବିଜ୍ଞାପନର ସ୍ୱରୂପ ଓ ପରିସର ଆଲୋଚନା କର ।

ଖ) ସମକାଳରେ ବିଜ୍ଞାପନର ଆବଶ୍ୟକ ରହିଛି – ଏହି ଉକ୍ତିର ଗୁରୁତ୍ୱ
ପ୍ରତିପାଦନ କର ।

ଗ) ବିଜ୍ଞାପନର ଲକ୍ଷ୍ୟ କିପରି ହେବା ଆବଶ୍ୟକ – ବୁଝାଇ ଲେଖ ।

d) How ethyl alcohol is prepared by fermentation process ? 7½

2. a) Give structure and use of sulphonamide. 3½

b) How would you synthesize sulphanilamide from (i) acetanilide (ii) Benzene (iii) Sulphanilic acid. 9

3. Discuss the mode of action of antipyretic analgesics by citing the examples of three typical drugs which you have studied. 12½

4. Classify the antiviral drugs on the basis of their mode of action. Give the structure, chemical name and use of Acyclovir. 12½

5. Write notes on the following :

a) Chloromycetin 3½

b) Lysine 3

c) Vitamin B_2 3

d) Vitamin C 3

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

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

1. Answer any *two* of the following :

a) i) Discuss science behind designing of drugs. 5

ii) What do you understand by the term 'Pharmaceutical Impurities' ? Explain with suitable examples. 2½

b) Write notes on the following : 2½ × 3

i) analgesics

ii) antipyretic

iii) anti inflammatory.

c) Write notes on the following : 2½ × 3

i) anti bacterial

ii) anti fungal

iii) anti viral.

b) Explain the theory of optical spatial filtering. 12½

c) i) Explain the working of He-Ne laser. 8

   ii) Write the different advantages of optical fibre over traditional metal communication lines. 4½

d) i) Explain the principle of holography quantitatively. 8

   ii) Explain the application of holography in interferometry. 4½

□□

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Answer any *two* of the following : 7½ × 2

   a) What is Population inversion ? Derive an expression for population inversion condition in terms of Einstein co-efficients.

   b) What is holography and how it is different from the photography.

   c) What is the basic principle of optical fibres ? Discuss the propagration mechanism of light wave in optical fibre.

   d) What are the differences between multimode and single mode fibres ?

2. Answer any *two* of the following :

   a) Explain how the lasing conditions are achieved in a semiconductor laser diode. 12½

[Turn Over

2. निम्नलिखित प्रश्नों में से किन्हीं *चार* प्रश्नों के उत्तर दीजिए :

7½ × 4

क) रिपोतार्ज का अर्थ स्पष्ट करते हुए उसके लेखन की प्रविधि पर प्रकाश डालिए ।

ख) फिचर लेखन कहने से आप क्या समझते हैं ? फिचर लिखते समय किन-किन बातों पर ध्यान देना जरूरी है ? अपने शब्दों में लिखिए ।

ग) साक्षात्कार के विविध प्रकारों का विवेचन कीजिए ।

घ) स्तंभ लेखन से क्या आशाय है ? स्तंभ लेखन की विशेषताओं को स्पष्ट कीजिए ।

ङ) पत्रकारिता की परिभाषाबतलाते हुए आर्थिक पत्रकारिता की प्रमुख विशेषताओं को उल्लेख कीजिए ।

च) फिचर लेखन में विषय चयन एवं सामग्री निर्माण की प्रक्रिया पर चर्चा कीजिए ।

छ) स्तंभ लेखन का अर्थ स्पष्ट करते हुए इसके प्रकारों की चर्चा कीजिए ।

ज) समाचार लेखन क्या है ? समाचार लिखते समय किन-किन बातों पर साबधानी वरतनी चाहिए ? अपने शब्दों में लिखिए ।

2018

Full Marks - 80

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. निम्नलिखित प्रश्नों में से किन्हीं *चार* प्रश्नों के उत्तर संक्षेप में दीजिए ।

7½ × 4

क) रिपोतार्ज के स्वरूप पर प्रकाश डालिए ।

ख) फिचर लेखन की प्रविधि पर चर्चा कीजिए ।

ग) साक्षात्कार से क्या आशय है ? इसका उद्देश्य स्पष्ट कीजिए ।

घ) समाचार पत्र के विविध स्तंभों पर लिखिए ।

ङ) पत्रकारिता की उपादेयता पर चर्चा कीजिए ।

च) साक्षात्कार के महत्व पर आलोचना कीजिए ।

छ) समाचार लेखन की भाषा-शैली पर संक्षेप में लिखिए ।

ज) फोटो पत्रकारिता का विवेचन कीजिए ।

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Answer any *two* of the following :   7½ × 2

   a)   Uses of microbes.

   b)   Ecosystem biodiversity.

   c)   Importance of fruit crops

   d)   Sustainable development.

2. Answer any *two* of the following :   12½ × 2

   a)   Give an account on Conservation of Biodiversity.

   b)   Discuss different ornamental plants of India. Add their importance.

   c)   Describe the values and uses of Biodiversity.

   d)   Discuss about Biodiversity information management and communication.

ଗ) ଭବିଷ୍ୟତରେ କେବେ ବିପଦ ଆସିବ ବୋଲି ଭାବି ବର୍ତ୍ତମାନକୁ ନଷ୍ଟ କରିଦେବା କ'ଣ ଦରକାର ?

ଘ) ଏଠି ସାୟୟଦିକତା କହିଲେ ପରସ୍ପର କାନ୍ଧ ପିଞ୍ଜାପିଞ୍ଜି ଆଉ ଟାଉଟରୀକୁ ବୁଝାଏ । ଯିଏ ନିଜକୁ ଟେକି ଯେତିକି ଥୋଇ ପାରିଲା-ସେ ସେତିକି ବଡ଼ ସାୟୟଦିକ ।

୪. ଯେ କୌଣସି *ଚାରୋଟିର* ସଂକ୍ଷିପ୍ତ ଉତ୍ତର ଲେଖ :   ୨ × ୪

 କ) ନାୟିକାକୁ ଅନୁକମ୍ପା ଦେଖାଇବା ଅପେକ୍ଷା ହତ୍ୟା କରିବା ହଜାର ଗୁଣେ ଶ୍ରେୟସ୍କର - ଏ କଥା କିଏ କାହାକୁ କହିଛି ?

ଖ) ବ୍ୟସ୍ତ ହଅନା ଝିଅ, ଭିକାରିଟାକୁ ବି ଜଣେ ହେଲେ କେହି ଚିହ୍ନିଥାଏ-ଏକଥା କିଏ କାହିଁକି କହିଛି ?

ଗ) ଖରାଦିନେ ପୋଲ ତଳେ ଚବଚବ କରି ପଥରକାଟି ବୋହି ଯାଉଥିବା ପାଣି ପାଖରେ କେଉଁମାନେ ମୁଣ୍ଡଟେକି ବସିଥାନ୍ତି ?

ଘ) ସକାଳର ମେଘ କ'ଣ ସନ୍ଧ୍ୟାରେ ଥାଏ ? - ଏ କଥା କିଏ କହିଛନ୍ତି ?

ଙ) 'ଗଜ ଗୋବର୍ଦ୍ଧନ ସିଂ' ନାମ ସହିତ ଦୁଇଲକ୍ଷ ଟଙ୍କା ନେବାକୁ କିଏ ଉଭଲ୍ କରି ଯାଇଥିଲେ ?

ଚ) ଗୋପାଳ ଛୋଟରାୟଙ୍କ ଲିଖିତ ଦୁଇଟି ନାଟକର ନାମ ଲେଖ ।

ଛ) 'କଳଙ୍କିତ ସୂର୍ଯ୍ୟ' ଏକାଙ୍କିକାର ଲେଖକ କିଏ ?

ଜ) ଆମେ କାହିଁକି ସେଇ ପୁରୁଣା ବିଶ୍ୱାସର ଖୋଲପାକୁ ଗେଣ୍ଡାପରି ବୋହି ବୋହି ଚାଲିଥିବୁ ? - ଏ କଥା କିଏ କହିଛି ?

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

୧. କ) ବିହ୍ନପଧର୍ମୀ ଏକାଙ୍କିକା ଭାବରେ 'ଛଦ୍ମବେଶୀ'ର ମୂଲ୍ୟାୟନ କର ।   ୧୨

ଅଥବା

ଖ) 'ସେତୁ' ଏକାଙ୍କିକାର ଭାବଧାରା ବିଶ୍ଳେଷଣ କର ।

୨. କ) 'ସକାଳର ମେଘ' ଏକାଙ୍କିକା ଅବଲମ୍ବନରେ ସାମ୍ପ୍ରତିକ ସମାଜ ଓ ଜୀବନର ବାସ୍ତବଚିତ୍ର ପ୍ରଦାନ କର ।   ୧୨

ଅଥବା

ଖ) 'କଳଙ୍କିତ ସୂର୍ଯ୍ୟ' ଏକାଙ୍କିକା ଆଧାରରେ ଜୀବନ ଯନ୍ତ୍ରଣାର ବିବିଧ ରୂପ ଅଙ୍କନ କର ।

୩. ଯେ କୌଣସି *ଦୁଇଟିର* ସପ୍ରସଙ୍ଗ ସରଳାର୍ଥ ଲେଖ :   ୪ × ୨

କ) ନିଜର ନେଇ ଯେ କଲା ଆମେ କହିବୁ ସ୍ୱାର୍ଥପର - ନିଜକୁ ବାଦ୍ ଦେଇ ଯେ କଲା ସେ ସେବକ ।

ଖ) ଦୁନିଆଁରେ ଏପରି ଶିଳ୍ପୀ ଓ ସ୍ରଷ୍ଟା ତୁମେ ଅନେକ ପାଇବ.... ଏମାନେ ନିଜକୁ ସୃଷ୍ଟିର ଆନନ୍ଦରେ ଭୁଲିଯାଆନ୍ତି ।

2. Answer any *four* of the following :   12½ × 4

    a) How education and society are mutually interrelated ? Comment.

    b) Discuss characteristics and components of learner-friendly school environment.

    c) Describe different activities and resources in a school.

    d) What is culture ? Discuss the role of education for conservation and transmission of culture.

    e) What is socialisation ? Discuss the role of educcation for socialization of individuals.

    f) What is Social Change ? Discuss the factors influencing social change.

    g) Define modernisation. Discuss important characteristics of a modernised society.

    h) What is inclusive development ? Discuss the role of education in inclusive development.

2018

Full Marks - 80

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

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

    a) How is agricultural society different from industrial society ?

    b) How education is considered as a sub-system of social system ?

    c) What are important aspects of School-Community interface ?

    d) Why school is called a formal agency of education ?

    e) What are different types of culture ?

    f) Explain the concept "acculturation".

    g) Why social control is essential in Society ?

    h) Explain the concept of sustainable development.

[2]

c) What is AIDS ? Explain its causes, mode of transmission and control measures.

d) Describe about the causes, symptoms and dietary management of Diabetes Mellitus.

V-219-1.2 ☐☐

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Give short answer on any *two* of the following :

7½ × 2

a) Vitamin-B Complex

b) Radioactive Pollution and its impact on health.

c) Rabies.

d) Obesity.

2. Answer any *two* of the following : 12½ × 2

a) Define Marasmus. Write in brief about the causes, symptoms and dietary management of Marasmus.

b) What is noise pollution ? Describe the sources, effects and its control.

V-219 [Turn Over

घ) संस्कृतेन अनुवद्यताम् :

आମ୍ଭେ ସମସ୍ତେ ଭାରତୀୟ । ଭାରତ ଆମ୍ଭର ମାତା । ମା' ଓ ଜନ୍ମଭୂମି ସ୍ୱର୍ଗଠାରୁ ବଡ଼ । କାଳିଦାସ ସଂସ୍କୃତରେ ମହାକବି । ମୁଁ ମାଆଙ୍କୁ ଭଲପାଏ । ସେ କେଉଁ ଆଡ଼କୁ ଗଲା ମୁଁ ଜାଣେନା । ତୁମ୍ଭେ କେଉଁଠାରେ ପଢ଼ୁଛ ?

ङ) चतुर्थाङ्कस्य सारं विमर्शत ।

V-215-0.8 ⬜⬜

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. टिप्पणी लिखत **द्वे** :   7½ × 2

   क) गृहिणीपदस्य महत्वं वर्णयत ।

   ख) कण्वस्य उपदेशं वर्णयत ।

   ग) प्रियम्बदायाः चरित्रं वर्णयत ।

   घ) बामाः कुलस्लाधः कथं वर्णयत ।

   ङ) शकुन्तलायाः प्रमत्तभावं प्रकटयत ।

2. **द्वयोः** उत्तरं लिखत :   12½ × 2

   क) कालिदासस्य काव्यकलां वर्णयत ।

   ख) दुर्वाशाऽभिशापस्य उपयोगितां वर्णयत ।

   ग) अनुसया प्रियम्वदयोः स्वभावं चरित्रं वर्णयत ।

[2]

3. What is nerve impulse ? Discuss the propagation of nerve impulse in non-myelinated nerve fibre. 9

4. Narrate mechanism of urine formation in mammalian kidney. 9

5. Describe the transport of CO_2 in blood. 9

6. Discuss the structure and functions of thyroid gland. 9

7. Give a brief account on spermatogenesis. 9

8. Describe the structure and functions of adenohypophysis. 9

9. Describe the structure of skeletal muscle. Add a note on mechanism of its contraction. 9

V-208-0.1 ❑❑

IV-UG-Zool(GE-B)-II

2018

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

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

   a) Liver

   b) Salivary glands

   c) Nephron

   d) Neuron

   e) Breathing

   f) Cardiac Cycle

   g) Parathyroid gland

   h) Breathing.

