KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II
Class: X
Subject: History & Civics

FM 50

Question 1   5x2=10

   i.   Why the President of our country is regarded as the first citizen of India?
   ii.   Give any two reasons for the indirect election of the President of our country.
   iii.   What is an ordinance? When is it issued by the President?
   iv.   What is the effect of National Emergency on centre-state relations?
   v.   What particular role is played by the President when no single party get a clear majority in the Lok Sabha?

Question 2   5x2=10

   i.   Give any two contribution of Jotiba Phule.
   ii.   Name the newspaper published by Indian leaders to propagate the social reforms.
   iii.   Name two forerunners of the Indian National Congress.
   iv.   Mention any two objectives of the Early Nationalist leaders.
   v.   How the Swadeshi and Boycott Movements were supplementary and complementary to each other?

Question 3   3+4+3=10

With special reference to the President of India, explain the following:

   i.   Procedure for the impeachment of the President.
   ii.   Executive powers.
   iii.   Emergency powers.

Question 4   4+4+2=10

Regarding the first phase and second phase of the Indian Nationalist Movement, discuss the following:

   i.   Methods of struggle of the Early Nationalist.
   ii.   Methods of Radical leaders.
   iii.   How much the Assertive Leaders were responsible to give rise to the Communalism in India?

Question 5   3+4+3=10

In the context of the Partition of Bengal, answer the following:

   i.   Causes for the Partition given by Lord Curzon.
   ii.   Nationalist interpretation of the Partition of Bengal.
   iii.   Any three objectives of Muslim league.

KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II
Class: X
Subject: Mathematics

FM 50

Group A(20marks)

(Attempt all questions)

1) a) Solve for x: $\frac{x+1}{x-2} + \frac{x+11}{x+3} = 4$ [3]

b) a circle is described on one of the equal sides of an isosceles triangle as diameter. Show that it passes through the midpoint of the base. [3]

c) From the top of a hill, the angles of depression of two consecutive kilometer stones due east area found to be 30^0 and 45^0 respectively. Find the distance of the two stones from the foot of the hill. [4]
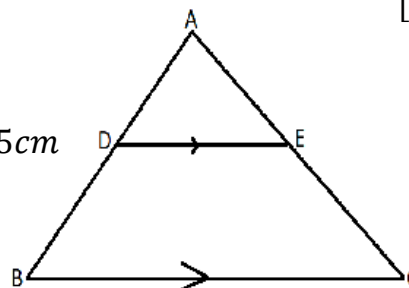
2) a) Prove that $\frac{cot\theta + cosec\theta - 1}{cot\theta - cosec\theta + 1} = cosec\theta + cot\theta$ [3]

b) using Factor Theorem, factorise; $x^3 + 2x^2 - 5x - 6$ completely. [3]

c) In the figure DE || BC. [4]

    i) Prove that $\Delta ADE \sim \Delta ABC$.

    ii) Given that $AD = \frac{1}{2}BD$, $calculate\ DE$; $if\ BC = 4.5cm$
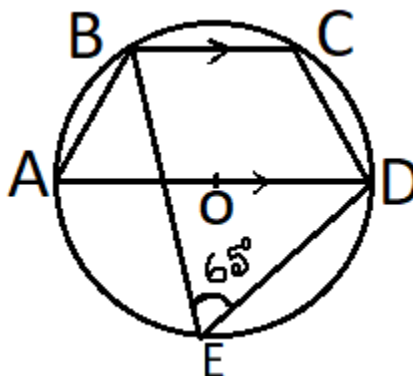

Group B(30marks)

(Attempt any three questions)

3) a) If $2x^3 + ax^2 + bx - 2\ has\ a\ factor\ (x + 2)$ and leaves a remainder 7 when divided by (2x–3), find the values of a and b. [4]
   b) Prove that $sec\theta - cosec\theta)(1 + tan\theta + cot\theta) = sec\theta tan\theta - cosec\theta cot\theta$. [3]
   c) Solve $5x^2 - 3x - 4 = 0$ and give your answer. Correct to 3 significant figures. [3]
4) a) AD is a diameter of the given circle, and BC || AD. If $\angle BED = 65^0$, find $\angle BAD\ and\ \angle DBC$. [4]
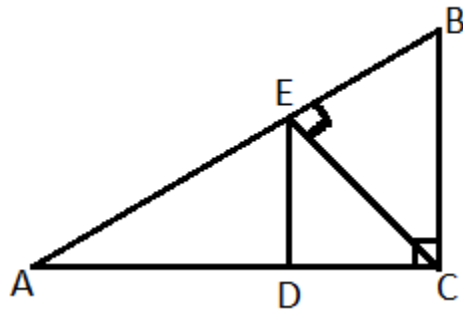

    b) Without solving, find the value of 'm' for which the following quadratic equation has real and equal roots:
$x^2 + 2(m - 1)x + (m + 5) = 0$ [3]
    c) Solve: $3sin\theta = 2cos^2\theta, (0 < \theta < 90^0)$ [3]

5) a) A vertical tower subtends a right angle at the top of vertical flag on the ground, the height of the flag being 10m. if the distance between the tower and the flag be 20m, find the height of the tower. [4]

b) if (x–2) is a factor of $2x^3 - x^2 - mx - 2$, find the value of m and factorise the expression completely. [3]

c) Find the values of k so that the equation $kx(x - 2) + 6 = 0$ has two equal roots. Also find the root in each case. [3]

6) a) In the given figure, $\angle ACB = \angle ADE = \angle CEB = 90^0$ Prove that: i) $\triangle BEC \sim \triangle CDE$ (ii) BEXAD = EDXCE [4]

b) If $a\cos\theta + b\sin\theta = m$ and $a\sin\theta - b\cos\theta = n$, prove that $a^2 + b^2 = m^2 + n^2$ [3]

c) Two circles intersect at P and Q. Through P, diameters PA and PB of the two chords are drawn. Show that AQ and QB are in the same straight line. [3]

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

Full Marks : 50

Section - A   (20 Marks)
(Attempt all questions)

Question No. 1   (4x5)

A.   Name the following -   (5x1)
i)   Cells surrounding the Stoma.
ii)   Exudation of Cell Sap from wounds.
iii)   The leaves which have Chlorophyll in patches.
iv)   The process of voiding the urinary bladder.
v)   The waxy layer on the leaves.

