

**KRISHNAGAR ACADEMY**  
**HALF YEARLY EXAMINATION, 2020**  
**PHASE - II**  
**CLASS - XII**  
**SUBJECT - BIOLOGY**

Full Marks : 50

**PART - I** (20 Marks)

**Question No. 1** (8x1)

- a) i) Define Capacitation.  
ii) The lower narrow end of the uterus is called.....  
iii) What is the HGP ?  
iv) Differentiate : DNA and RNA.  
v) What measures should be adopted to prevent STDs ?  
vi) Mention two functions of human placenta.  
vii) Write two applications of DNA fingerprinting ?  
viii) What is central dogma ?
- b) **Tick the correct answer :** (4x1)  
i) The act of expelling the full term foetus from the uterus is termed as :  
a) Gestation      b) Implantation      c) Parturition      d) Capacitation  
ii) The type of sex determination mechanism in birds is :  
a) XX-XY      b) XX-XO      c) Haplo-diploidy      d) ZW-ZZ  
iii) "One species" DNA differs from others in its :  
a) Phosphate Groups      b) Base Sequence      c) Sugars      d) All of these  
iv) A gamete affected by non-disjunction would have :  
a) The potential for a genetic disorder  
b) One extra or one missing chromosome  
c) A change from the normal chromosome number  
d) All of the above.
- c) **Differentiate :** (4x1)  
i) Monosomy and Trisomy  
ii) Sertoli & Leydig Cell  
iii) Endometrium and Myometrium  
iv) Genotype & Phenotype
- d) **Expand :** RCH and ART (2x1)
- e) **Give the contributions of :** T. H. Morgan and Gamow. (2x1)

**PART - II** (30 Marks)

**Section - A** (4x2)

**Question No. 2.** What is Linkage and Pleiotropy ?

**Question No. 3.** The following table shows genotypes for ABO blood grouping & their phenotypes. Fill in gaps left in the table :

Sl. No.	Genotype	Blood Group
1.	I <sup>A</sup> I <sup>A</sup>	A
2.	?	A
3.	I <sup>B</sup> I <sup>B</sup>	B
4.	?	B
5.	I <sup>A</sup> I <sup>B</sup>	?
6.	?	O

**Question No. 4.** Give the scientific term for the following :

(4x½)

- Release of ovum from ovary.
- Onset of menstrual cycle in females.
- End of menstrual cycle.
- Structure that picks up ova on its release.

**Question No. 5.**

- Differentiate :
  - Animal Pole and Vegetal Pole.
  - Leading Strand and Lagging Strand.

or

- Name the glands associated with male and female reproductive organs.

### Section ~ B

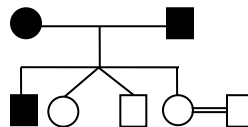
(4x3)

**Question No. 6**

- Write a note on the process of replication.

or

- Interpret the pedigree chart.



**Question No. 7.** Write a note on Lac Operon.

**Question No. 8.** Write a note on Hormonal Control of Oogenesis.

**Question No. 9. Differentiate :** Transcription and Translation

### Section ~ C

(2 x 5)

**Question No. 10. Write in brief :**

- IVF, b) ZIFT, c) IUT, d) GIFT, e) AI

or

- Write in details about the process of DNA fingerprinting.

**Question No. 11.**

(2½ + 2 ½)

- Discuss :
  - Turner Syndrome.
  - Klinefelter Syndrome.

or

- Discuss : Thalassemia & PKU.

# KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II

Class: XII

Subject: Business Studies

FM 50

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## **PART 1**

### **Question 1**

(5x2=10)

- a) Define the term Staff Recruitment.
- b) What is Staff Selection?
- c) What is Staff Training?
- d) Define Staff motivation.
- e) What do you mean by Staff remuneration?

## **PART 2**

### **Question 2**

- a) Discuss the advantages of internal sources of recruitment. (4)
- b) Discuss the various steps in selection process.

### **Question 3**

- a) Write down the benefits of E-recruitment. (4)
- b) Discuss the characteristics of staff morale.

### **Question 4**

- a) Write the merits of On-the-job training. (4)
- b) Explain moral productivity matrix.

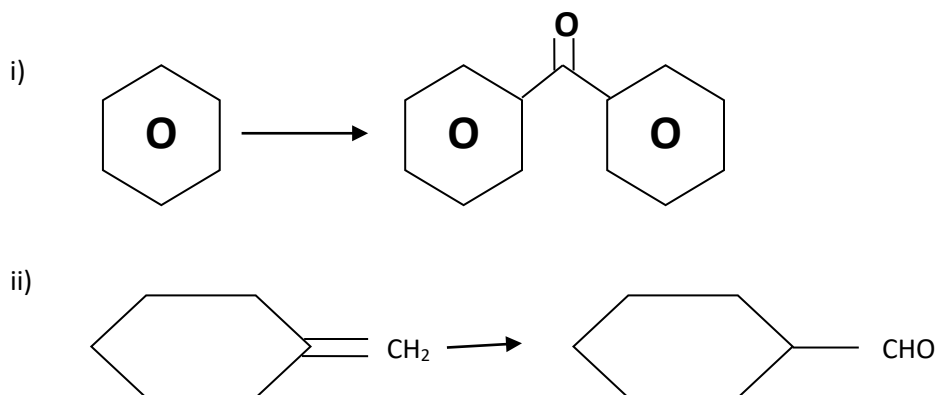
### **Question 5**

- a) Explain Herzberg's two factor theory. (4)
- OR
- b) Distinguish between Time – role system and Piece – rate system. (4)