2. Discuss digestion in mammalian alimentary canal. 9

[2]

Write notes on the following :   6½ × 2

a)   Dysfunctional Conflicts

b)   Group level conflicts.

3.   What is the role and importance of communication
      in an organisation ? Explain the different barriers to
      effective communication.   13

OR

Write notes on the following :   6½ × 2

a)   Grapevine

b)   Transactional Analysis in Communication.

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1.   Describe various factors inluence the group formation
      and also explain the stages of group development.   14

OR

"Leadership is a quality, that leads to overall growth
and development in every sphere of life". Mark your
outlook over this statement, with reason. Also
mention the important characteristics of leadership.
Quoting example of an organization, which has
undergone a great success story, because of an
outstanding leadership, find the elements of these
characteristics.   14

2.   What is multiple approach avoidance conflict. Give a
      realistic organisational examples of where it may
      occur ?   13

OR

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. a) Using Rayligh-Schrodinger Perturbaton theory calculate the energy of the nth state up to second order of a perturbed harmonic oscillator. 10

   b) Using variational method show that the expectation value of the Hamiltonian of a system is greater than or equal to its ground state energy. 6

   OR

   c) Deduce the connecting relations when the turning point is to the left and right of the classically forbidden region using WKB approximation. Hence establish Bohr-Sommerfeld quantization rule. 6+6+4

[Turn Over

2. a) Discuss the general features of time dependent perturbation theory. Discuss zero order, first order and second order perturbation. Calculate the transition probability per unit time.   8+4

OR

b) Write short notes on any *two* :   6 × 2

i) Fermi Golden rule

ii) Electric dipole radiation and selection rules

iii) Basic principle of LASER.

3. a) What do you mean by Scattering amplitude and scattering cross section ? Obtain wave function for a scattered wave using first order Born approximation.   4+4

b) Using Born approximation calculate the scattering cross section for the screened Coulomb potential

$$V(r) = -\frac{ze^2}{r} e^{-ar}$$

where zs, e and a are constants.   4

OR

c) Discuss resonance scattering from a square well potential specified by

$$V(r) = -V_0 \quad r < a$$
$$= -0 \quad r > a$$

and deduce the Breit-Wigner formula for scattering cross section.   8+4

b) Prove that the cubic B-splines satisfy

i) $B_i(x) = 0$ outside of $x_i < x < x_{i+4}$;

ii) $\sum_{i=-3}^{n-1} B_i(x) = 1 \quad x_0 \leq x \leq x_n$.

□□

2018

Full Marks - 40

Time - 3 Hours

The questions are of equal value

Answer *all* questions

1. a) Use Gauss-Legendre quadrature to evaluate the integral

$$\int_0^1 e^{-x^2} dx$$

for n = 3. (Three point formula)

OR

b) Let $I_n(f) = \sum_{j=0}^{n} w_{j,n} f(x_j, n)$, $n \geq 1$

be a sequence of numerical integration formulas that approximate $I(f) = \int_a^b f(x) dx$.

Let F be a family dense in C[a, b]. Then prove that $I_n \rightarrow (f) \rightarrow I(f)$ all $f \in C[a, b]$ if and only if (i) $I_n(f) \rightarrow I(f)$ all $f \in F$ and

(ii) $B \equiv \underset{n \geq 1}{\text{Supremum}} \sum_{j=0}^{n} \left| w_{j,n} \right| < \infty$

[Turn Over

2. a) Solve the problem $y' = x - 2y$, $y(0) = 1$ for four steps using trapezoidal method with $h = 0.25$.

OR

b) Derive the consistency condition for the general form of the multistep method :

$$y_{n+1} = \sum_{j=0}^{p} a_j y_{n-j} + h \sum_{j=-1}^{p} b_j f\left(x_{n-j,} y_{n-j}\right), \ n \geq p$$

where $a_0, \ ......, \ a_p, \ b_{-1}, \ b_0, \ ......, \ b_p$ are constants, $p \geq 0, h > 0$.

3. a) Consider the problem

$$y' = \frac{1}{1+x^2} - 2y^2, \ y(0) = 0.$$

using Runge-Kutta method, find $y(1)$ with step length $h = 0.25$.

OR

b) Consider the second order Adams-Bashforth method

$$y_{n+1} = y_n + \frac{h}{2}\left[3y'_n - y'_{n-1}\right], \ n \geq 1.$$

Find the region of stability.

4. a) Solve the given system by Gauss-Seidel method

$$6x_1 + 2x_2 + 2x_3 = -2$$

$$x_1 + 2x_2 - x_3 = 0$$

$$2x_1 + \frac{2}{3}x_2 + \frac{1}{3}x_3 = 1.$$

Start with $(0, 0, 0)^T$.

OR

b) Solve the given system by Gauss-Jordan method.

$$2x - 3y + 5z = -38$$

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

$$5x - 2y - 3z = -1$$

5. a) Obtain the cubic spline approximation for the function given in the tabular form :

x	0	1	2	3
f(x)	1	2	33	244

and $M(0) = 0, M(3) = 0$.

OR

3. Write short notes on any *two* of the following : 8 × 2

a)   Bureaucray and Policy making

b)   Delegated Ligislation

c)   Power elite

d)   Political Parties and Policy making.

□□

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. a)   "Elitism and democracy cannot co-exist". Comment.   12

OR

b)   Discuss the views of Mosca and Michels on circulation of elites.

2. a)   Define Public Policy and discuss the process of Policy making.   12

OR

b)   Account of the growing role of Judiciary in Policy making. Do you think that the Judiciary is encroaching the legislative space ? Justify your answer.

[2]

3. Write short notes on any *two* of the following : 8 × 2

    a) Disaster Preparedness

    b) Weber's views on Bureaucracy

    c) Limitations of Scientific Management Approach

    d) Relief Measures during a disaster.

□□

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. a) Examine Elton Mayo's Human Relations theory
        of management.   12

                        OR

    b) Evaluate Fred Riggs' ecological approach to
        administration.

2. a) What do you mean by disaster ? Explain the
        typology of disaster.   12

                        OR

    b) Explain and evaluate the existing system of
        disaster management in India.

୪. ଯେ କୌଣସି *ଚାରୋଟିର* ସଂକ୍ଷିପ୍ତ ଟିପ୍ପଣୀ ଲେଖ :   ୪ × ୨

କ) 'କଳସା ଚଉତିଶା'ର ରଚୟିତା କିଏ ?

ଖ) 'ଅର୍ଥ କୋଇଲି' କିଏ ଓ କାହାକୁ ଆଧାର କରି ଲେଖିଛନ୍ତି ?

ଗ) ସାରଳା ଦାସଙ୍କ ବାଲ୍ୟ ନାମ କ'ଣ ଥିଲା ?

ଘ) କେଉଁ ରାକ୍ଷସ ବଧ ପ୍ରସଙ୍ଗରେ ଚଣ୍ଡୀପୁରାଣ ରଚିତ ହୋଇଛି ?

ଙ) 'ହରିବଂଶ' କିଏ ରଚନା କରିଛନ୍ତି ?

ଚ) ଅଭିମନ୍ୟୁ ସାମନ୍ତସିଂହାର କେଉଁ ଧର୍ମାବଲମ୍ବୀ ଥିଲେ ?

ଛ) 'ବ୍ରହ୍ମାଣ୍ଡ ଭୂଗୋଳ'ରେ କେଉଁ ତତ୍ତ୍ୱ ପ୍ରକାଶିତ ହୋଇଛି ?

ଜ) 'ବୈଦେହୀଶ ବିଳାସ' କାବ୍ୟର ନାୟକ କିଏ ?

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

୧. କ) ଚର୍ଯ୍ୟାପଦ ଗୁଡ଼ିକର ସାହିତ୍ୟିକ ମୂଲ୍ୟ ନିର୍ଦ୍ଧାରଣ କର ।   ୧୨

ଅଥବା

ଖ) ସାରଳା ସାହିତ୍ୟରେ ଥିବା ପ୍ରବାଦ ଓ ପ୍ରବଚନଗୁଡ଼ିକ ଓଡ଼ିଆ ଜାତୀୟ ଜୀବନର ଜୀବନ୍ତ ପ୍ରକାଶ – ଆଲୋଚନା କର ।

୨. କ) ପଞ୍ଚସଖା ସାହିତ୍ୟରେ ଶ୍ରୀଜଗନ୍ନାଥ କିପରି ସ୍ଥାନିତ ହୋଇଛନ୍ତି ପ୍ରଦର୍ଶନ କର ।   ୧୨

ଅଥବା

ଖ) ରୀତି ଯୁଗରେ ରଚିତ ଓଡ଼ିଆ ଧର୍ମୀୟ ସାହିତ୍ୟର ସୂଚନା ଦିଅ ।

୩. ଯେ କୌଣସି *ଦୁଇଟିର* ସଂକ୍ଷିପ୍ତ ଟିପ୍ପଣୀ ଲେଖ :   ୪ × ୨

କ) ରସକଲ୍ଲୋଳ

ଖ) ବିଳଙ୍କା ରାମାୟଣ

ଗ) ବଟ ଅବକାଶ

ଘ) ଜଗନ୍ନାଥ ଦାସ ।

ଗ) ଉତ୍କଳ ଦୀପିକା

ଘ) ବାଜି ରାଉତ ।

୪. ଯେ କୌଣସି *ଚାରୋଟିର* ସଂକ୍ଷିପ୍ତ ଉତ୍ତର ଲେଖ :   ୨ × ୪

କ) 'ଓଡ଼ିଆ ଏକ୍ ଭାଷା ନୟ' – ଏ କଥା କିଏ କହିଥିଲେ ?

ଖ) ରାଧାନାଥ ରାୟ କେଉଁଠି ଜନ୍ମଗ୍ରହଣ କରିଥିଲେ ?

ଗ) ଫକୀର ମୋହନଙ୍କ ମୂଳ ସାଙ୍ଗିଆ କ'ଣ ଥିଲା ?

ଘ) 'ବର୍ଣ୍ଣବୋଧ' କିଏ ରଚନା କରିଥିଲେ ?

ଙ) ସତ୍ୟବାଦୀର ପଞ୍ଚସଖାଙ୍କ ନାମ ଲେଖ ।

ଚ) 'ମିଶୁ ମୋର ଦେହ ଏ ଦେଶ ମାଟିରେ' – କିଏ କହିଥିଲେ ?

ଛ) 'ମାଟିର ମଣିଷ' ଉପନ୍ୟାସ କାହାର ସୃଷ୍ଟି ?

ଜ) 'ବାନପ୍ରସ୍ଥ' ନାଟକ କିଏ ଲେଖିଛନ୍ତି ?

□□

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

୧. କ) ରାଧାନାଥ ରାୟ ଓଡ଼ିଆ ସାହିତ୍ୟରେ ଆଧୁନିକ ଯୁଗର ବାର୍ତ୍ତାବହ-
ଆଲୋଚନା କର ।   ୧୨

ଅଥବା

ଖ) ସତ୍ୟବାଦୀ ସାହିତ୍ୟ ରାଧାନାଥ ସାହିତ୍ୟର ପ୍ରତିବାଦ କହିଲେ ଅତ୍ୟୁକ୍ତି
ହେବ ନାହିଁ – ପ୍ରମାଣ କର ।

୨. କ) ସବୁଜ ସାହିତ୍ୟରେ ପ୍ରକଟିତ ରୋମାଣ୍ଟିକ୍ ଚେତନାର ପରିଚୟ
ପ୍ରଦାନ କର ।   ୧୨

ଅଥବା

ଖ) ପ୍ରଗତିବାଦର ବାହକ ଭାବରେ ସଚ୍ଚି ରାଉତରାୟଙ୍କ କବିତା
ଆଲୋଚନା କର ।

୩. ଯେ କୌଣସି *ଦୁଇଟିର* ସଂକ୍ଷିପ୍ତ ଟିପ୍ପଣୀ ଲେଖ :   ୪ × ୨

କ) 'ଇନ୍ଦ୍ରଧନୁ' ଓ 'ବିଜୁଳି'ର ସଂଘର୍ଷ

ଖ) ଦରବାର

୩. ଯେ କୌଣସି **ଦୁଇଟିର** ସଂକ୍ଷିପ୍ତ ଟିପ୍ପଣୀ ଲେଖ :   ୪ × ୨

କ) ସାରଳା ମହାଭାରତର ଭାଷା

ଖ) ବିରାମ ଚିହ୍ନ

ଗ) ବିଭିନ୍ନ ଅର୍ଥରେ 'ଉଆ' ପ୍ରତ୍ୟୟଯୁକ୍ତ ଶବ୍ଦ

ଘ) ଓଡ଼ିଆ ଭାଷାରେ ଦ୍ରାବିଡ଼ ଶବ୍ଦ ସମ୍ଭାର ।

V-241-0.4   ☐☐

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

୧. କ) ଓଡ଼ିଆ ଭାଷାର ବିକାଶ କ୍ରମରେ ଚର୍ଯ୍ୟାପଦର ଭାଷା ସଂପର୍କରେ ଆଲୋଚନା କର ।   ୧୬

ଅଥବା

ଖ) ଇଣ୍ଡୋ-ଇଉରୋପୀୟ ଭାଷା ପରିବାରର ଉଦ୍ଦେଶ ଓ ବର୍ଗୀକରଣର ସୂଚନା ଦିଅ ।

୨. କ) ଓଡ଼ିଆ ଭାଷା ଉପରେ ଇଂରାଜୀ ଭାଷାର ପ୍ରଭାବ ଦର୍ଶାଅ ।   ୧୬

ଅଥବା

ଖ) ବାକ୍ୟର ଲକ୍ଷଣ, ଗଠନ ଓ ପ୍ରକାରଭେଦ ଉଦାହରଣ ସହ ବୁଝାଅ ।

୩. ଯେ କୌଣସି **ଦୁଇଟିର** ସଂକ୍ଷିପ୍ତ ଟିପ୍ପଣୀ ଲେଖ :   ୪ × ୨

କ) ମାନସ୍ୱର

ଖ) ବିବର୍ତ୍ତନ ସିଦ୍ଧାନ୍ତ

ଗ) ସ୍ୱର୍ଣ ବ୍ୟଞ୍ଜନ

ଘ) ଶବ୍ଦ ପରିବର୍ତ୍ତନର ଦିଗ ।

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

୧. କ) ଭାଷାର ଉତ୍ପତ୍ତି ସଂପର୍କୀୟ ବିଭିନ୍ନ ମତବାଦ ଆଲୋଚନା କର ।   ୧୬

ଅଥବା

ଖ) ଧ୍ୱନି ଉତ୍ପନ୍ନରେ ବାଗ୍‌ଯନ୍ତ୍ର ଓ ତାହାର ବିଭିନ୍ନ ଅଂଶର କାର୍ଯ୍ୟକାରିତା ଉଲ୍ଲେଖ କର ।

୨. କ) ଉଚ୍ଚାରଣ ଦୃଷ୍ଟିରୁ ସ୍ୱରଧ୍ୱନିର ବର୍ଗୀକରଣ ଦର୍ଶାଅ ।   ୧୬

ଅଥବା

ଖ) 'ଭାଷା ପରିବର୍ତ୍ତନର କାରଣଗୁଡ଼ିକ ଅନୁଧ୍ୟାନ କର ।

2. Explain the factors for the growth of regionalism in India. 12½

3. Discuss the role of caste and religion as determinants of voting behaviour. 12½

4. Analyse the evolution of party system in India. 12½

5. Explain the causes and dimensions of communalism in India. 12½

6. What do you mean by affirmative action ? Give your arguments in favour of affirmative action in India. 12½

7. "Hindu Rashtra and Secularism can co-exist". Do you agree ? Justify your answer. 12½

8. What were the recommendations of the Mandal Commission ? Give your comments on the issue of reservation for Other Backward Classes. 12½

9. What do you mean by Welfare Administration ? Discuss the impact of globalization on Welfare Administration. 12½

2018

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

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

a) What are your arguments in favour of women's reservation in elected bodies ?

b) What is Mixed Economy model ?

c) Explain "Politicization of Caste" with examples.

d) Analyze the importance of gender as a determinant of voting behaviour.

e) Do you think Post-1991 Indian state is more repressive ? Justify your answer.

f) What is negative secularism ?

g) Explain the main problems in the functioning of coalition governments in India.

h) Why has there been demands for secession ?

g) Establish Charles Lamb the most delightful essayist with special reference to his essay 'Chimney Sweepers'.

2. Justify the relevance of the essay 'On Knocking at the Gate in Macbeth'. 12½

3. Why did Mary Shelley make Frankenstein ? Discuss the novel *Frankenstein* as a novel of Fiction. 12½

4. Critically analyse William Blacke's poem 'The Tyger'. 12½

5. What are the main features of Willim Hazlitt's Essay 'On Familiar Style'. 12½

6. What type of poetry is a 'Red Red Rose' of Robert Burns. Explain. 12½

7. 'The Castaway' is an elegiac poem/ballad of William Cowper. Elucidate. 12½

8. Write a short note on the melancholy note in Romantic Poetry. 12½

9. Describe and analyse the most striking features of P.B. Shelley's poem 'Ode to the West Wind'. 12½

2018

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

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

a) What is Romantic Lyric. Discuss its salient features.

b) Summarise the ideas contained in the poem 'Kubla Khan'.

c) To what extent can the romantic movement of English Poetry be described as a return to Nature.

d) Write a brief note on the poem 'Ode to the Grecian Urn'.

e) What features of Hazlitt as a romantic do you notice in the Essay 'On Going a Journey'.

f) Write a short note on Byron's 'Childe Harold's Pilgrimage'.

2. Discuss the origin and radiation with special reference to Miocene hominoids. 9

3. Discuss the primate feautures and their phylogentic relationship. 9

4. Explain the distribution and features of Homo erectus from Asia. 9

5. Give an account of Appearance of genes homo special reference to Homo habits. 9

6. Briefly discuss the distribution and fossil evidence of Neanderthals. 9

7. Discuss the distribution and features of Homo Sapiense sapiens. 9

8. Discuss the process of Hominisation. 9

2018

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

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

4×6

a) Ramapithecus

b) Characteristics of Primate

c) Australopithecine

d) Characteristics of Homo habilis

e) Write types of Neanderthals and their character.

f) Homosapiences

g) Origin of Modern Man

h) Write the distribution of homosapienes.

ज) खड़ीबोली को सुधारने में द्विवेदीजी ने महत्वपूर्ण भूमिका निभायी
है । आलोचना कीजिए ।

2. भारतेन्दु युगीन गद्य के विकास पर आलोचना कीजिए ।   12½

3. छायावाद युगीन काव्यप्रवृत्तियों पर आलोचना कीजिए ।   12½

4. हिन्दी नाटक के उदभव और विकास में भारतेन्दुजी और द्विवेदीजी के
महत्वपूर्ण योगदान पर आलोचना कीजिए ।   12½

5. प्रगतिवादी काव्य की प्रमुख काव्यप्रवृत्तियों पर आलोचना
कीजिए ।   12½

6. समकालीन कविताओं की विशेषताओं पर आलोचना
कीजिए ।   12½

7. द्विवेदी युगीन नाटक की प्रमुख विशेषताओं पर आलोचना
कीजिए ।   12½

8. स्वाधीनता परवर्त्ती हिन्दी गद्य के स्वरूप और विशेषताओं का परिचय
प्रदान कीजिए ।   12½

9. स्वतन्त्रता पूर्ववर्त्ती नाटक में वर्णित राष्ट्रीय चेतना में विशुद्ध राष्ट्रभक्ति
नहीं पायीजाती है । आलोचना कीजिए ।   12½

2018

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

1. किन्हीं *चार* प्रश्नों का उत्तर दीजिए ।   7½ × 4

क) भारतेन्दु युगीन नाटक की प्रमुख विशेषताओं पर प्रकाश डालिए ।

ख) द्विवेदी युगीन नाटक में वर्णित राष्ट्रीय भावनाओं पर विस्तार से
आलोचना कीजिए ।

ग) छायावादी काव्यों में वर्णित प्रकृति चित्रण की विशेषताओं पर
आलोचना कीजिए ।

घ) प्रयोगवादी प्रमुख कवियों का संक्षिप्त परिचय दीजिए ।

ङ) नयी कविता को व्यक्तिवादी काव्य कहाजाता है । आलोचना
कीजिए ।

च) नयी कविता और समकालीन कविता का एक तुलनात्मक
अध्ययन प्रस्तुत कीजिए ।

छ) भारतेन्दुजी के नाटक में वर्णित तात्कालिक सामाजिक परिस्तितियों
का परिचय दीजिए ।

2. Describe the different parts of an optical microscope with neat sketch. Add a note on their function.   9

3. Describe the behaviour of light in thin section.   9

4. Outline the optical properties of mineral studies under microscope.   9

5. Describe the composition and structure of the Earth.   9

6. Briefly describe Atomic Substitution, Polymorphism and Pseudomorphism.   9

7. Discuss briefly the Uniaxial Interference figure with diagram.   9

8. Give a detail account of the method of Preparation of Thin Section.   9

9. What is Polarisation ? Describe the various methods by which polarised light can be generated.   9

2018

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

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

   a) Double Refraction

   b) Construction of Nicol Prism

   c) Birefringente

   d) Accessory Plates

   e) Types of Extinction

   f) Types of Meteorites

   g) Brief note on Geochemical cycle

   h) Structure of Atmosphere.

8. The total revenue function is given by

$$TR = 12x + \frac{1}{2}x^2 - \frac{1}{2}x^3.$$

Show that marginal revenue is equal to the average revenue when average revenue is at its maximum.   12½

2018

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

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

   a) Illustrate the difference between an open and a closed model.

   b) Find the solution of the differential equations given by

      $$\frac{dy}{dx} = \frac{y}{x} \text{ and } \frac{dy}{dx} = \frac{x}{y}$$

   c) Show that the demand function given by

      $$P = \frac{a}{x} - c$$

      is downward sloping and convex from below.

   d) Find the derivative of the following functions :

      i) $x^2 + xy + y^2 = 0$

ii) $y = \dfrac{x+1}{x-1}$

e) Given the utility function $u = q_1 q_2$ and the budget constraint $p_1 q_1 + p_2 q_2 = 60$, find optimum u.

f) Explain the significance of Lagrangian multiplier in optimisation.

g) Define a boardered hessian determinant and explain its use in economics.

h) Examine the stability of the following model in equilibrium

      Demand function $q_t = \alpha - \beta P_t$

      Supply function $q_t = \gamma + \delta P_{t-1}$.

2. Explain how a technology matrix is derived from the transaction matrix and discuss its use in production planning. Illustrate with an example.   12½

3. Solve the following differential euqations

i) $\dfrac{d^2 y}{dx^2} - 8 \dfrac{dy}{dx} + 16y = e^x$ 6½

i) $\left(x^2 + 1\right) \dfrac{dy}{dx} + 2xy = 4x^2$ 6

4. a) If $x = y(1 + \log x)$, prove that

    $\dfrac{dy}{dx} = \dfrac{\log x}{(1+\log x)^2}$ 6½

b) If $y = x^x$, find $\dfrac{dy}{dx}$.   6

5. a) Find points of inflection of the function given by

    $y = 5.e^{-x^2/2}$ 6

b) If the demand function is $P = \sqrt{9-q}$, find at what level of output q, the total revenue TR will be maximum.   6½

6. a) Find the conditions that a firm will be in equilibrium under perfect competition.   6

b) Divide 15 into two parts such that the square of one multiplied with the cube of the other is maximum.   6½

7. Solve the following equations :

i) $y_{x+2} - 3y_{x+1} + 2y_x = x + 1$ 6½

ii) $y_{x+1} = 4y_{x+4}$.   6

2. Discuss the social condition of Ancient Rome with special reference to the slave society. 12½

3. Discuss the growth of trade and commerce in Ancient Rome. 12½

4. Throw light on the Gods, Goddesses and religious beliefs of Ancient Romans. 12½

5. What is Feudalism ? Discuss its main features. 12½

6. Describe in brief the organisation of production and trade in Medieval Europe. 12½

7. Give an account of the rise and spread of Christianity in Europe. 12½

8. Write an essay on Sufism. 12½

9. Analyse the factors responsible for the spread of Islam religion. 12½

□□

2018

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

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

a) Agrarian economy of Ancient Rome

b) Roman Architecture

c) Roman Literature

d) Manors

e) Decline of Feudalism

f) Institution of Papacy

g) Ummayads and Abbusids

h) Main tenets of Sharia.

2018

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

୨. ଆଧୁନିକ ଓଡ଼ିଆ ସାହିତ୍ୟ ପରିମଣ୍ଡଳରେ ରୋମାଷ୍ଟିକ୍ ଭାବାଦର୍ଶର ବୈଶିଷ୍ୟ ନିରୂପଣ କର ।   ୧୨.୫

୩. ଆଧୁନିକ ସାହିତ୍ୟର ନବନିର୍ମାତାଙ୍କ ଭିତରେ ଫକୀରମୋହନ ସେନାପତି ଥିଲେ ଅନ୍ୟତମ ବିଥାଣୀ - ଆଲୋଚନା କର ।   ୧୨.୫

୪. ଜାତୀୟତାବାଦୀ ଭାବଚେତନା, ଆଧୁନିକ ସାହିତ୍ୟରେ କିପରି ନୂତନ ଦିଶା ପ୍ରକାଶ କରିଛି ଆଲୋଚନା କର ।   ୧୨.୫

୫. ସତ୍ୟବାଦୀ ସାହିତ୍ୟର ସାହିତ୍ୟାଦର୍ଶ ସମ୍ପର୍କରେ ଆଲୋକପାତ କର ।   ୧୨.୫

୬. ସବୁଜ ଯୁଗର ଜଣେ ମର୍ଯ୍ୟାଦାବନ୍ତ ସାରସ୍ୱତ ସେବକ କାଳୀଚରଣଙ୍କ କୃତିତ୍ୱ ସମୀକ୍ଷା କର ।   ୧୨.୫

୭. ସବୁଜ ଯୁଗର ସାହିତ୍ୟିକ ସ୍ୱାତନ୍ତ୍ର୍ୟ ପ୍ରତିପାଦନ କର ।   ୧୨.୫

୮. ସବୁଜ-ଚେତନା ପରେ ଓଡ଼ିଆ କବିତା କ୍ଷେତ୍ରରେ ପ୍ରଗତିବାଦୀ ଦୃଷ୍ଟିଭଙ୍ଗୀ କିପରି ସଫଳତାର ସହିତ ପ୍ରକାଶିତ ଆଲୋଚନା କର ।   ୧୨.୫

୧. ଯେ କୌଣସି *ଚାରିଟିର* ସଂକ୍ଷିପ୍ତ ଉତ୍ତର ଦିଅ :   ୭.୫ × ୪

କ) ଆଧୁନିକ କବିତାର ବୈଶିଷ୍ୟ

ଖ) ରାଧାନାଥ-ସାହିତ୍ୟର ଟ୍ରାଜିକ୍ ଧର୍ମିତା

ଗ) ସତ୍ୟବାଦୀ ସାହିତ୍ୟର ସୁଦୂରପ୍ରସାରୀ ବାର୍ତ୍ତା

ଘ) କବି ଗୋଦାବରୀଶ ମିଶ୍ର

ଙ) ନବଯୁଗ ସାହିତ୍ୟ ସଂସଦ

ଚ) ସବୁଜ ଯୁଗର ଗଦ୍ୟ ସାହିତ୍ୟ

ଛ) ପ୍ରଗତିବାଦୀ କାବ୍ୟ ଚେତନା

ଜ) ସଚି ରାଉତରାୟ ।

2. Examine moksa as a purusartha.   12½

3. Give an account of Carvaka's hedonistic ethics.   12½

4. What are the Five Great Vows of Jainism ?
   Explain.   12½

5. Explain and examine the Buddhist concept of
   nirvana.   12½

6. Discuss karmayoga of the Bhagabadgita.   12½

7. "Truth is God and God is Truth". – Explain after
   Gandhi.   12½

8. Discuss Gandhi's view of Satyagraha.   12½

2018

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

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

   a) Justify the meaning of 'Purusartha'.

   b) State three jewels of Jainism.

   c) Distinguish between the Mahabrata and Anubrata.

   d) State Buddha's Four Noble Truths.

   e) Explain Buddha's view of Soul.

   f) What is Akarma according to the Bhagbad Gita ?

   g) Explain Gandhi's concept of Swaraj.

   h) What is Non-violence according to Gandhi ?

g) Write a short essay on capitalist model of development.

h) Write a short essay on Gandhian model of Development.