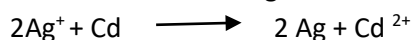
1. Give balanced chemical equations for the following name reactions:- (5\*1=5)
  - a. Stephen Reduction
  - b. HVZ Reaction
  - c. Wolff Kishner Reduction
  - d. Cannizzaro Reaction
  - e. Clemenson's Reduction
2. Carry out the conversions:- (5\*1=5)
  - a. Formaldehyde to Propanal
  - b. Acetic Acid to Lactic Acid
  - c. Acetaldehyde to Lactic Acid
  - d. Formaldehyde to Urotropine
  - e. Acetic Acid to Formic acid
3. Distinguish by a good chemical test:- (3\*1=3)
  - a. Formaldehyde and Benzaldehyde
  - b. Acetic Acid and Formic Acid
  - c. Ethanal and Propanal
4. When 9650 C of electricity is passed through a solution of copper sulphate, 3.175 g of copper is deposited on the cathode (at weight of Cu=63.5). Name the law to which the above observation confirms. (1)
5. State Kohlraush Law. (1)
6. What is fuel cell? (1)
7. For the cell –  
 $\text{Zn} | \text{Zn}^{2+} (a=1) || \text{Cu}^{2+} (a=1) | \text{Cu}$   
Given,  $E_{\text{Zn} | \text{Zn}^{2+}} = 0.761\text{V}$  and  $E_{\text{Cu}^{2+} | \text{Cu}} = 0.339\text{V}$ 
  - i) Write the cell reaction
  - ii) Calculate the emf and free energy change at 298 K involved in the cell. (3)
8. How much electricity is required to oxidize 1 mole of FeO to Fe<sub>2</sub>O<sub>3</sub>? (1)
9. The resistance of 0.5 (M) solution of an electrolyte in a cell was found to be 45 ohm. Calculate the molar conductivity of the solution if the electrodes in the cell are 2.2 cm apart and have an area of 3.8 cm<sup>2</sup>. (3)
10. Calculate the pH of, Pt | H<sub>2</sub>(1 atm) | H<sub>2</sub>SO<sub>4</sub> half cell.  
[Given :-  $E_{\text{H} | \text{H}^+} = 0.3\text{V}$ ] at 25°C. (2)
11. For the molecule IF<sub>7</sub>:- (3)
  - i) Draw the structure of the molecule
  - ii) State the hybridisation of the central atom
  - iii) State the geometry of the molecule
12. Give balanced equation:- (2)
  - i) Chlorine gas is passed through cold and dilute NaOH solution
  - ii) Chlorine gas is passed through hot and concentrated NaOH solution
13. Give reasons:- (2)
  - i) Xenon gives a series of fluorides, but helium and neon do not. Why ?
  - ii) Halogens are coloured and the colour deepens from fluorine to iodine.
14. An aliphatic hydrocarbon 'A' on treatment with sulphuric acid in the presence of Hg SO<sub>4</sub> yields a liquid 'B' with molecular formula C<sub>2</sub>H<sub>4</sub>O. 'B' on oxidation with acidified potassium dichromate yields 'C' which gives effervescence with sodium bicarbonate. 'C' when treated with SOCl<sub>2</sub> gives 'D'. When 'D' reacts with ethanol it gives sweet smelling liquid 'E'. 'E' is also formed when 'C' reacts with ethanol in the presence of concentrated H<sub>2</sub>SO<sub>4</sub>.
  - i) Identify A, B, C, D and E
  - ii) Draw the structure of the isomer of compound B.
  - iii) Write the balanced equation for the conversion of A to B.
  - iv) Show the reaction for C to D.

(2+1+1+1=5)

15. Carry out the conversions:- (3)



16. Consider the following cell reaction at 298K :- (3)



The standard reduction potential,  $E^\circ$ ,

For  $\text{Ag}^+|\text{Ag}$  and  $\text{Cd}^{2+}|\text{Cd}$  are 0.8 V and -0.4V, respectively.

i) Write the cell representation

ii) What will be the emf of the cell if the concentration of  $\text{Cd}^{2+}$  is 0.1 (M) and that of  $\text{Ag}^+$  is 0.2(M)?

iii) Will the cell work spontaneously for the condition given in (ii) ?

17. Define molar conductance of a solution. State its unit. How it is related to the specific conductance of solution?(2)

18. Give reactions and the conditions required for preparation of the following compounds:- (2)



19. Explain why interhalogen compounds are more reactive than constituent elements? (1)

20. Compare the acid strength of different oxoacids of halogens,  $\text{HClO}$ ,  $\text{HClO}_2$ ,  $\text{HClO}_3$ ,  $\text{HClO}_4$ . (1)

21. Give the structure and geometry of  $\text{XeO}_3$ . (1)

# KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II

Class: XII

Subject: Commerce

FM 50

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## PART 1

### Question 1

(5x2=10)

- a) What is Equity shares?
- b) What is Preference shares?
- c) What is Bonus shares?
- d) Define the term Management.
- e) What is retained earning?

## PART 2

### Question 1

- a) Write three features of RTGS. (3)
- b) Write short notes on SWOT Analysis. (3)
- c) Discuss the features of Business Environment. (5)
- d) Write down the importance of finance for business. (5)

### Question 2

- a) Write short notes on ESOP. (3)
- b) Discuss the advantages of Equity shares from the company's point of view. (4)
- c) Discuss the factors affecting fixed capital. (5)

### Question 3

- a) Write short notes on Sweat Equity Shares. (3)
- b) Distinguish between Preference Shares and Equity Shares. (4)
- c) Discuss the objectives of management. (5)

# KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II

Class: XII

Subject: Economics

FM 50

***Attempt all questions from Part I and any three questions from Part II***

## **PART I**

**(Attempt all questions)**

**(7x2=14)**

### **Question 1**

- a) Classify the following into **fixed cost** and **variable cost**. Give reasons:
  - i) Rent for a land
  - ii) Cost of raw material
  - iii) Payment for transportation of goods
  - iv) Minimum telephone bill
- b) Identify the **market** forms:
  - i) Issue of currency notes by RBI
  - ii) Goods sold are homogeneous
  - iii) Market for soaps in India
  - iv) Warships purchased by Indian Government
- c) With a proper illustration, show the impact of a rise in sales tax on the supply curve of a commodity.
- d) Demand remaining unchanged, what is the effect of change in supply on the equilibrium price and output – Show by **two** different diagrams.
- e) In which stage should a rational producer operate. Why?
- f) At a price of Rs30/unit, the quantity demanded rises by 60 units. Calculate its  $e_p$ .
- g) Draw TFC, TVC and TC Curves in a single diagram and comment on their shapes.