2. Discuss the meaning and nature of social change. 12½

3. Explain the conflict theory of social change. 12½

4. Analyse the functionalist theory of social change. 12½

5. Discuss the cultural factor of social change. 12½

6. Explain the Demographic factor of social change. 12½

7. Define Economic growth and discus the factors accelerating Economic Growth. 12½

8. Analyse the socialist model of development. 12½

2018

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

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

a) Discuss briefly the relationship between social change and social evolution.

b) Analyse cyclical theory in brief.

c) Explain briefly the role of Technology in social change.

d) Discuss how ideologies brings changes in society.

e) Analyse the indicators of social development in brief.

f) Discuss the factors prevnting Economic Growth.

2. पञ्चमाङ्कस्य सारकथां लिखत ?   12½

3. मुद्रिका प्राप्तिः वृत्तान्तं वर्णयत ?   12½

4. सप्तमाङ्कस्य महत्वं वर्णयत ?   12½

5. पञ्च अवस्थायाः प्रकारं वर्णयत ?   12½

6. अर्थप्रकृतिनां महत्वं वर्णयत ?   12½

7. मारीचाश्रम मारिचकुषेः महत्वं वर्णयत । तत् कण्वाश्रमस्य प्रभेदं
   वर्णयत ।   12½

8. हंस पादिका गीतस्य महत्वं वर्णयत।   12½

9. सप्तमाङ्के संभोग शृगांरस्य महत्वं वर्णयत ।   12½

2018

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

1. केषांचित् *चतुर्णां* प्रश्नानां उत्तरं लिखत :   7½ × 4

   क) सानुमती प्रवेशस्य नाटकीयोपयोगितं वर्णयत ।

   ख) मुद्रिका प्राप्तिः वृत्तान्तं वर्णयत ।

   ग) शकुन्तला कथं प्रत्याख्याता वर्णयत ।

   घ) नाटकस्य लक्षणानि वर्णयत ।

   ङ) मातली आगमन वृत्तान्तं वर्णयत ।

   च) प्रस्तावनायाः लक्षणं वर्णयत ।

   छ) पूर्वरंगस्य महत्वं वर्णयत ।

   ज) नान्दी कतिविद्याः वर्णयत ।

   झ) शददां वित्तमनुष्ठानं च त्रितयं समागतम वर्णयत ।

   ञ) 'तव प्रसादस्य पुरस्तु सम्पदः व्याख्यायत ।

2018

Full Marks - 80

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. *चतुर्णां* टिप्पणी लिखत :   7½ × 4

क) अष्टध्यायी – पाणिनिः

ख) उतसर्गः

ग) सार्वचातुक तथा आर्धचातुक

घ) अदेङ्गुणः अथवा उपेन्द्रवज्रा

ङ) नदी संज्ञा अथवा मन्दाक्रान्ता

च) उपसर्गाः क्रियायोगे

छ) आगमः / ओदशः

ज) टि तथा धु संज्ञा

झ) सुप् तिजन्तं पदम

ञ) वार्तिकम ।

[2]

2. *चतुर्णाम्* व्याख्यात :   12½ × 4

क) आदिरन्त्यन सहता, अथवा आर्या घन्दः

ख) तपरः तत् कालश्य

ग) न वेति विभाषा

घ) येन विचि स्तद न्तस्य

ङ) हलन्यम, उपजाति

च) तुल्याश्य प्रयत्नं सर्वर्णम

छ) अणुदित सवर्णस्य चापर्त्ययः

ज) उकालो अच् ह्स्व दीर्घाप्लुतः

झ) नाजझलीः

2018

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

1. किन्हीं *चार* प्रश्नों का उत्तर दीजिए : 7½ × 4

   क) सप्रसंग व्याख्या कीजिए :

   ये सब स्फुलिंग हैं मेरी दस ज्वलामयी जलान के
   कुछ शेष चिन्ह हैं केवल मेरे उस महामिलन के ।

   ख) 'तोडती पत्थर' कविता में प्रगतिवादी ही नहीं मानवतावादी
   चिंताधारा का वर्णन है । आलोचना कीजिए ।

   ग) सप्रसंग व्याख्या कीजिए :

   ठहरो, अहो मेरे हृदय में है अमृत, मैं सींच दूंगा
       अभिमन्यु जैसे हो सकोगे तुम
   तुम्हारे दुख मैं अपने हृदय में सींच लुंगा ।

   घ) सप्रसंग व्याख्या कीजिए :

   अरुण यह मधुमय देश हमारा ।
   जहाँ पहुँच अनजान क्षितिज को, मिलता एक सहारा ।

[Turn Over

ङ) 'भिक्षुक' कविता में वर्णित भिक्षुक के करुण दृश्य के वर्णन के पिछे कवि का उद्देश्य स्पष्ट कीजिए ।

च) नारी कवि के रूप में महादेवीजी व्यक्तित्व का मूल्यांकन कीजिए ।

छ) प्रगतिवादी कवि के रुप में पंत की आलोचना कीजिए ।

ज) सप्रसंग व्याख्या कीजिए :

हाय! मृत्यु का ऐसा अमर, अपार्थिव पूजन ?
जब विषण्ण, निर्जीव पडा हो जग का जीवन ।

2. विरह काव्य की विशेषताओं के आधार पर 'आँसू' काव्य की आलोचना कीजिए ।   12½

3. 'तोडती पत्थर' कविता के आधार पर निरालाजी के सम्बेदनात्मक दृष्टिकोण की आलोचना कीजिए ।   12½

4. निरालाजी छायावादी कवि हैं, उनकी कविताओं में यथार्थवादी जीवन दृष्टि के साथ साथ आध्यात्मिक चेतना भी है । पठित कविता तुम और मैं के आधार पर आलोचना कीजिए ।   12½

5. पंत प्रकृति के सुकोमल कवि हैं । पठित कविताओं के आधार पर आलोचना कीजिए।   12½

6. महादेवीजी वेदना की कवयित्री हैं । 'मैं नीर भरी दुःख की बदली' कविता के आधार पर आलोचना कीजिए ।   12½

7. छायावादी कवि के रूप में महादेवीजी का मूल्यांकन कीजिए ।   12½

8. 'ताज' कविता में पंतजी का कायापलट हुआ है । प्रकृति से मुँह मोडकर यथार्थवाद की ओर उन्मुख हुए हैं । पठित कविता के आधार पर आलोचना कीजिए ।   12½

9. 'हे चिर महान' कविता में वर्णित भक्ति भावना पर प्रकाश डालिए ।   12½

☐☐

2018

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

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

   a) For any two event A and B if $B \subset A$ then prove that $P(B) \leq P(A)$.

   b) For any three event A, B and C defined on sample space S such that $B \subset C$ and $P(A) > 0$ then prove that $P(B|A) \leq P(C|A)$

   c) For any two event A and B show that

      $P(A \cap B) \leq P(A) \leq P(A \cup B) \leq P(A) + P(B)$.

   d) If A and B are independent events then
      (i) $\overline{A}$ and B (ii) $\overline{A}$ and $\overline{B}$
      are independent.

e) A random variable X has the following probability function :

Values of X : x : 0 1 2 3 4 5 6 7

$\qquad$ p(x) : 0 K 2K 2K 3K K² 2K² 7K² + K

Find P(X ≥ 6) and P(0 < X < 5).

f) A coin is tossed untill a head appears. What is the expectation of the number of tosses requird.

g) Ten unbiased coins are thrown simultaneously. Find the probability of getting at least 7 heads.

h) If X and Y are independent Poission variate such that P(X = 1) = P(X = 2) and P(Y = 2) = P(Y = 3), find V(X − 2Y).

2. If A, B and C are three events show that $\qquad$ 12

$$P(A \cup B \cup C) = P(A) + P(B) + P(C) - P(A \cap C)$$
$$- P(B \cap C) - P(A \cap B) + P(A \cap B \cap C).$$

3. If A and B are two events and P(B) ≠ 1. Prove that

$$P\left(A / \bar{B}\right) = \frac{P\left(A\right) - P\left(A \cap B\right)}{1 - P\left(B\right)}$$

and hence deduce that

$$P\left(A \cap B\right) \geq P\left(A\right) + P\left(B\right) - 1$$

Also show that $P\left(A\right) >$ or $< P\left(A / B\right)$ according as

$$P\left(A / \bar{B}\right) >$$ or $< P\left(A\right).$ $\qquad$ 12

4. Define distribution function. State and prove the properties of distribution function. $\qquad$ 12

5. Define Cumulant generating function. State and prove the additive properties of Cumulants and what is the effect of change of origin and scale on cumulants. 12

6. Define Binomial distribution and write its proeperties. $\qquad$ 12

7. Define Poission distribution and give examples of Poission variate show that in Poission distribution mean = variance. $\qquad$ 12

8. Define Geometric distribution. Find mean and variance of geometric distribution. $\qquad$ 12

▢▢

2. Define oceanography and discuss the importance of Oceans.　9

3. Discuss the general relief of the ocean floor.　9

4. Describe the bottom relief of the Indian ocean.　9

5. Give an account of the distribution of salinity of ocean water.　9

6. Elaborate the types and importance of marine resources.　9

7. Discuss the types of ocean deposits.　9

8. What is tide ? Discuss its types.　9

9. Describe the currents of North Atlantic Ocean.　9

2018

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

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

   a) Scope of Oceanography

   b) Mid-Atlantic ridge

   c) Deep sea plain

   d) Ooze

   e) Horizontal temperature distribution in oceans

   f) Atoll

   g) T-S diagram

   h) Formation of waves.

h) Differentiate between constructivist approach and traditional approach to teaching and learning.

2. Discuss characteristics and importance of teaching.

3. Describe 5E model of designing a lesson with suitable examples from a topic of any school subject.

4. Differentiate between memory, understanding and reflective level of teaching task.

5. What is theory of teaching ? Explain communication theory of teaching with examples.

6. Discuss some important general principles of teaching.

7. Evaluate project method as the best method.

8. What is activity-based approach to teaching ? Discuss its key elements.

9. What are the central features of constructivist approach to teaching and learning.

2018

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

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

   a) How teaching is related to learning ?

   b) What are various variables embedded in a teaching task ?

   c) What are different activities performed during interactive phase of teaching task ?

   d) State the nature of theory of teaching.

   e) What are the essentials of normative theory of teaching propounded by Mitra and Clarke.

   f) State and two psychological principle of teaching with examples.

   g) What are different steps of problem solving method ?

h) Discuss the nature and characteristics of happiness.

2. What is intelligence ? Discuss Gardner's theory of multiple intelligence. 9

3. Discuss different cross cultural issues in testing intelligence. 9

4. What is personality ? Discuss all about the social cognitive theory of personality. 9

5. Explain, how the biological and socio-cultural determinants affecting personality. 9

6. Define motivation. Discuss Maslow's theory of Motivation. 9

7. Define emotion. Discuss the James-Liange theory of emotion. 9

8. What is social behaviour ? Discuss the meaning of attribution and errors in attribution. 9

9. Define Positive Psychology. Discuss, how the positive psychology is a cause for subjective wellbeing and personal growth. 9

2018
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

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

   a) Discuss in details the Stenbergs triarchic theory of intelligence.

   b) Briefly discuss the heredity and environment controversy in intelligence.

   c) Elaborate the humanistic theory of personality.

   d) Briefly discuss different trait and types of personality.

   e) Briefly discuss the Arousal and Expectancy theories of motivation.

   f) Point out the Cannon-Bard theory of Emotion.

   g) Explain the meaning of social cognition and processing of social information.

2018

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

1. Answer any *four* of the following :

    a) Discuss about the superposition of two
        perpendicular Harmonic oscillations employing
        graphical method.   6

    b) Derive Newton's formula for velocity of
        sound.   6

    c) Derive an expression for velocity of longitudinal
        waves in pipe filled with fluid.   6

    d) Develop the differential equation of wave
        motion.   6

    e) Discuss about the Fresnel's diffraction pattern
        due to a straight edge.   6

f) How the interference fringes are formed in a Fabry-Perot interferometer. 6

g) Discuss the construction and working of Lloyd's mirror. 6

h) Distinguish between holography and photography. Briefly discuss about the procedure of the production of holography. 2+4

2. Discuss about the superposition of two colinear oscillations having (i) equal frequencies and (ii) different frequencies. 4½+4½

3. Derive an expression for velocity of plane progressive longitudinal wave in an elastic medium. 9

4. Describe the experimental set up and theory to determine the wave length of light using Newton's ring. 9

5. Describe the experimental set up and theory of Young's double slit experiment. Hence obtain the expression for fringe width. 9

6. Show that the radii of half period zone of a zone plate are proportional to the square root of natural numbers. Hence, derive an expression for its focal length. 7+2

7. Describe the construction, theory and working of Michelson's interferometer with suitable diagram. 9

8. a) Discuss the difference between Fresnel's and Fraunhofer's diffraction. 4

   b) Show that a zone plate possesses multiple foci. 5

9. Write notes on the following : 4½ × 2

   i) Electromagnetic nature of light

   ii) Point source holography.

☐☐

ii)   the enthalpy of mixing (ΔH_{mix}) is zero.

iii) the entropy change of mixing (ΔS_{mix}) is always positive.   9

9. State first law of themodynamics. Derive the mathematical expression for it. Explain the fact that internal energy in a state function but heat and work are not.   9

2018

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

1. Answer any *four* of the following :

a) State and explain the following terms with suitable examples : 2×3

i)   State function and path function.

ii) Extensive and Intensive Properties.

iii) Thermodynamic reversible and irreversible process.

b) i)   Define first law of thermodynamics. How will you justify it ?   3

ii) Derive a relationship between ΔH and ΔU.   3

c) i)   Explain the concept of residual entropy.   4

ii) What do you understand by inversion temperature ?   2

d) Derive Gibbs-Helmholtz equation for a process at constant pressure and constant volume. 6

e) What do you understand by the term fugacity ? Explain why fugacity of helium on hydrogen is always more than the pressure. 6

f) i) State le-chateliers principle. 2

ii) Derive the relationship between K_P, K_C and K_X for reaction involving ideal gases. 4

g) Define and explain : 3+3

i) Elevation of boiling point

ii) Depression of freezing point.

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

i) Osmotic Pressure

ii) Relative Lowering of Vapour Pressure.

Group - B

2. Explain the term (i) Enthalpy and Enthalpy change (ii) Heat capacity. Derive an expression for heat capacity at constant volume and that at constant pressure. Derive the relationship between them. 9

3. Derive thermodynamically Kirchoff's equation and mention its applications. 9

4. What is Joule-Thomson effect ? State and derive Joule-Thomson coefficient. Prove thermodynamically that Joule-Thomson co-efficient for an ideal gas is zero. 9

5. What is meant by Chemical Potential ? How does Chemical Potential vary with temperature and pressure ? Derive Gibbs equation. 9

6. Deduce the expression for the Van't Hoff reaction isotherm. Discuss its significance with reference to the direction of Chemical Change. 9

7. State Raoult's law for vapour pressure lowering. How is this law derived ? Explain how the law can be used for determining molar mass of dissolved substance. 9

8. Derive as expression for Gibbs free energy change of mixing (ΔG_{mix}) for an ideal solution. Show that for an ideal solution

i) the volume of mixing (ΔV_{mix}) is zero.

2. Discuss about the reproduction in Equisetum.　　9

3. Give an account on range of thallus organization in Bryophytes.　　9

4. Describe the life history of Pinus with economic importance.　　9

5. Discuss the morphology and anatomy of Cycas with ecological importance.　　9

6. Discuss the morphology, anatomy and affinities of Rhynia.　　9

7. Give an account on stelar evolution in pterydophytes.　　9

8. Discuss the anatomy and reproduction of psilotum.　　9

9. Give an account on ecological and economic importance of Sphagnum.　　9

2018

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

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

   a) Thallus of Riccia

   b) Sporophyte of Marchantia

   c) Heterospory and seed habit

   d) Economic importance of pterydophytes.

   e) Female gametophyte of cycas

   f) Stem of Lyginopteruis

   g) Male cone of Pinus

   h) Flower of Gnetum.

2. What are the different secretary products in different parts of the alimentary canal ? Discuss the nervous and hormonal regulation of these secretions.   9

3. Give an account of transport of respiratory gases in blood.   9

4. Describe the structure and function of Haemoglobin.   9

5. Narrate the structure of kidney and its histological details.   9

6. Explain the mechanism of blood clotting.   9

7. Give an account of the composition of blood and discuss the function of each component.   9

8. Discuss the process of absorption of lipid in the intestine.   9

9. Describe the origin, conduction and regulation of heart beat.   9

□□

2018

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

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

   a)   Pulmonary Ventilation

   b)   Gastro-intestinal hormones

   c)   Oxygen dissociation curve

   d)   Elecrocardiogram

   e)   Mechanism of urine formation

   f)   Blood pressure and its regulation

   g)   Coronary Circulation

   h)   Cardiac Cycle.

8. a) Write the procedure to draw a tree if Pre-order and In-order is given. Construct the tree where :

Pre-order : AJMHKFCINLGEB

In-order : ABCFHJMKEGILN

b) Write the procedure to draw a tree if Post-order and In-order is given. Construct the tree where :

Post-order : DFEBGIJKHCA

In-order : DBFEAGCLJHK 9

9. What are the different applications of Stack ? Write down PUSH and POP procedures of Stack with example. 9

□□

2018

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

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

a) Convert the following postfix expression into its infix form by using a stack :

A B + C ^ D E * F / -

b) Define a Dqueue ? How it differs from circular queue ? Write an algorithm to insert and delete an element into a Queue.

c) Draw a binary tree for the following expression and find out its pre-order traversal expressions

$E = 5 * 7 + (4 - 8 * 9) - 6 / 2.$

d) Write and explain Round Robin algorithm with an example.

e) Write short notes on the following :

   i)   Compaction

   ii) Boundary Tag System

   iii) Decision Tree.

f) Insert the following elements into a heap tree and after insertion delete the node 89 :

     66, 43, 55, 23, 16, 5, 89, 88, 49, 23, 34

g) Write and explain the algorithm for Tower of Hanoi with an example.

h) What is meant by memory representation ? Represent Stack and Queue in memory in terms of Array and Linked List.

2. What is AVL tree ? Construct an AVL tree with the node values in the following order :   9

  Jan, Feb, Mar, Apr, May, June, July, Aug, Sep, Oct, Nov, Dec.

3. Differentiate between Single, Double and Circular Linked list ? Write an algorithm in C to insert an element into a double linked list.   9

4. Write short notes on the following :   9

   i)   De-allocation Strategy

   ii) Memory Representation of Tree

   iii) Application of Queues.

5. What is a BST ? Construct a BST with the node values in the following order :

     5, 7, 26, 44, 33, 12, 88, 54, 78, 22, 47, 23

  After constructing the tree, delete the node 26.   9

6. Sort the following elements by using Quick method :   9

   12, 33, 26, 5, 77, 37, 88, 99, 28, 67, 76, 18, 69, 44

7. Write short notes on the following :   9

   i)   Full Vs. Complete Binary tree

   ii) Stack Vs. Queue

   iii) Array Vs. Linked List

2018

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

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

   a) What is joint stock company ? Discuss its advantages and disadvantages.

   b) What is Govt. Company ? Explain its special features.

   c) Discuss the characteristics and functions of a promoter.

   d) What is Articles of Association ? How it is different from Memorandum of Association.

   e) Distinguish between Bonous Shares and Right Shares.

   f) Define the term director. Discuss powers and duties of directors.

g) What are the provisions of the Companies Act, 2013 regarding appointment, removal and remuneration of auditors ?

h) Write a detailed note on Demant and Physical Share. Also distinguish between them.

2. What is a Company ? What kind of companies can be formed under Indian Companies Act ?   9

3. Define Memorandum of Association of a company and state its importance.   9

4. How are directors appointed ? What are the provisions under Indian Companies Act relating to remuneration, vacation of office and removal of directors ?   9

5. What is Annual General Meeting ? State the legal provisions regarding calling of such meeting.   9

6. "An auditor is a watch dog and not a bloodhound". Explain and illustrate this statement.   9

7. What do you understand by the winding up of a company ? Discuss the circumstances in which a company may be wound up by the National Company Law Tribunal (NCLT).   9

8. Write meaning and characteristics of Whistle-blowing and Whistle blower. What are the consequences of Whistle-blowing ? Explain.   9

9. What is depository system in India ? Explain its characteristics and also explain its functions in detail.   9

Depreciation overcharged in cost accounts 2,080

Administrative overheads recovered
in excess in Cost accounts 2,720

Interest on investment recorded
in financial accounts 14,000

Goodwill written off 9,200

Income tax paid recorded in
financial accounts 69,280

Stores adjustment
(credit in financial books) 760

Loss in Stock in financial accounts 10,800

8. Calculate Labour Variances from the following
   information : 12½

   Labour Rate = ₹1 per hour

   Hours as standard per unit = 12 hours

   Actual Data :

   Units Produced = 1,000

   Actual labour cost = ₹10,000

   Hours worked actually = 12,500 hours.

2018

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

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

   a) Explain FIFO and LIFO methods of valuation of
      material issues.

   b) Distinguish between financial accounting and
      cost accounting.

   c) What is Labour turnover ? What are its causes ?

   d) Explain various levels of stock.

   e) Distinguish between spoilage and defectives in a
      manufacturing company. Discuss their treatment
      in cost accounts.

   f) What is Unit Costing ? To what type of concern
      is this method suitable ?

   g) What is Contract Costing ? Discuss the basic
      features of Contract Costing.

h) Explain the concept of over/under absorption of overhead.

2. Define Cost Accounting. What are the objectives of Cost Accounting. 12½

3. From the following information, prepare a cost sheet for the month of April 2018 : 12½

Raw Materials consumed ₹15,000

Direct Labour Charges ₹9,000

Machine Hours worked 900 Hrs

Machine Hour Rate ₹5

Office Overhead 20% on works cost

Selling overhead ₹0.50 per unit

Units produced 17,100 units

Units sold 16,000 units

@ ₹4 per unit

4. Explain the steps in the purchasing procedure from the time a need for material is determined until the material is stored and paid for. 12½

5. What is budgetary control ? Explain the advantages and limitations of budgetary control. 12½

6. Product Z is obtained after it passes through three distinct processes. The following information is obtained from accounts for the month ending 31st Mar, 2018

Items	Processes		
	I (₹)	II (₹)	III (₹)
Material	2600	1980	2962
Labour	2000	3000	4000
Overhead	2000	3000	4000

The following additional data are obtained :

Process	Output during the month	Percentage of normal loss	Value of scrap per unit
I	950 units	5%	2
II	840 units	10%	4
III	750 units	15%	5

Prepare Process I A/c, Process II A/c and Process III A/c. 12½

7. From the following find out the financial Profit/Loss by preparing a reconciliation statement : 12½

₹

Net loss as per cost accounts 2,75,840

Works overhead under recovered in cost accounts 4,992

ଝ) ସାହିତ୍ୟର ବିକାଶରେ ପତ୍ରପତ୍ରିକାର ଯଥେଷ୍ଟ ଭୂମିକା ରହିଛି –
  ବିଚାର କର ।

୨. ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ କାଳର ପ୍ରମୁଖ କବି ଏବଂ ସେମାନଙ୍କ କବିତା
  ସଂପର୍କରେ ଆଲୋକପାତ କର ।   ୧୨.୫

୩. ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ଉପନ୍ୟାସର ଧାରା ସମ୍ପର୍କରେ ଏକ ବିବରଣୀ
  ପ୍ରସ୍ତୁତ କର ।   ୧୨.୫

୪. ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଗଳ୍ପର ଗତି ଓ ପ୍ରକୃତି ବିଶ୍ଳେଷଣ କର ।   ୧୨.୫

୫. ନାଟ୍ୟକାର ମନୋରଞ୍ଜନ ଦାସଙ୍କ ପ୍ରବର୍ତ୍ତିତ ନୂତନ-ନାଟ୍ୟଧାରା ସମ୍ପର୍କରେ
  ବିଚାର କର ।   ୧୨.୫

୬. ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଏକାଙ୍କିକାର ଗତିଧାରା କିପରି ବଦଳି ଯାଇଛି,
  ଉଲ୍ଲେଖ କର ।   ୧୨.୫

୭. ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ କାଳର ଯେ କୌଣସି ଜଣେ ପ୍ରାବନ୍ଧିକଙ୍କ ପ୍ରବନ୍ଧ
  ଆଲୋଚନା କର ।   ୧୨.୫

୮. ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ କାଳରେ ପ୍ରକାଶିତ ମୁଖ୍ୟ ପତ୍ରପତ୍ରିକାଗୁଡ଼ିକର
  ବିବରଣୀ ପ୍ରଦାନ କର ।   ୧୨.୫

୯. ଓଡ଼ିଆ ସମାଲୋଚନା ସାହିତ୍ୟକୁ ନଟବର ସାମନ୍ତରାୟଙ୍କ ଅବଦାନ
  ଉଲ୍ଲେଖ କର ।   ୧୨.୫

□□

2018

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

୧. ଯେ କୌଣସି *ଚାରିଟିର* ସଂକ୍ଷିପ୍ତ ଉତ୍ତର ଦିଅ :   ୭.୫ × ୪

କ) ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ କବିତାରେ ଚିତ୍ରକଳ୍ପର ପ୍ରୟୋଗ କିପରି
  ହୋଇଛି, ଉଦାହରଣ ସହ ଲେଖ ।

ଖ) କବି ରମାକାନ୍ତ ରଥଙ୍କ ଯେ କୌଣସି କବିତା ପୁସ୍ତକ ସମ୍ପର୍କରେ
  ଆଲୋଚନା କର ।

ଗ) ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ କାଳର ଯେ କୌଣସି ଏକ ଉପନ୍ୟାସର
  ସଂକ୍ଷିପ୍ତ ଆଲୋଚନା କର ।

ଘ) ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ଗଳ୍ପର ଉପସ୍ଥାପନ ଶୈଳୀ ବଦଳି
  ଯାଇଛି, ପ୍ରମାଣ ଦର୍ଶାଅ ।

ଙ) 'ନବନାଟ୍ୟ ଆନ୍ଦୋଳନ' କ'ଣ ? ବୁଝାଇ ଦିଅ ।

ଚ) ସ୍ୱାଧୀନତା ପରବର୍ତ୍ତୀ ପ୍ରବନ୍ଧ ସାହିତ୍ୟର କ୍ରମବିକାଶ ସମ୍ପର୍କରେ
  ପ୍ରବନ୍ଧ ଲେଖ ।

ଛ) ସମାଲୋଚନାର ପ୍ରକାର ଭେଦ ।

[Turn Over

g) Find the particular integral of

$(D^2 + 4)y = x \sin x$.

h) Find the Laplace transform of $te^{-2t} \sin t$.