## **PART II**

**(Attempt any three questions)**

### **Question 2**

- a) Differentiate between Perfect Competition and Monopolistic Competition on the following grounds:
  - i) Degree of price influence
  - ii) Nature of products sold
  - iii) Existence of selling cost
- b) Discuss the elasticity of demand on
  - i) a commodity which has many substitutes
  - ii) a small part of individual's income spent on a commodity
  - iii) multiple uses of a commodity
- c) How does AR and MR behave with change in TR under imperfect competition ----- explain though proper schedule and illustration. (3+3+6=12)

### **Question 3**

- a) Give reasons. State whether the following statements are True or False:
  - i) When there are diminishing returns to a factor, total production always decreases.
  - ii) Total Product will increase only when marginal product increases.
  - iii) Marginal Product cuts AP from its top.

b) From the following data, find AFC, AVC, MC.

Output(Unit)	0	1	2	3	4	5
TC(Rs)	30	90	110	120	140	180

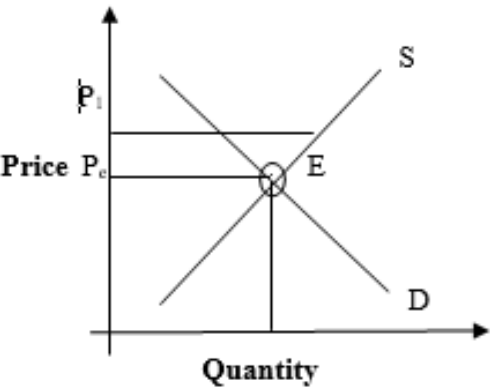
c) Through proper schedule and illustration, explain the behavior of TP, AP and MP in the short – run. (3+3+6=12)

**Question 4**

- a) Give reasons:
  - i) Why is MC Curve U - shaped?
  - ii) Why does inferior goods have negative income – elasticity of demand?
  - iii) Why is  $AFC \neq 0$ ?
- b) i) How is the supply curve of labour different from the supply of goods? (draw diagrams in each case)
- ii) The demand for a good at a price of Rs 10/unit is 40 units. Price falls by Rs 5. If price elasticity of demand is (-) 3, calculate the new quantity demanded.
- c) What will be the impact on equilibrium price and output if demand and supply both decreases simultaneously. (give proper illustrations of the same) (3+3+6=12)

**Question 5**

- a) How does Cross Elasticity of demand vary for substitutes and complementary goods. (Give proper illustrations)
- b) Study the diagram given below and answer the questions that follow:



- i) P<sub>e</sub> is the equilibrium price. What would prompt the government to fix the price at P<sub>1</sub>?
- ii) What would be the effect of fixing the price at P<sub>1</sub>?
- c) Through neat and labeled diagrams, elucidate the following concepts:-
  - i) Five different point elasticities on a non – linear supply curve
  - ii) Five different point elasticities on a linear demand curve touching the two axes. (3+3+6=12)

**Question 6:**

- a) How is market cleared of its supplies – explain with proper illustration.
- b) Derive a market supply curve for 100 firms by plotting an indivual supply schedule of firm A selling apples
- c) I) complete the following table:

Units Sold	TR	MR	AR
1	10	10	
2			9
3	24		
4		4	7
5	30		6
6	30	0	
7	28		4
8		-4	3

ii)When the market price of cheese rises from ₹20/Kg to ₹21/Kg, a producer expands his supply from 3000Kg to 3500Kg. Calculate the price elasticity of supply. (3+3+6=12)





# KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II

Class: XII

Subject: English Paper-I

FM 50

## Question 1.

Write a composition on any one of the following subjects in about 450-500 words: **15**  
(You are reminded that you will be rewarded for orderly and coherent presentation of material, use of appropriate style and general accuracy of spelling, punctuation and grammar.)

- Describe a farmhouse you greatly admire. You may include the design, the décor, the furniture, furnishings and fitting as well as the landscaping that has been done in your description.
- Technology has enabled people to work from their homes. Would it be an advantage or disadvantage for students to learn from their homes in the future, rather than go to schools?

Give your opinion for or against this thought.

- The advantage and disadvantage of career as a reporter.
- Recall and describe a situation in your life when you were really scared.
- Liberty.

f. Write an original short story on the following theme "A planned robbery that does not take place".

## Question 2.

**10**

- Your group of four friends have planned a trip for a week. You plan to travel by the local transport available. Write a report in about 300 words on the outline given below:

Preparation for the trip-area to be covered- interesting and important places on the route-traffic on the highway-accommodation and stop overs-problems faced-feeling at the end of the trip.

- You are the captain of your school cricket team. Write a proposal for establishing a sports club in your school. Highlight the importance of sports in the life of each one of us. **8**

## Question 3.

Answer sections(a),(b)and (c) **(2)**

- (1) (A) If I had a little more time I would have done better work.

(B)With.....

- (2) (A)It is believed that this temple was built a thousand year ago.

(B)This temple.....

(b)Fill in each blank with suitable word(Do not write the sentence): **(2)**

(1)The money was divided equally.....two brothers.

(2)Their spacious apartment was divided.....and converted into three flats.

(3)The workers agreed.....work on their holiday provided they got a compensatory day off.

(4)I can't agree.....the view that liberalizing the economy will help the poor.

(c)Fill in the blanks in the passage given below with the appropriate form of the3 verb given in brackets.Do not write the passage, but write the verbs in the correct order . **(3)**

I..... (1)(agree) with psychologists that dreams.....(2)(reflect)our deepest thoughts and fears. And a child I ..... (3)(have) a dream that often recurred, with minor variations. In the dream my final examinations..... (4)(start)and I missed the most important paper! Sometimes, in dream I.....(5)(sleep)through the paper. On one occasion a traffic snarl..... (6)(prevent) me from reaching the examination centre.

## Question 4.

**(10)**

Read carefully the passage given below and answer the questions (a),(b) and (c) that follow:

- By the beginning of the twentieth century considerable advances had been made, particularly in anesthetics which made effective surgery possible, but still, doctors seemed

almost as impotent as their predecessors in the middle ages. It is true that they now knew that much disease and death was due not to something as mighty as divine anger but often to something as small as germs, but they were usually as powerless against the minuteness of the one as against the immensity of the other. As they watched tens of thousands of children die annually of scarlet fever, measles, chickenpox, whooping cough, diphtheria, and tens of thousands of adults perish of fevers, T.B, childbirth and minor injuries, there must have seemed to them only one medical problem---how to discover drugs and treatment that would defeat disease and death.