2. Solve the following initial value problem :

$xy' = (y - x)^3 + y, \ y(0) = 0$.   9

3. Solve by method of variation of parameter :

$(D^2 + 4)y = 2 \tan 2x$.   9

4. Solve : $x - yp = ap^2$.   9

5. Solve : $yP^2 + (x - y)P - x = 0$.   9

6. Solve : $(x^2D^2 + 4xD + 2) y = \sin x$.   9

7. Find the general solution of the differential equation

$2x^2y'' - xy' + (x - 5)y = 0$.   9

8. Solve : $x^2y'' + 2xy' - 20y = (x + 1)^2$.   9

9. Use Laplace transform to solve

$y'' + 2y' + 2y = 2, \ y(0) = 0, \ y'(0) = 1$.   9

2018

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

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

a) Solve : $(2x + y + 3)\dfrac{dy}{dx} = x + 2y + 3$

b) Solve : $(x^2y - 2xy^2) \, dx + (3x^2y - x^3) \, dy = 0$.

c) Solve : $x\sqrt{1 + P^2} = P$.

d) Solve : $\dfrac{d^2y}{dx^2} - 2\dfrac{dy}{dx} + y = xe^x \sin x$.

e) Solve the following initial value problem :

$x^2y'' - 3xy' + 4y = 0 \; ; \; y(1) = 1, \, y'(1) = 1$.

f) Find the power series solution of the following :

$y'' + 8xy' - 4y = 0$.

ନୁହେଁ । ତେଣୁ ସହଜରେ ସେମାନେ ରୋଗ କବଳରେ ପଡ଼ନ୍ତି । ଦରିଦ୍ର ଓ ନିରାଶ୍ରୟ ଲୋକ ଯେଭଳି ଭାବରେ ଜୀବନ ଅତିବାହିତ କରନ୍ତି ତାହା ମଣିଷ ଉପଯୋଗୀ ନୁହେଁ । ଅତଏବ ଖାଦ୍ୟ, ବସ୍ତ୍ର ଓ ଆଶ୍ରମ ଆମ ଲୋକଙ୍କର ପ୍ରଥମ ଓ ପ୍ରଧାନ ଆବଶ୍ୟକତା ।

ଯୋଜନାକୃତ ଅର୍ଥନୈତିକ ଉନ୍ନୟନ ଦ୍ୱାରା ଆମେ ଜନସାଧାରଣଙ୍କର ଏବଂ ଶିକ୍ଷ ଓ ରପ୍ତାନି ବାଣିଜ୍ୟର ଆବଶ୍ୟକତା ପୂରଣ କରିବା ଉଦ୍ଦେଶ୍ୟରେ କୃଷି ଉତ୍ପାଦନ ବୃଦ୍ଧି କରିବାପାଇଁ ଉଦ୍ୟମ କରୁଥାଇଁ । ଏଇ ପ୍ରକ୍ରିୟାରେ ବୟନ ଶିଳ୍ପର ପ୍ରସାର ହେବ, ଲୋକଙ୍କୁ ଉଚିତ ମୂଲ୍ୟରେ ବସ୍ତ୍ର ମିଳିପାରିବ । ଗୃହ ନିର୍ମାଣ ଯୋଜନାମାନ କାର୍ଯ୍ୟକାରୀ କରି ସ୍ୱଳ୍ପ ବେତନଭୋଗୀ କର୍ମଚାରୀମାନଙ୍କ ପାଇଁ ବାସଗୃହ ଯୋଗାଇ ଦିଆଯିବ ।

ଯୋଜନାଗୁଡ଼ିକ ଯେତେ ପରିମାଣରେ କାର୍ଯ୍ୟକାରୀ ହେବାର କଥା, ବହୁ କ୍ଷେତ୍ରରେ ତାହା ହୋଇ ନ ପାରିବାର ପ୍ରଧାନ କାରଣ ହେଉଛି, ଏ ପ୍ରକାର ଜାତୀୟ ନିର୍ମାଣ କାର୍ଯ୍ୟରେ ନିଯୁକ୍ତ ଥିବା କର୍ମଚାରୀମାନଙ୍କର ଭାବଗତ ଆନ୍ତରିକତାର ଅଭାବ । ସରକାରୀ କ୍ଷେତ୍ରରେ ହେଉ କି ଅନ୍ୟତ୍ର ହେଉ, ଯେଉଁଠି ଲୋକେ ଏ ପ୍ରକାର ଦାୟିତ୍ୱରେ ନିଯୁକ୍ତ ହୋଇଛନ୍ତି, ସେମାନଙ୍କ ମନରେ ଏକ ଜାତୀୟ ଅଭିମାନ ଜାଗ୍ରତ କରିବା ଅତ୍ୟନ୍ତ ଆବଶ୍ୟକ ।

ପ୍ରଶ୍ନାବଳୀ :

 କ) ଗାନ୍ଧିଜୀଙ୍କ ଦୃଷ୍ଟିରେ ଭାରତର ସ୍ୱରୂପ କ'ଣ ଥିଲା ?

ଖ) ବୈଷୟିକ ଦରିଦ୍ରତା କିପରି ଦୂର କରାଯାଇପାରିବ ?

ଗ) ଭାରତୀୟମାନଙ୍କର ପ୍ରଥମ ଓ ପ୍ରଧାନ ଆବଶ୍ୟକତା କ'ଣ ?

ଘ) କେଉଁ ଉପାୟରେ ଭାରତୀୟମାନେ ସ୍ୱାବଲମ୍ବୀ ହୋଇପାରିବେ ?

ଙ) ଜାତୀୟ ନିର୍ମାଣ କାର୍ଯ୍ୟରେ ନିୟୋଜିତ କର୍ମଚାରୀମାନଙ୍କର ଦାୟିତ୍ୱ କ'ଣ ?

2018

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

୧. ଯେ କୌଣସି *ଚାରିଟିର* ସଂକ୍ଷିପ୍ତ ଉତ୍ତର ପ୍ରଦାନ କର :   ୭.୫ × ୪

କ) 'ଈଶ୍ୱର ଯେପରି ଅନନ୍ତ ଶକ୍ତିଶାଳୀ ସେହିପରି ଅନନ୍ତ ପ୍ରେମର ଆଧାର' – ବୁଝାଇ ଲେଖ ।

ଖ) 'ସାରଳା ସାହିତ୍ୟ' ପ୍ରବନ୍ଧରୁ ସାତଟି ଖାଣ୍ଟି ଗାଉଁଲି ଶବ୍ଦର ଉଦାହରଣ ଦିଅ ।

ଗ) 'କଞ୍ଚୁକୀ ଭୃତ୍ୟ ନୁହେଁ, ଭବିଷ୍ୟତର ଦ୍ରଷ୍ଟା' – ଆଲୋଚନା କର ।

ଘ) 'କସ୍ତୁରୀ ମୃଗ'ରେ ବିଭୁପ୍ରେମ କିପରି ପ୍ରତିଫଳିତ ହୋଇଛି, ଦର୍ଶାଅ ।

ଙ) 'ବ୍ୟାସକୂଟ' କାହାକୁ କୁହାଯାଏ ।

ଚ) ପ୍ରବାଦ ଓ ସୂକ୍ତି ମଧ୍ୟରେ ପ୍ରଭେଦ ଦର୍ଶାଅ ।

ଛ) ନିମ୍ନଲିଖିତ ଶବ୍ଦଗୁଡ଼ିକର ଶୁଦ୍ଧ ରୂପ ଲେଖ :

ଦୁରାବସ୍ଥା, ନୀର୍ଜନ, ମନଭାବ, ଗଣେଷ, ଉଜ୍ଜଳ, ସାନ୍ନ୍ୟାସିକ, ପାବନୀ, ଜାତିୟ ।

ଜ) ସମାସଗତ ଅଶୁଦ୍ଧିର ଶୁଦ୍ଧ ରୂପ ଲେଖ :

ନିର୍ଦୋଷୀ, ଅହୋରାତ୍ରି, ନିର୍ଦ୍ଧନୀ, ଦୃତଗାମୀ, ନିରୂପମା, ଶଶୀଭୂଷଣ, ହସ୍ତୀଦନ୍ତ ।

୨. ‘‘ଅନନ୍ତ ପ୍ରେମରେ ଦୀକ୍ଷିତ ନ ହେଲେ ମାନବାତ୍ମାର ସୁଖ ନାହିଁ, ଶାନ୍ତି ନାହିଁ, ଗତି ନାହିଁ, ମୁକ୍ତି ନାହିଁ ।’’ ପ୍ରାବନ୍ଧିକଙ୍କର ଏହି ମନ୍ତବ୍ୟର ଯଥାର୍ଥତା ପ୍ରତିପାଦନ କର ।   ୧୨.୫

୩. କେବଳ ଅଧବସାୟ ନୁହେଁ କବି ପ୍ରତିଭାର ଦୀପ୍ତି ହେଉଛି ସାରଳା ସାହିତ୍ୟ – ବିଚାର କର ।   ୧୨.୫

୪. କଙ୍କୁକୀର ଭାବନା ନେଇ ରାଧାନାଥ କିପରି କ୍ଷଣଭଙ୍ଗୁର ସଂସାରରେ ଅନିତ୍ୟ ମଣିଷ ଜୀବନର ଚିତ୍ର ପ୍ରଦାନ କରିଛନ୍ତି, ଉଲ୍ଲେଖ କର ।   ୧୨.୫

୫. ‘ତିନୋଟି ସନେଟ୍’ କବିତାର ସାରମର୍ମ ଲେଖ ।

୬. ଭାବ ସଂପ୍ରସାରଣ କର :   ୧୨.୫

ତୁଳସୀ ଦୁଇ ପତ୍ରରୁ ବାସେ ।

ଅଥବା

ଅମୃତ ବିନୟ ବଚନ । କହି ତୋଷିବ ପ୍ରାଣୀମାନ ।

୭. ଯେ କୌଣସି **ଦଶଟି** ବାକ୍ୟକୁ ଶୁଦ୍ଧ ରୂପରେ ଲେଖ :   ୧୨.୫

କ) ଦୁଃଖରେ ଲୋକେ କାନ୍ଦୁଛି ।

ଖ) ସେ ଆମ ଗ୍ରାମର ବରିଷ୍ଠତମ ବ୍ୟକ୍ତି ।

ଗ) କୂଅରେ ଗୋଟିଏ ଶିଶୁଟିଏ ଖସି ପଡ଼ିଲା ।

ଘ) ପଠିତ ପ୍ରବନ୍ଧର ଉତ୍କୃଷ୍ଟତା ଦର୍ଶାଅ ।

ଙ) ମାଧବ ସପରିବାରେ ଏଠି ରହିବେ ।

ଚ) ପଡ଼ିଆରେ ଦଶଟା ଗାଈ ଚରୁଛି ।

ଛ) ସଂକ୍ଷିପ୍ତରେ ଉତ୍ତର ଦିଅ ।

ଜ) ସଜ୍ଜାନୀୟ ଅତିଥି ମଞ୍ଚାସୀନ ହେବେ ।

ଞ) ଛାତ୍ରମାନେ ଏଠାରେ କାହିଁକି ଏକତ୍ରିତ ହୋଇଛନ୍ତି ?

ଟ) ସବୁ ପିଲାମାନେ ଛୁଟିରେ ଗଲୁ ।

ଠ) ସନ୍ତୋଷ କିନ୍ତୁ ନିର୍ଦୋଷୀ ।

ଡ) ସେ ଯଦିବା ଉଚ୍ଚଶିକ୍ଷିତ କିନ୍ତୁ ତାଙ୍କର ବୁଦ୍ଧି କମ୍ ।

ଢ) ଅନ୍ୟାନ୍ୟ ଛାତ୍ରମାନେ କ’ଣ କରିଛନ୍ତି ?