- (2) Today we realize that their assessment was all too simple. Science has conquered the majority of illnesses that plagued man at the beginning of this century; we have seen the infant mortality rate plummet from 150 for every 1000 live births than 20 per thousand in less than 70 years, and in the same period the average life span has been extended from 46 to 70 years for men and from 50 to 75 for women. Patients are now given new parts to replace worn-out organs, and machinery can take over the functions of heart, lungs and kidneys while the natural ones are undergoing repair. All of these would have been genuine miracles only fifty years ago.
  - (3) But as the achievements of medicines advanced and death retreated further it become obvious that disease, far from being the only barrier a Utopia of health, was but the foothill of a whole range of problems which struck at the very roots of religion, morality and philosophy. It is all very well to save the lives of millions of babies all over the world, but where, in a world which seems to be running rapidly out of resources, shall we find food in a generation or two to feed all the extra mouths? It is wonderful to think that we shall survive into our seventies and eighties, but have we thought carefully enough of the immense problems of looking after the elderly? Deformed embryos which nature would in the past probably have aborted in miscarriages, are often born alive---but to what sort of life? Seventy years ago it seemed easy to decide what was meant by 'alive' and 'dead', but now, in the light of further knowledge, the boundaries have become blurred. Besides the new problems medicine has to face, there has to be a new face of learning as every week new drugs, new techniques and new ideas flood from the research centers---but also they have a different place in society.
  - (4) Until fairly of recently the doctor was almost a demi-god; he seemed to hold the power of life and death, and his whole profession was shrouded in an air of mystery. In addition to his lofty and respected position he was a kind of father-figure. He knew most of his patients personally, and become almost a confessor in the religious sense to them.
  - (5) Today much of mystique has gone and the average doctor appears very much a man like the rest of us, just with a different job. Mass communication enable everyone to read about the mysteries of medicine, to watch major operation on TV and to argue with the experts on the morals and problems of medical treatment. Our insides, which to most people half a century ago contained strange organs such as heart, lungs and stomachs, are now familiar to most older school-children who, thanks to their science lessons, can talk knowledgeably of endocrine glands, neurons and chromosomes.
- (a) (i) given below are four words and phrases. Find the words which have a similar meaning in the passage. (1)
- (1) nuisance (2) head- long
- (ii) For each of the words given below, write a sentence of at last ten words, using the same word unchanged in form, but with a different meaning from that which it carries in the passage: (2)
- (1) minor (2) race
- (b) Answer the following questions in your own words as briefly as possible:
- (i) What cause do you think the medieval doctor attributed to most illness and death? (1)
- (ii) Why were doctors at beginning of the 20<sup>th</sup> century powerless against the majority of diseases? (1)

(iii) What two factors was make doctors of today different from his predecessor? (1)

(C) In about 100 words, mention the benefits of Medical Science and the new problems that have arisen. (4)

## DRAMA

A) Answer the following questions:

a) Stephano: Put of that gown, Trineulo L Peaches for it. By this hand, I'll have that gown.

Trinculo: Thy grace shall have it

Caliban: The dropsy drown this fool! What do you mean to dote thus on such luggage?

Let's alone.

And do the murder first. If he awake, from toe to crown he'll fill our skins with pinches/Make us strange stuff.

- |      |  |   |
|------|--|---|
| i)   | Where are Trinculo and Stephane? What has distracted Trinculo?   | 1 |
| ii)  | Who has arranged for the distraction and why?  | 2 |
| iii) | Which murder is Caliban referring to? why does he want this?   | 2 |
| iv)  | How did Caliban tempt Stephano to execute his plan?  | 2 |
| v)   | What does Caliban fear would happen to them if they fail?  | 2 |
| vi)  | Give meaning of the following words as they are used in the context of the passage:<br>1) Luggage<br>2) Dropsy |   |

b) Ariel:

I told you Sir, they were red hot with drinking, So full of velour that they smote the air for breathing in their faces, boat the ground for kissing of their feet; yet always bending towards their project. Then I beat my tabor, at which like unback'd colts hey pricked their ears advane'd their eyelids, lifted up their noses. As they smelt music. So I charm'd their ears That calf-like they my lowing followed through Tooth'd brains, sharp furzes, pricking gorse and thorns.

Which entor'd their frail shins. At last I loft them I'th' filthy mantled pool beyond your cell, there dancing up to th' chins, that foul lake O'er stunk their feet.

- |      |  |   |
|------|--|---|
| i)   | To whom Ariel is speaking? Whom does Ariel refer to as 'they'?   | 1 |
| ii)  | "bending towards their project."– what does Ariel mean here by 'their project'? explain briefly.                   | 2 |
| iii) | How do 'they' behave being 'red-hot with drinking'?  | 2 |
| iv)  | Why did Ariel 'charm' them?  | 1 |
| v)   | How did they behave after being 'charm'd'?   | 2 |
| vi)  | Give the meanings of the following words as they are used in the context of the passage:<br>1) Tabor<br>2) Bending |   |

B) Referring closely to Act IV Scene-I of the play 'The Tempest', narrate how did Ariel and Prospero treat Caliban, Stephano and Trinculo.

## PROSE

C) Bring out the inner turmoil of Miss Meadows in the story "The singing Lesson". 15

## PART 1

### Question 1

Answer the following questions:– (5x2=10)

- a) Name the standard geological Eras?
- b) Distinguish between flora and vegetation.
- c) What is Distribution and density of population?
- d) State two problems of Kolkata port.
- e) How the problem of small land holdings can be solved?

### Question 2

On the outline map of India mark and name the following:- (10x1=10)

- a) Central Meridian of India.
- b) The highest mountain peak of India.
- c) One mountain pass in Arunachal Pradesh.
- d) River which flow into India through Dihang Gorge.
- e) The longest west flowing river.
- f) The northern most point of Indian union.
- g) Coastal plain between Krishna and Cauvery.
- h) Gulf on which Kandla port is located.
- i) A plateau located north of Vindhya Range.
- j) The highest peak in Western Ghats.

## PART 2

### Question 3 (5X2=10)

- a) Large area of Western Rajasthan lacks rail transport buty northern plains have dense network. Explain why?
- b) How transport and industrial development are related?
- c) How radio and television are important means of communication.
- d) State two problems and two advantages of pipeline transport.
- e) i) Mumbai port have several advantages than other ports in India. Explain.  
ii) What is Golden Quadrilateral?

### Question 4 (5x2=10)

- a) i) Why the agricultural lands in India are small in size?  
ii) What is Sustainable development?
- b) There is a certain decrease in the growth rate of population between 1981 – 2011. Why?
- c) How population increase affects the development?
- d) Why the densely populated areas are increasing in Indian region?
- e) What is fallow land? How the amount of fallow land can be decreased?

### Question5 (5x2=10)

- a) What are the main purpose of social forestry?
- b) What is the total percentage of forest cover in India? Do you think it is sufficient? Justify your answer.
- c) Explain the formation of Himalayas with reference to the theory of plate tectonics.
- d) Distinguish between the vegetation of western slopes of Western Ghats and Central India.
- e) How trees of desert vegetation adopts with environment?
- f) Why there is a variation in the mountain forest? (Decidious to alpine)



# KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II

Class: XII

Subject: History

FM 50

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## Group – A

7X2=14

- i. Name the Syndicate leader who favoured Mrs Indira Gandhi to be the next Prime Minister after Lalbahadur Shastri. When?
- ii. What do you mean by Land Ceiling Act and why was it included in our Constitution?
- iii. Why was nationwide emergency imposed on 25 June ,1975?
- iv. What were the programmes adopted by AASU-AAGSP on 27 November,1979?
- v. Who was Laldenga and what was his demand?
- vi. Give the reason of unpopularity of Weimer Republic.
- vii. Mention the Corfu incident.

## Group-B

### Question 1

- i. Discuss the causes of the Naxal Movement with special reference to the contribution of Charu Majumder.
- ii. Discuss the course of JP Movement.

6+6=12

### Question 2

- i. Discuss the objectives and the main features of the foreign policy of Germany between 1933 and 1938.
- ii. Explain the Spanish Civil War of 1936 which was considered as a dress rehearsal of World War II.

6+6=12

### Question 3

- i. Estimate the contribution of America to the Allied Powers in the Second World War.
- ii. Explain the reasons for the defeat of the axis power in World War II.

6+6=12



**KRISHNAGAR ACADEMY**  
**HALF-YAERLY (PHASE-II) EXAMINATION**  
**CLASS-XII**

**SUBJECT-MATHEMATICS**

**FULL MARKS: 50**

**Attempt all questions**

**Question 1.**

(4x1=4)

a) If  $\tan^{-1} x + \tan^{-1} y = \frac{\pi}{4}$ , then the value of  $y + x + yx$  is

- (i) 1            (ii)  $\sqrt{3}$             (iii)  $\frac{1}{\sqrt{3}}$             (iv)  $-1$

b) If A and B are square matrices of the same order, then the value of  $(A+B)(A-B)$  is equal to

- (i)  $A^2 - B^2$             (ii)  $A^2 - BA - AB - B^2$   
(iii)  $A^2 - B^2 + BA - AB$             (iv)  $A^2 - BA + B^2 + AB$

c) The value of  $\int \frac{1}{e^x + e^{-x}} dx$  is

- (i)  $\tan^{-1}(e^{-x}) + c$             (ii)  $\tan^{-1}(e^x - e^{-x}) + c$   
(iii)  $\tan^{-1}(e^x) + c$             (iv)  $\tan^{-1}(e^x + e^{-x}) + c$

d) The order and degree of the differential equation  $xy \frac{d^2y}{dx^2} + x \left( \frac{dy}{dx} \right)^2 - y \frac{dy}{dx} = 0$  are

- (i) Order 2, Degree 1            (ii) Order 1, Degree 1  
(iii) Order 1, Degree 2            (iv) Order 2, Degree 2

**Question 2.**

Evaluate:  $\int \tan x \tan 2x \tan 3x dx$  (2)

**Question 3.**

Prove that  $\tan^{-1} \frac{1}{3} + \tan^{-1} \frac{1}{5} + \tan^{-1} \frac{1}{7} + \tan^{-1} \frac{1}{8} = \frac{\pi}{4}$  (2)

**Question 4.**

If  $A = \begin{bmatrix} 5 & a \\ b & 0 \end{bmatrix}$  and A is symmetric matrix, show that  $a = b$  (2)

**Question 5.**

Find the point on the curve  $y = (x - 3)^2$ , where the tangent is parallel to the line joining  $(4, -1)$  and  $(5, 0)$ . (4)

**Question 6.**

Find the intervals on which the function  $f(x) = \frac{x}{x^2+1}$  is strictly increasing and/or strictly decreasing. (4)

**Question 7.**

Evaluate:  $\int \tan^{-1} \sqrt{x} dx$  (4)

**Question 8.**

Solve the differential equation  $\sin^{-1} \left( \frac{dy}{dx} \right) = x + y$  (4)

**Question 9.**

Solve the system of linear equation  $x - 2y = 10, 2x - y - z = 8, -2y + z = 7$  (6)

**Question 10.**

Solve the equation for x:  $\sin^{-1} \frac{5}{x} + \sin^{-1} \frac{12}{x} = \frac{\pi}{2}, x \neq 0$  (6)

**Question 11.**

Verify Lagrange's MVT for the function  $f(x) = 2 \sin x + \sin 2x$  on  $[0, \pi]$  (6)

**Question 12.**

Show that the rectangle of maximum perimeter which can be inscribed in a circle of radius 10 cm is a square of side  $10\sqrt{2}$  cm. (6)

# KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II

Class: XII

Subject: Physical Education

FM 50

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## Section -A

1. Write a short note on the following.  
a) Circuit Training Method. b) Interval Training method. c) Isometric exercise d) Advantage of Cooling Down. 4+4+4+4
2. What is the importance of warming up ? 8
3. What is conditioning and why it is important ? 8
4. Write in details career aspect in physical education.. 8

## Section -B (any two)

5. Write the name of the five national football tournament. . 5
6. Write any five basic skills in Cricket. 5
7. Write a short note on FIBA. 5
8. Draw a diagram of a single badminton court showing its dimensions. 5

# KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II

Class: XII

Subject: Physics

FM 50

1. (A) Choose the correct option.

i) If the distance between two equal point charges is doubled and their individual charges are also doubled, the force between them will be. 1

- a) Doubled                      b) Halved                      c) Same                      d) None

ii) The wave front of the distant source of unknown shape is approximately 1  
(a) Spherical (b) cylindrical (c) elliptical (d) plane.