ଣ) ଏବେ ବି ମଧ ସେ ବଞ୍ଚିଛି ।

୮. ନିମ୍ନଲିଖିତ ଗଦ୍ୟାଂଶଟିକୁ ପାଠକରି ପ୍ରଦତ୍ତ ପ୍ରଶ୍ନଗୁଡ଼ିକର ଉତ୍ତର ନିଜ ଭାଷାରେ ପ୍ରଦାନ କର :   ୧୨.୫

ସ୍ୱାଧୀନତା ହାସଲ କରିବା ଦିନରୁ ଏଇ କେତେ ବର୍ଷ ଧରି ଆମେ ଆମ ଜନସାଧାରଣଙ୍କ ନିମନ୍ତେ ରାଜନୈତିକ ସ୍ୱାଧୀନତା କହିଲେ ଯାହା ବୁଝାଏ– ସେତିକି କେବଳ ନୁହେଁ, ବରଂ ଏକ ପୂର୍ଣ୍ଣତର ତଥା ମହତ୍ତର ସ୍ୱାଧୀନତା ଅର୍ଜନ କରିବା ନିମନ୍ତେ ଉଦ୍ୟମ କରିଥାଉଁ । ଗାନ୍ଧିଜୀ ଥରେ କହିଥିଲେ, ‘‘ଦେଶର ଗୋଟିଏ ପ୍ରାନ୍ତରୁ ଅନ୍ୟ ଏକ ପ୍ରାନ୍ତଯାଏଁ ମୁଁ ସର୍ବତ୍ର ବୁଲିଚି ଏବଂ ଦେଖିଚି ଅଗଣିତ ଜ୍ୟୋତିହୀନ ଆଖି, ମଣିଷର ଦୟନୀୟ ପ୍ରତିଛବି । ସେମାନେ ଭାରତ । ଏଇସବୁ କୁଡ଼ିଆ ଘରେ, ଖତଗଦା ମଝିରେ, ଯେଉଁ ଦୀନ ଅକିଞ୍ଚନ ଲୋକେ ବାସ କରିଛନ୍ତି ସେମାନଙ୍କ ଭିତରେ ଜ୍ଞାନର ନିର୍ଯ୍ୟାସ କିନ୍ତୁ ଗାଢ଼ତା ପ୍ରାପ୍ତ ହୋଇ ରହିଚି ।’’

ଏହି ଉକ୍ତିରେ ଗାନ୍ଧିଜୀ ଆମ ଜନସାଧାରଣଙ୍କର ବୈଷୟିକ ଦରିଦ୍ରତା ଓ ଆଧ୍ୟାତ୍ମିକ ସମ୍ପଦ କଥା ଦର୍ଶାଇଛନ୍ତି । ଏଇ ବୈଷୟିକ ଦରିଦ୍ରତା ଦୂର କରିବାପାଇଁ ଏବଂ ଆଧ୍ୟାତ୍ମିକ ଜୀବନରେ ବିଶ୍ୱାସ ଦୃଢ଼ତର କରିବାପାଇଁ ଆମକୁ ସବୁମନ୍ତେ ଉଦ୍ୟମ କରିବାକୁ ପଡ଼ିବ ।

ଆମ ଦୀନ ଜନତାର ଅବସ୍ଥା ଆମ ଦେଶର ଅବ୍ୟବସ୍ଥାର ପ୍ରତୀକ । ସେମାନେ ଯେଉଁ ଖାଦ୍ୟ ଖାଆନ୍ତି ତାହା ଶରୀରର ପୁଷ୍ଟି ପକ୍ଷରେ ଯଥେଷ୍ଟ

f) Wheat doesn't grow where the soil isn't fertile.
   (Identify the adverbial clause)

g) I bought a pen. The pen was soon lost.
   (Join two sentences into a complex sentence)

h) Father was determined that I _____ (should/ would) read engineering.
   (Choose one alternative)

i) Goldsmith was famous _____ his generosity.
   (Use a prepositon)

j) Give an example of a compound sentence of your own.

□□

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. Answer any *two* of the following :   7½ × 2

   a) 'The Barber's Trade Union' is a story of social realism. Comment.

   b) What roles do the officer and the quarreling young men play in the story 'The Lament'.

   c) Interpret the following passage in your own words with value added morals :

   Madame Oreille was a frugal soul. She knew the precise value of a soul, and was armed with a whole quiverful of rigorous maxims relating to the multiplication of money. Her maid found it no easy matter to feather her nest, while Mousieur Oreille had great difficulty in squeezing pocket-money out of his wife. Although the pair were comfortably off and had no children, it was pain and grief to Madame

[Turn Over

Oreille to part with her shining silver. Each coin seemed to be wrong from her very heart, and whenever she had to meet some substantial but unavoidable expenses, it cost her a sleepless night.

d) Write your comment on Velan, reading the following passage :

Presently Velan came out of his hut with a bundle on his head. He looked at the tree-cutters and said, "You are very kind to an old man. You are very kind to wait". He looked at the Margosa and wiped his eyes, "Brothers, don't start cutting till I am really gone far, far away".

The tree-cutters squatted on the ground and watched the old man go. Nearly falf an hour later his voice came from a distance, half-indistinetly : "Don't cut yet. I am still within hearing. Please wait till I am gone farther".

2. Answer any *two* of the following :　　　7½ × 2

a) Suppose you are a news reporter working in an area where a tragic train accident occured. Prepare a report citing causes of accident and damage.

b) Expand the following idea :

'Honesty is the best Policy'.

c) Prepare a C.V. for the post of a Lecturer in Physics.

d) You are the Managing Director of a company. Prepare a Notice for a cause to be served among co-directors and board members to attend a meeting without fail.

3. Do as directed :　　　　　　　　　　　10

a) After war dead were carried to burial ground.

(Correct the error)

b) I saw a dead horse walking in the garden.

(Correct the error)

c) They visited our place yesterday.

(Use a phrasal verb for 'visited')

d) She paid no attention to what I said.

(Identify the noun clause)

e) This is the house that my father built.

(Identify the adjective clause)

[2]

ଗ) ଗ୍ରାମରେ ସୁଲଭ ମୂଲ୍ୟ ଦୋକାନଟିଏ ଖୋଲିବା ପାଇଁ ଯୋଗାଣ
ବିଭାଗ ଅଧିକାରୀଙ୍କୁ ଦରଖାସ୍ତ ଲେଖ ।

ଘ) ବୈଦ୍ୟୁତିକ ଯୋଗାଯୋଗ ସମ୍ପର୍କରେ ଆଲୋକପାତ କର ।

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

୧. ଯେ କୌଣସି *ଦୁଇଟିର* ଉତ୍ତର ସଂକ୍ଷେପରେ ଦିଅ :   ୭.୫ × ୨

 କ) ତର୍କ ବିତର୍କ

ଖ) ଗାଁ ନିଶାପ

ଗ) ଯୋଗାଯୋଗର ଭାଷା

ଘ) ବିବରଣୀ ଲିଖନ ।

V-314-1.8   ☐☐

୨. ଯେ କୌଣସି *ଦୁଇଟିର* ଉତ୍ତର ଲେଖ :   ୧୨.୫ × ୨

କ) ଦଳଗତ ଆଲୋଚନାର ଉପକାରିତା ଉଲ୍ଲେଖ କର ।

ଖ) ସାକ୍ଷାତ୍କାରର ବିଭାଗୀକରଣ ଦର୍ଶାଇ ବୃଦ୍ଧିଭିତ୍ତିକ ସାକ୍ଷାତ୍କାରର
ଉପସ୍ଥାପନ କର ।

V-314   [Turn Over

ଗ) ତର୍କ ବିତର୍କ

ଘ) ଆଙ୍ଗିକ ଓ ବାଚିକ ଯୋଗାଯୋଗ ।

୩. ଯେ କୌଣସି *ଆଠଟିର* ଅତି ସଂକ୍ଷିପ୍ତ ଉତ୍ତର ଲେଖ : ୧ × ୮

କ) ଆନୁଷ୍ଠାନିକ ବିଜ୍ଞାପନ କ'ଣ ?

ଖ) ଚୁକ୍ତିନାମା କେଉଁଠାରେ ଲେଖାଯାଏ ?

ଗ) ଇ'ମେଲ୍ କହିଲେ କ'ଣ ବୁଝ ?

ଘ) ଯୋଗାଯୋଗରେ ବଳାଘାତର ଭୂମିକା ?

ଙ) ଅଫିସିକ ପତ୍ରରେ ସ୍ଥାନ ଓ ତାରିଖ କେଉଁଠି ଲେଖାଯାଏ ?

ଚ) ଆନ୍ତର୍ଜାତିକ ଯୋଗାଯୋଗ ପଦ୍ଧତି କ'ଣ ?

ଛ) ବିବରଣୀ କ'ଣ ପାଇଁ ଲେଖାଯାଏ ?

ଜ) ଜରୁରୀ ସାକ୍ଷାତ୍କାର କାହାକୁ କୁହାଯାଏ ?

ଝ) ସ୍ୱଗତ କଥନ କ'ଣ ?

ଞ) ସଂକ୍ଷିପ୍ତ ସୂଚନା ପ୍ରେରଣ କିପରି ହୁଏ ?

ଟ) ସାକ୍ଷାତ୍କାରର ଆବଶ୍ୟକତା କ'ଣ ପାଇଁ ?

ଠ) 'All India Radio' କେବେ ପ୍ରତିଷ୍ଠା ହୋଇଥିଲା ?

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

୧. ଯେ କୌଣସି *ଦୁଇଟିର* ଉତ୍ତର ପ୍ରଦାନ କର : ୧୨ × ୨

କ) ଯୋଗାଯୋଗର ସଂଜ୍ଞା ନିରୂପଣ ପୂର୍ବକ ଏହାର ରୀତି ଓ ମାଧ୍ୟମ ସଂପର୍କରେ ସବିଶେଷ ବର୍ଣ୍ଣନା କର ।

ଖ) ବିଭିନ୍ନ ଚାକିରି କ୍ଷେତ୍ରରେ ଦଳଗତ ଆଲୋଚନା କିପରି ହୁଏ ଓ କାହିଁକି ହୋଇଥାଏ, ତାହା ଆଲୋଚନା କର ।

ଗ) ସ୍ୱଗତ କଥନ ଓ ସାଙ୍ଗୀକ ଭଙ୍ଗୀ ଦ୍ୱାରା କ'ଣ ଲାଭ ହୋଇଥାଏ ? ଏହାର ଆବଶ୍ୟକତା କେତେ ଉପଯୋଗୀ ତାହା ଉଦାହରଣ ମାଧ୍ୟମରେ ଦର୍ଶାଅ ।

ଘ) ୱେବ୍‌ସାଇଟ୍‌ର ଉପଯୋଗିତା ଆଧୁନିକ ଜୀବନକୁ କିପରି ନିୟନ୍ତ୍ରଣ କରୁଛି, ଆଲୋଚନା କର ।

୨. ଯେ କୌଣସି *ଦୁଇଟିର* ସଂକ୍ଷିପ୍ତ ଉତ୍ତର ଲେଖ : ୪ × ୨

କ) ସରକାରୀ ପତ୍ର ଉଦାହରଣ

ଖ) ଶ୍ରାବ୍ୟ ସଂଚାର ବିଧାନ

ख) कठोपनिषदः तृतीय वाख्याः सारं लिखत ।

ग) स्थितप्रज्ञस्य का भाव वर्णयत ।

घ) सरलार्थं लिखत :

यस्तु विज्ञानवान् समनस्कः सदा शुची
सतु तत् पदमाप्नीति यस्मात भूयो न जायते ।

V-311-0.2   □□

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. अधोलिखितेषु **द्वयोः** उत्तरं लिखत :   7½ × 2

   क) विज्ञानवान् कः वर्णयत ।

   ख) नचिकेतसः तृतीय करं किम् ?

   ग) कः आत्मना तुष्टः भवति ?

   घ) ଭାରତ ଆମ୍ଭର ମାତା । ସଂସ୍କୃତ ଏହାର ଭାଷା । ସଂସ୍କୃତ ପଢ଼ ।
      ଭଲ ମଣିଷ ହେବ । ଏହା ଚରିତ୍ର ଗଠନ କରେ । ଚରିତ୍ର ହିଁ ସାର ।
      ଚରିତ୍ର ନଥିଲେ ସବୁ ଅସାର ।

   ङ) स्थितप्रज्ञस्य प्रवक्ता वा गुरुः कः वर्णयत ?

2. अधोलिखितेषु **द्वयोः** उत्तरं लिखत :   12½ × 2

   क) कः आत्मनः अधिकारी ?

V-311   [Turn Over

2. फिचर लेखन के स्वरूप पर आलोचना करते हुए फिचर के विषय चयन करते समय किन बातों पर ध्यान देना चाहिए । 12½

3. किन किन विषयों पर फिचर लिखा जा सकता है ? उसका परिचय प्रदान कीजिए । 12½

4. साक्षातकार किसे कहते हैं ? साक्षातकार के उद्देश्यों पर विस्तात से आलोचना कीजिए । 12½

5. साक्षातकार से पहले एक संवाददाता को किन किन बातो पर ध्यान देना पडता है ? 12½

6. आधुनिक युग में स्तंभ लिखन एक चुनौति है । एक स्तंभकार को किन किन बातों पर ध्यान देना पडता है ? 12½

7. समाचार लिखन किसे कहते है ? अपने गावँ में हुई आगजानी पर एक समाचार तयार कीजिए । 12½

8. पत्रकारिता के स्वरूप और अर्थ पर विस्तार के साथ आलोचना कीजिए । 12½

9. फटो पत्रकारिता का अर्थ स्पष्ट करते हुए उद्भव और विकास पर आलोचना कीजिए । 12½

2018

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

1. किन्हीं *चार* प्रश्नों का उत्तर दीजिए : 7½ × 4

क) फिचर के सामग्री निर्धारण पर आलोचना कीजिए ।

ख) साक्षात्कार की प्रविधि पर आलोचना कीजिए ।

ग) भेंटवार्ता किसे कहते हैं ? उसके स्वरूप पर आलोचना कीजिए ।

घ) साक्षात्कार के समय किन् बातों पर ध्यान देना चाहिए ।

ङ) समाचार पत्र मे स्तंभ लेखक के महत्व पर विचार कीजिए ।

च) आधुनिक युग में फिचर लेखन जरुरी हो गया है । आलोचना कीजिए ।

छ) हिन्दी पत्रकारिता का उद्भव और विकास पर आलोचना कीजिए ।

ज) राजनैतिक पत्रकारिता की सामान्य जानकारी दीजिए ।

[Turn Over

[4]

2. किन्हीं *दो* का उत्तर दीजिए :   12½ × 4

   क) भाषा की परिभाषा देते हुए मौखिक और लिखित भाषा में अंतर
       स्पष्ट कीजिए ।

   ख) राजभाषा और राष्ट्रभाषा में क्या अंतर है, अपने शब्दों में
       लिखिए ।

   ग) हिंदी मे व्यंजन ध्वनि किसे कहते हैं ? उसके विविध भेदों पर
       प्रकाश डालिए ।

   घ) संप्रेषण क्या हैं ? हिंदी संप्रेषण के महत्व पर चर्चा कीजिए ।

V-312-0.3   ☐☐

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. क) किन्हीं *चार* शब्दों के दो-दो पर्यायवाची शब्द लिखिए :
                                                        1 × 4

       सागर, आकाश, रास्ता, नदी, पक्षी, पृथ्वी

   ख) किन्हीं *चार* वाक्यों के शुद्ध रूप लिखिए :   1 × 4

       i) गुरुजी का दर्शन मिला ।

       ii) मेरे मित्र ने बोला ।

       iii) परमात्मा सबका भलाई करता है ।

       iv) बूढे का प्राण निकल गया।

       v) उसने परीक्षा दिया ।

       vi) तुम्हारा तबीयत कैसा है ?