(iii) The expression for the resistivity of a material in terms of mass (m) and charge (e) of the electron, number density of electrons (n) and relaxation time ( $\tau$ ). 1

(a)  $\rho = \frac{2m}{ne^2\tau}$

(c)  $\rho = \frac{2n}{me^2\tau}$

(b)  $\rho = \frac{m}{2ne^2\tau}$

(d)  $\rho = \frac{ne^2\tau}{2m}$

(iv) Light of wavelength  $6000\text{\AA}$  in vacuum enters a medium of refraction index 1.5. What will be its wavelength in the medium. 1

- a)  $4000\text{\AA}$       b)  $4500\text{\AA}$       c)  $3500\text{\AA}$       d)  $400\text{\AA}$

B. Answer the following questions.

i) A stationary oil drop between two parallel plates has a charge of  $3.2 \times 10^{-19}\text{C}$  and a weight of  $1.6 \times 10^{-14}\text{N}$ . What is the strength of the electric field acting on the drop? [1]

ii) State Gauss's theorem. [1]

iii) Why all over the world, giant telescope are reflecting type? State any one reason.

iv) Explain why the electrical conductivity of a pure semiconductor increases on heating?

v) State Huygens' Principles.

vi) The polarizing angle for a medium is  $60^\circ$ . Calculate its refractive index. (1)

2. A charged particle enters a uniform electric field at right angles to the field direction. Show that it follows a parabolic path inside the field. [2]

3. Distinguish between p-type and n-type semiconductors on the basis of energy band diagram. [2]

4. What is LED? Explain how radiations are given out by LED? (2)

5. What is meant by doping? Why is it done? (2)

6. Where should an object be kept on the principal axis of a convex lens of focal length 20 cm, in order to get an image, which is double the size of the object? (2)

OR,

A biconvex lens made of glass ( $n=1.5$ ) has two spherical surfaces having radii 20 cm and 30 cm. Calculate the focal length. (2)

7. Two wires of the same length, one of copper and the other of mangamin have the same resistance. Which wire is thicker and why? (2)

8. A uniform wire connected across a source consumes a power P. It is cut into n equal parts and all the parts are connected in parallel across the same source. What will be the power consumed now? (2)

9. A bar magnet having a magnetic moment of  $10^4\text{J/T}$  is free to rotate in a horizontal plane.

A horizontal magnetic field  $B=5 \times 10^{-4}\text{T}$  exists in space. Calculate the work done to rotate the magnet by  $60^\circ$  from the direction of the magnetic field. (2)

10. A particle of mass  $m$  and charge  $q$  is released from rest in a uniform electric field  $E$ . Find

- i) Its speed after time  $t$
  - ii) The distance travelled by it in time  $t$
  - iii) its kinetic energy after moving  $s$  distance  $x$ . [3]
- OR,

A laser operates at a frequency of  $3 \times 10^{14}$  Hz and has an aperture of  $10^{-2}$  m. what will be the angular speed? [3]

11. Name the charge carriers in the following at room temperature:

- (i) Conductor (ii) Intrinsic Semiconductor (iii) Insulator. (3)

12. Derive the expression for the field due to a magnetic dipole on the axis.

Derive the expression for the magnetic field due to a magnetic dipole in broad-side on position at a distance  $r$  from its centre.

13. a) A thin fixed ring of radius  $r$  has a positive charge  $Q$  uniformly distributed over it. A particle of mass  $m$ , having negative charge  $q$ , is placed on the axis of the ring at a distance  $a$  from its centre. Show that if  $x \ll r$ , the particle will execute approximately simple harmonic motion. [3]

b) determine the ratio of the electrostatic and gravitational forces between two electrons placed in vacuum at a distance  $r$  from each others. [2]

14. What is rectifier? Explain the action of a full wave rectifier giving labelled circuit diagram. (5)

OR

Derive Snell's law of refraction using Huygens's wave theory. (5)

15. (a) State Kirchhoff's laws for the circuit network. Use then laws to obtain the balanced condition of a Wheatstone bridge. (3)

(b) Two cells of emfs 6V and 12V and internal resistances  $1\Omega$  and  $2\Omega$  respectively are connected in the parallel so as to send current in the same direction through an external resistance of  $15\Omega$

i) Draw the circuit diagram.

ii) Using Kirchhoff's laws calculate

(A) Current through each branch of the circuit.

(B) Potential difference across the  $15\Omega$  resistance. (2)

OR

(a) Describe Young's double slit experiment for obtaining interference fringes.

Derive the expressions for (i) variation of intensity with path difference (ii) position of maxima and minima (iii) fringe width. (3)

(b) A diffraction grating has 800 lines per mm and is illuminated normally by parallel monochromatic lights of wave-lengths 560 nm and 590 nm. Calculate the difference in angular position of the first order spectra due to the two lights on the same side of the normal.

# KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II

Class: XII

Subject: Political Science

FM 50

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## Group – A

7X2=14

- i. Why a fusion is there between the legislature and executive in a Parliamentary form of Government?
- ii. Why Political homogeneity is not required in the Presidential form of Government?
- iii. Name the leaders who objected the use of the term ' We the people' in the beginning of the Preamble.
- iv. Why Indian Constitution is a bulky Constitution?
- v. Discuss Article 21 of our Constitution.
- vi. What are the provisions of Article 26?
- vii. What do mean by Habeas Corpus?

## Group-B

### Question-1

- i. Discuss the features of Parliamentary form of Government with particular reference to Uk.
- ii. Explain the features of Presidential form of Government with reference to the Us Presidential Government.

6+6=12

### Question-2

- i. Why our Indian Constitution is rigid as well as flexible? Explain.
- ii. Discuss the Emergency provisions of Our Constitution.
- iii. Discuss the different sources of our Indian Constitution.

4+4+4=12

### Question-3

- i. Explain Article 19 along with its limitations.
- ii. Discuss Right to Constitutional Remedies with all its writs to protect the other Fundamental Rights.

$$6+6=12$$

# KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II

Class: XII

Subject: Psychology

FM 50

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## Section I

- I. Answer the following short questions: (20\*1=20)
1. Define life span development.
  2. Mention the different types of stressors.
  3. What is career counseling?
  4. Write the difference between growth and maturation.
  5. How is stress and hypertension related?
  6. Define defense mechanism.
  7. Explain consumer behaviour.
  8. Growth is predictable. Explain the statement.
  9. How is emotion important for the development of an individual?
  10. Who developed the GAS MODEL of STRESS and in which year?
  11. Distinguish between Chromosome and Genes.
  12. How can memory be improved?
  13. Name the instrument that measures individual skills with the job components.
  14. What is multiple self?
  15. What is rationalization?
  16. Explain CBT.
  17. How does development proceed from 'General to Specific'?
  18. Define Primary Appraisal.
  19. How does fortitude reduce stress in an individual?
  20. What is the role of culture on Consumer Psychology?

## Section II

(Answer any 3 questions)

1. a) Describe the models that influence consumer's decision making process. (6)  
b) Distinguish between Time Study and Motion Study. (4)
2. a) What is the role of a psychologist in facilitation of learning in School? (6)  
b) Name and write the difference between the two Evaluation Techniques of Examination.(4)
3. a) Define Development. What are the determinants influencing development? (1+4)  
b) What are the developmental periods of an individual? (5)
4. a) Describe General Adaptation Syndrome Model of Stress. (5)  
b) What are the effective ways of handling stress? (5)
5. a) What are the effects of stress on Health and Performance of an individual? (6)  
b) What is understood by leadership and team building? (2+2)





১) নিম্নলিখিত বিষয়গুলির মধ্যে থেকে একটি বিষয় বেছে নিয়ে একটি রচনা লেখো।

(কমবেশি ৪০০টি শব্দের মধ্যে)

২০

ক. বিজ্ঞানের অপব্যবহার

খ. মনে করো টাইম মেশিনে চড়ে তুমি অতীতের কোনো রাজার দরবারে গেছ। যা দেখলে, যা করলে, তাই নিয়ে একটি রচনা লেখো।

২) নিম্নলিখিত অংশটি পড় ও তার পরের প্রশ্ন গুলির উত্তর দাও।

পৃথিবীর সবচেয়ে বিখ্যাত মিউজিয়াম কায়রোয়। প্রাচীন মিশরের নানা পুরনো জিনিস তুত-আনখ-আমুনের ধনরত্ন। আদিকালের চিত্রাঙ্কর, ছবি আর হাজার হাজার বছর আগেকার মানুষের 'মমি' -এসব দেখতে সারা পৃথিবী থেকে লোক আসে।

এই মিউজিয়াম যিনি গড়ে তোলেন তাঁর নাম মারিয়েত। তিনি ছিলেন ফরাসি দেশের একজন স্কুল মাস্টার। মিশর আক্রমণ করে নেপোলিয়নের বাহিনী ফিরে যাওয়ার সময়ে এদেশ থেকে কিছু কিছু পুরনো নিদর্শন নিয়ে যায়। মিউজিয়ামে সেই সব জিনিস দেখে মারিয়েত মিশরের ইতিহাস সম্বন্ধে অনুসন্ধিৎসু হয়ে ওঠেন। এরপর তিনি চেষ্টা করে ল্যুভর মিউজিয়ামে মিশর বিভাগে সহকারীর একটা কাজ জোগাড় করেন। পরের বছরই ফরাসি সরকার কিছু বাপ টিক পাণ্ডুলিপি কেনবার জন্য তাকে মিশরে পাঠায়। মারিয়েতের নেশা হল পুরনো মিশরকে জানার। তিনি কাউকে কিছু না বলে চলে যান সাক্ষারায়। সেখানে তিনি খুঁজে বার করেন বেশ কিছু অমূল্য পুরাবস্তু।

এদিকে মিশরের মহম্মদ আলিও চেষ্টা করছিলেন মিশরের পুরাবস্তুর একটি মিউজিয়াম তৈরি করতে, কিন্তু জিনিস গুলো হয় মাঝপথে, নয় আসার পরই উধাও হয়ে যেতে থাকে।

ক) পৃথিবীর সবচেয়ে বিখ্যাত মিউজিয়াম কোথায়?

সারা পৃথিবীর লোক সেখানে কী দেখতে আসে?

খ) এই মিউজিয়াম যিনি তৈরি করছিলেন তার নাম ও পরিচয় দাও।

গ) মিশরের পুরনো নিদর্শন ফরাসি দেশে কী করে যায়?

ঘ) মারিয়েত মিশরের পুরনো ইতিহাস জানতে চাইলেন কেন?

ঙ) কোথায় কাজ জোগাড় করলেন মারিয়েত?

চ) মিশরে মারিয়েত এলেন কী করে?

ছ) মিশরের পুরাবস্তুর মিউজিয়াম করতে চেয়েছিলেন কে?

৩) নিম্নলিখিত শব্দ গুলো দিয়ে সার্থক বাক্যরচনা করো।

৫×১=৫

ক) একাই একশো খ) ইটুড়ে পাকা গ) উত্তম মধ্যম ঘ) চাঁদের হাট ঙ) জড় ভরত

বিভাগ- খ

৫) "ডাস্টবিনের দুই পাশে দুটি প্রানী, নিষ্পন্দ নিশ্চল।"

ক) কোন্ গল্পের অংশ? লেখকের নাম কী?

খ) দুটি প্রানী বলতে কাদের বোঝানো হয়েছে?

গ) কেন তারা নিষ্পন্দ নিশ্চল?

ঘ) কোন্ ঘটনায় তারা দু'জন দু'জনকে চিনতে পেরেছিল?

২+২+৩+৩=১০

৬) "আর তার গলা থেকেও ধর্মের ষাঁড়দের মতোই কর্কশ আদেশ শোনা যায় : 'রাস্তা ছাড়ো! নইলে-'"

ক) কোন্ কবিতার অংশ? কবি কে?

খ) তার বলতে কার কথা বলা হয়েছে?

গ) তার 'রাস্তা ছাড়ো' কথাটার মধ্যে দিয়ে কবি কী বোঝাতে চেয়েছেন?

ঘ) 'ধর্মের ষাঁড়' কারা? তারাই বা রাস্তা ছাড়তে বলে কেন?