[2]

ग) एक-एक शब्द में लिखिए (किन्हीं *तीन* का) 1 × 3

    i) जिसका अन्त न हो ।

    ii) जो देखा नहीं जाता ।

    iii) जो देने योग्य ।

    iv) जो कुछ नहीं जानता ।

    v) जो जन्म से अंधा हो ।

घ) किन्हीं *दो* का अर्थ लिखकर वाक्यों में प्रयोग कीजिए : 2 × 2

    i) कुत्ते की मौत मरना ।

    ii) घोड़े बेचकर सोना ।

    iii) ईद का चाँद होना ।

    iv) अक्ल का दुश्मन ।

अथवा

[3]

क) किन्हीं *चार* के विलोम शब्द लिखिए : 1 × 4

उपयोग, अल्पायु, धनी, पुरस्कार, विवाद, हर्ष ।

ख) किन्हीं *चार* के शुद्धरूप लिखिए : 1 × 4

पुराणिक, अनाधिकार, शमशान, समाधी, फुल, सुसुप्ति ।

ग) एक-एक शब्द में लिखिए (किन्हीं *तीन* का) 1 × 3

    i) इन्द्रियों को जीतनेवाला ।

    ii) जो कहा गया हो ।

    iii) जो शास्त्र जानता है ।

    iv) जो बहुत जानता है ।

    v) जो कम बोलता है ।

घ) किन्हीं *दो* का अर्थ बताकर वाक्यों में प्रयोग कीजिए : 2 × 2

    i) अंधे की लाठी ।

    ii) अपना उल्लू सीधा करना

    iii) अंधों में काना राजा ।

    iv) तिल का ताड़ करना ।

vii) Bread and butter _____ our problem.

(Supply correct alternative from

are, is, have been)

viii) Sun sets in the west. (Correct the error)

ix) What is the time in your watch.

(Correct the error)

x) It is my confidence that I will win.

(Use the adjective form of 'confidence')

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. a) Discuss the theme of Chekov's 'The Marriage Proposal'. 7½

   OR

   Sketch the character of Lomov in 'The Marriage Proposal'.

   b) Discuss the elements of humour and satire in 'The Mother's Day'. 7½

   OR

   Comment on the title 'The Mother's Day'.

2. Write a CV to be sent to a firm for appointment as an accountant. 7½

   OR

Prepare notes on the following passage and suggest a title.

The forces of globalisation and technology are reshaping our world. Global trade now accounts for nearly 25 percent of the World's GDP. Privatisation has become a global phenomenon with more than a hundred countries pursuing the privatisation agenda. The internet has grown to reach more than 450 million users. The mapping of the human genome will possibly lead to the development of new categories of drugs and improve the quality of our lives. These are fundamental forces at work. In fact the world you are stepping into is vastly different from the one that we lived in even ten years ago. In these times, you will be competing with the best in the World. The task before you is no doubt arduous. Years of protectionism have sapped Indian companies of their creativity and emphasis on excellence. However you must strive hard to mould the view among decision-makers that India is synonymous with not just competitive costs but also high quality. Indian companies are increasingly establishing their presence in the global markets. They are your natural allies. As they build the brand of India Inc., you must be there to assist them in doing so.

3. Expand the idea in the proverb, 'Rome was not built in a day'.   7½

OR

Write a report on the Annual Day function of the Commerce Society of your college.

4. Do as directed :   10

   i)   Mr. Das is poor but he is honest.
                        (Turn into simple sentence)
   ii) The sky is cloudy and it may rain.
                        (Turn into complex sentence)
   iii) He cut the fruit _____ a knife.
                  (Supply correct preposition in the blank)
   iv) He behaves decently.
                        (Use the noun form of 'behave')
   v)   My friend <u>visited</u> me yesterday.
                        (Use the suitable phrasal verb
                              for the underlined word)
   vi) We _____ help the blind.
                  (Use the suitable modal in the blank.)

II-UG-Hn(AECC)-II (Com)

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *three* questions including question No.1

5. निर्देशानुसार उत्तर दीजिए : 12½

क) किन्हीं **दो** का दो-दो पर्यायवाची शब्द लिखिए :

जल, पेड, धरती

ख) किन्हीं **दो** शब्दों का विलोम शब्द लिखिए :

स्वर्ग, सूखा, गुरु ।

ग) अनेक शब्दों के लिए एक शब्द लिखिए :

i) जिसने ईन्द्रियों को जीत लिया है ।

ii) जिसे सहा नहीं जा सके ।

घ) शब्द को शुद्ध कीजिए :

दहि, सेशनाग

ङ) वाक्यों को शुद्ध कीजिए :

i) सीता ने चावल खायी है ।

ii) आप कल अवश्य जरुर आयेंगें ।

च) मुहाबरों का अर्थ बताते हुए वाक्य बनाइए :

i) आँख दिखाना ।

ii) सौ सुनार का एक लौहार का ।

1. किन्हीं **दो** प्रश्नों का उत्तर दीजिए : 7.5 × 2

क) लिखित भाषा के स्वरूप और विशेषताओं पर आलोचना कीजिए ।

ख) राष्ट्रभाषा और राजभाषा का तुलनात्मक अध्ययन प्रस्तुत कीजिए ।

ग) हिन्दी के स्वरवर्ण और ब्यंजनवर्ण का तुलनात्मक अध्ययन प्रस्तुत कीजिए ।

घ) वाक्यों में अशुद्धियाँ किन स्तरों पर होती है ? आलोचना कीजिए ।

2. हिन्दी के ब्यंजन वर्ण की परिभाषा देते हुए उसके भेद पर आलोचना कीजिए । 12½

3. स्वरवर्ण किसे कहते हैं ? स्वरवर्णों के प्रकार भेद का परिचय प्रदान कीजिए । 12½

4. सम्प्रेषण कहने से आप क्या समझते हैं ? सम्प्रेषण के महत्व पर आलोचना कीजिए । 12½

3. What is globalisation ? Describe the need for globalisation. 12½

4. What is FDI ? Describe the need for FDI in India. 12½

5. Write a note on growth and role of Public Sector in India. 12½

6. Define Privatisation and describe its scope and objective. 12½

7. What is Industrial Policy ? Describe the recent changes in Industrial Policy of 1991. 12½

8. Make an overview of International trading environment. 12½

9. What is World Bank ? Describe its function in recent years. 12½

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2018
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

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

a) What are the objectives of Business ?

b) Define the nature of economic environment.

c) Need for Industrial Licensing Policy.

d) What are the features of Industrial Policy 1948 ?

e) GATT

f) IMF

g) Features of new economic policy.

h) Ranga Ranga Committee Report.

2. Define Business Environment and describe its scope. 12½

II-UG-Env.Sc(AECC)-II (Arts)

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *three* questions including Q.No.1

which is compulsory

1. Write notes on any *two* of the following :   7½ × 2

   a)   Food chain

   b)   Deforestation

   c)   Flood

   d)   Waste Management.

2. Describe energy-flow in an ecosystem.   12½

3. Give an account of different methods for conservation of biodiversity.   12½

4. Discuss the importance of different alternate energy source.   12½

5. Describe the cause, effect and control measure of Water Pollution.   12½

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *three* questions including Q.No.1

which is compulsory

1. Write notes on any *two* of the following :   7½ × 2

   a)   Food chain

   b)   Deforestation

   c)   Flood

   d)   Waste Management.

2. Describe energy-flow in an ecosystem.   12½

3. Give an account of different methods for conservation of biodiversity.   12½

4. Discuss the importance of different alternate energy source.   12½

5. Describe the cause, effect and control measure of Water Pollution.   12½

4. Describe causes, effects and control measures of Air Pollution. 12½

5. Briefly discuss some Acts, you have studied under Environment Laws. 12½

□□

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

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

1. Write notes on any *two* of the following : 7½ × 2

   a) Global Warming

   b) Disaster Management

   c) Deforestation

   d) Food chain.

2. Discuss about ecologial succession you have studied. 12½

3. What is biodiversity and explain its different aspects. 12½

[Turn Over

2. जयदेवस्य गीतगोविन्दं वर्णयत ।   12½

3. मेघस्य दूत योग्यतां वर्णयत ।   12½

4. वाणभट्टस्य काव्यकलां वर्णयत ।   12½

5. हितोपदेशस्य महत्वं वर्णय ?   12½

6. मेघदूते नदीनां वर्णनं कुरुत ।   12½

7. मेघदूते उज्जयिनी वर्णनं कुरुत ।   12½

8. टिप्पणी लिखत :   12½

स्वप्न वासवदत्तम्, दशकुमार चरितम् ।

अथवा

गद्यकाव्यस्य उत्पत्ति तथा विकाशं वर्णयत ।

2018

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

1. केषांचित् **चतुर्णां** प्रश्नानां उत्तरं लिखत :   7½ × 4

क) आम्रकुट पर्वतस्य शोभां वर्णयत ।

ख) दशार्णदेशस्य शोभां वर्णयत ।

ग) आशावन्दः कुसुम सदृशं कथं वर्णयत ।

घ) महाकाल मन्दिरस्य शोभां वर्णयत ।

ङ) वस्तराज उदयंयनस्य कथां वर्णयत ।

च) गम्भीरा नद्याः कामभावं प्रकटयत ।

छ) नीति शतकम, टिप्पणीं लिखत ।

ज) कालिदासस्य मेघदूतम् ।

There was a great scholar in Mithila named Mandana Mishra, more than a thousand years ago. He was so famous that scholars from different part of the country come to him for learned discourses in various branches of learning. Sankaracharya come to him also. Mandana Mishra had a parrot. The parrot could recite many topics of discussion going on his house.

2. अधोलिखितेषु कयोचित् **द्वयोः** उत्तरं लिखत : 12½ × 2

क) स्थितप्रज्ञस्य कः स्वभावः ?

ख) रथरुपकत्वमालोचयत ?

ग) गीतायाः पठितांशमाश्रित्य व्यवहारिकतामालोचयत।

घ) उपनिषद्शब्दस्य कोऽर्थः तस्याः महत्वमालोचयत ।

□□

2018

Full Marks - 40

Time - 2 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

1. अधोलिखितेषु कयोचित् **द्वयोः** उत्तरं देयम् : 7½ × 2

क) ''आपुर्यमाणमचलंप्रतिष्ठमे'' इत्युक्ते कः आशयः ?

ख) ''वुद्धिनाशात्प्रणश्यति'' इत्युक्ते का प्रासङ्गिकता ?

ग) कठोपनिषदः पठितांशनुसारं कः तत्पदमाप्नोति ?

घ) संस्कृतेन अनुवाद कुरुत :

ହଜାରେ ବର୍ଷରୁ ଅଧିକ କାଳ ପୂର୍ବେ ମିଥିଲାରେ ମଣ୍ଡନ ମିଶ୍ର ନାମରେ ଜଣେ ବଡ଼ ପଣ୍ଡିତ ଥିଲେ । ସେ ଏତେ ବିଖ୍ୟାତ ଥିଲେ ଯେ ଦେଶର ବିଭିନ୍ନ ସ୍ଥାନରୁ ପଣ୍ଡିତମାନେ ତାଙ୍କ ସହ ଶାସ୍ତ୍ରାଲୋଚନା କରିବା ପାଇଁ ଆସୁଥିଲେ । ଶଙ୍କରାଚାର୍ଯ୍ୟ ମଧ୍ୟ ଏହାଙ୍କ ନିକଟକୁ ଆସିଥିଲେ । ମଣ୍ଡନ ମିଶ୍ରଙ୍କର ଗୋଟିଏ ଶୁଆ ଥିଲା । ଗୃହରେ ହେଉଥିବା ପାଣ୍ଡିତ୍ୟପୂର୍ଣ୍ଣ ଆଲୋଚନାରୁ ଅନେକ କଥା ଏଇ ଶୁଆଟି କହି ପାରୁଥିଲା ।

[Turn Over

2018

Full Marks - 40

Time - 3 Hours

The figures in the right-hand margin indicate marks

Answer *all* questions

୧. ରୂପତତ୍ତ୍ୱ ସମ୍ପର୍କରେ ଆଲୋକପାତ କର ।   ୧୬

ଅଥବା

ଅର୍ଥତତ୍ତ୍ୱର ଉପାଦେୟତା ବିଶ୍ଳେଷଣ କର ।

୨. ଐତିହାସିକ ଭାଷା ବିଜ୍ଞାନର ବୈଶିଷ୍ଟ୍ୟ ଉଲ୍ଲେଖ କର ।   ୧୬

ଅଥବା

ଭାଷାବିଜ୍ଞାନକୁ ଜନ୍ ବ୍ୟାମ୍ସଙ୍କ ଅବଦାନ ସମ୍ପର୍କରେ ଆଲୋଚନା କର ।

୩. ଯେ କୌଣସି *ଦୁଇଟିର* ସଂକ୍ଷିପ୍ତ ଟିପ୍ପଣୀ ଲେଖ :   ୪ × ୨

କ) ଶବ୍ଦର ବନ୍ଧରୂପ

ଖ) ଲକ୍ଷଣାଶକ୍ତି

ଗ) ବର୍ଣ୍ଣନାମ୍ଳକ ଭାଷା ବିଜ୍ଞାନ

ଘ) ନୀଳକଣ୍ଠ ଦାସ ।