২+২+৩+৩=১০

# KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II

Class: XII

Subject Sociology

FM 50

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A) Answer the following questions

(10×2)

- 1) Define Superstition.
- 2) Distinguish between clan and gotra.
- 3) Explain Moral code and Religious Code.
- 4) What is Amitate?
- 5) Define Taboo.
- 6) What is fetishism?
- 7) Distinguish between Sacred and Profane.
- 8) What are the basic component of Religion?
- 9) Explain Sororate.
- 10) What are the two types of unilineal descent?

B) Answer the following questions

(5×6)

- 1) Explain the functional theories of Religion.
- 2) Explain in detail the structural and functional changes in family.
- 3) Discuss about the various forms of marriage.
- 4) Discuss about the functions and dysfunctions of religion
- 5) Morality is an informal means of social control. Discuss.
- 6) Briefly explain Animism naturism and totemism as the original theories of religion.

Question 1.

निम्नलिखित विषयों में से किसी एक विषय पर 400 शब्दों में (20)  
निबंध लिखो :

- (i) स्वदेश प्रेम (ii) किसी इतिहासिक स्थान की सैर

Question 2.

निम्नलिखित अवतरण को पढ़कर अन्त में दिष्ट गद्य प्रश्नों के उत्तर अपने शब्दों में लिखिए।

जल को मानव जीवन और अस्तित्व के लिए बहुमूल्य माना जाता है। किन्तु मानव जीवन के लिए आवश्यक इस अमृत के लिए आज देश का 3/4 भाग तरस रहा है। वैष्णव देवी से लेकर कन्याकुमारी तथा द्वारिका से कामारव्या तक शायद ही ऐसा स्थान होगा जहाँ के लोग पानी के भारी संकट का सामना न कर रहे हों। समाजवाद से उदारवाद और साम्यवाद से प्रखर राष्ट्रवाद तक की कोई भी विचारधारा अभी तक लोगों की इस आवश्यक वस्तु को नहीं दिला सकी है।

प्राचीन युग में देश में हर गाँव और नगर में तालाब हुआ करते थे। राजा-महाराजा अपनी प्रजा के हित चिन्तन की कामना से प्रायः धर्मशाला तथा छायादार वृक्षों के साथ कुम्हें और तालाबों का निर्माण करते थे। साथ ही धनी-मानी और परोपकारी व्यक्ति भी इस पवित्र उद्देश्य के लिए कार्य करते थे। एक समय था जबकि देश के चप्पे-चप्पे पर तालाबों का जाल फैला हुआ था। इतना ही नहीं जल के अभाव वाले इलाक़ों में शुद्ध और शीतल जल से युक्त बावड़ियों (छोटा तालाब) के पास जाने का उल्लेख मिलता है। किन्तु बढ़ती हुई जनसंख्या के लिए आवास की व्यवस्था करने



तथा शहरीकरण की प्रक्रिया तीव्र होने के साथ ही तालाबों को पाटने का कार्य भी आरंभ हो गया। आज स्थिति इसी है कि शहरों और गांवों में प्राधिकरणों (अधिकार) के नाम पर वैध तथा अवैध हर प्रकार की इमारतें खड़ी कर दी गयी हैं। इससे जहाँ तालाबों के समाप्त होने पर जल भण्डारण की व्यवस्था का अभाव हो गया। पचास के दशक में जहाँ 2000 ट्यूब-वैल पूरे देश में थे, अब यह संख्या लाखों से भी अधिक में पहुँच गयी है। उदाहरण के लिए उत्तर प्रदेश और गुजरात में यह स्तर काफी नीचे पहुँच गया है।

प्रश्न:

- (i) जल का मानव जीवन में क्या स्थान है? उसकी उपयोगिता के विषय में अपने विचार स्पष्ट कीजिए। (2)
- (ii) वर्तमान युग में मानव को पर्याप्त पेयजल न मिल पाने के लिए आप किसे उत्तरदायी मानते हैं और क्यों? (3)
- (iii) प्राचीन युग में पर्याप्त जल की उपलब्धता के कारणों पर प्रकाश डालिए। (2)
- (iv) वर्तमान युग में जल के पर्याप्त मात्रा में उपलब्ध न होने के क्या कारण हैं? स्पष्ट कीजिए? (3)

Question 3.(a) निम्नलिखित मुलवशों का अर्थ लिखकर वाक्यों में प्रयोग कीजिए। (5)

- (i) सोंच को आँच नहीं (ii) चोर की दाढ़ी में तिनका
- (iii) जिसकी लाठी उसकी भैंस (iv) सोंप भी मरे और लाठी भी न टूटे।
- (v) बिना सेवा मेवा नहीं।

(b) निम्नलिखित वाक्यों को शुद्ध करके लिखो: (5)

- (i) वह आता-आता रुक गया।
- (ii) आगे देखो खतरा है।
- (iii) प्रश्न को सावधानी द्वारा पढ़ो।
- (iv) बुरे से बुरा आदमी भी अच्छे व्यवहार की आशा करता है।
- (v) मैं आपका दर्शन करने आया हूँ।

(गद्य - संकलन)

Question 4.

- (i) "मेरी ही तरह वह भी कंगाल है"। (2)  
उपरोक्त कथन किसने किससे कहा तथा जब
- (ii) श्रीरोजा ने आत्महत्या के लिए उतारू बलराज को क्या-क्या सलाह दी? (3)
- (iii) "किंतु क्या करूँ आकांक्षा का नशा पी लिया है। वही मुझे बेबस किम है। जिस दुख में मनुष्य छाती फाड़कर चिल्लाते लगता हो, सिर पीटने लगता हो, वैसी प्रतिदूल परिस्थितियों में भी मैं केवल सिर नीचा कर चुप रहना अच्छा समझता हूँ।" (5)  
उपरोक्त कथन का आशय स्पष्ट कीजिए।

Question 5. (काव्य - मंजरी)

- (i) "आः धरती कितना देती है" कविता के कवि का नाम लिखते हुए बताइए कि वचन में कैसे क्या सोचकर बोध रहे? (2)
- (ii) धरती का नाम 'वसुधा' क्यों पड़ा? "हम जैसे बोझेंगे वैसा ही पाएंगे" से कवि का क्या आशय है? (3)
- (iii) इस कविता में कवि क्या संदेश दे रहे हैं? (5)