B.   Fill in the Blanks -   (5x1)
i)   The chemical substance used to test the presence of starch in a leaf..........
ii)   Specialised spores at the margin of the leaves………………………………..
iii)   The fine network of capillaries present in nephrons is known as…………..
iv)   Wooden doors swell up in rainy season due to………………………………
v)   The optimum range of temperature for photosynthesis is………………….

C.   Choose the odd one out -   (5x1)
i)   Bile, Urea, Uric Acid, Ammonia.
ii)   Transpiration, Photosynthesis, Phagocytosis, Guttation.
iii)   Stomata, Lenticel, Hydathode, Cuticle.
iv)   Endodermis, Epidermis, Epithelium, Cortex.
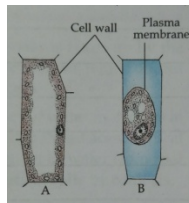v)   Tracheids, Vessel, Xylem Parenchyma, Xylem Fibres.

D.   Write True or False and correct the false statement -   (5x1)
i)   Guttation is favoured by high root pressure and high transpiration.
ii)   Transpiration is the loss of water from the leaves of the plant.
iii)   Photosynthesis occurs in all cells of a plant.
iv)   Urethra carries Urine from Kidney to Urinary Bladder.
v)   Transpiration helps in absorption of water.

Section - B   (30 Marks)
(Attempt all questions)
Question No. 2

A.   Given diagrams are of two plant cells, as seen under the microscope, after having
        been placed in two different solutions -   (5)

i)   What is the technical term for the condition of cell A and cell B ?

ii)   From the solutions given in brackets (water and strong sugar solution), name the solutions in which cell A and cell B were placed before being viewed under the microscope.

iii)   Under what conditions in the soil will the root hair resemble cell A and cell B ?

iv)   Name the pressure responsible for the movement of water from the root hair cell to the xylem of the root.

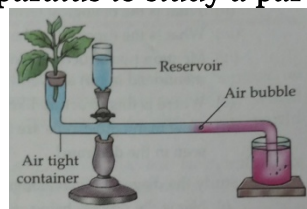v)   Name the pressure that helps in the movement of water up the xylem of the root.

B.   **Differentiate the followings -**   **(5)**

i)   Turgor Pressure and Wall Pressure.
                      or
        Turgidity and Flaccidity.

ii)   Renal cortex and Renal medulla

iii)   Endosmosis and Exosmosis.

iv)   Xylem and Phloem.

v)   Uricotelic and Ureotelic.

Question No. 3

A.   **The given diagram is an apparatus to study a particular phenomenon in plants. (5)**

i)   Name the apparatus.

ii)   Mention two limitations of the apparatus.

iii)   Which phenomenon is studied with the help of this apparatus ?

iv)   Write the function of the part marked 'reservoir'.

v)   What is the role of the air bubble in the experiment ?
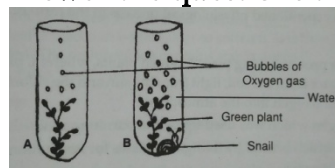
B.   **Define the following :**   **(2)**

i)   Plasmolysis

ii)   Ultrafiltration

C.   With proper diagram explain the mechanism of opening and closing of stomata. **(3)**
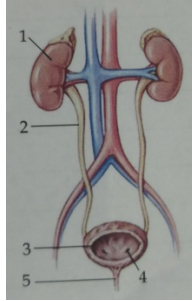
Question No. 4

A.   **The diagram given below shows test-tubes A and B. Test-tube A contains a green water plant. Test-tube B contains both a green water plant and a snail. Both test-tubes are kept in sunlight. Answer the questions that follow :**   **(5)**

i)   Name the physiological process that releases the bubbles of oxygen.

ii)   Explain the physiological process as mentioned in (i).

iii)   What is the purpose of keeping a snail in test-tube 'B' ?

iv)   Why does test-tube 'B' have more bubbles of oxygen ?

v) Give an example of a water plant that can be used in the above experiment.

B. Observe the figure given below and answer the following questions. (5)

i) Label the parts numbered 1 to 5.
ii) What prevents the back flow of fluid from part 3 to part 2 ?
iii) What is part 3 contractile in nature ?
iv) What is the difference between the part 5 of males and females ?
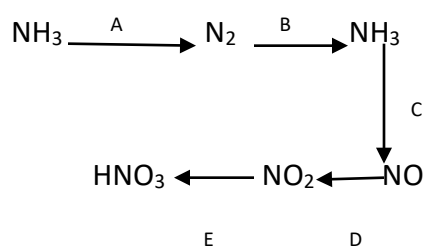v) Name the structural unit of part 1.

1.Carry out the following conversions by giving balanced chemical equation: (1x10=10)

   a. Lead carbonate to lead sulphate

   b. A soluble chloride to an insoluble chloride

   c. sulphur to sulphuric acid

   d. An insoluble salt to a soluble salt

   e. An alkali to an insoluble base

   f. Ammonia to nitrogen

   g.Ammonia to urea

   h. Ammoniun nitrate to laughing gas

   i. Ammonia to washing soda

   j. Ammonium chloride to ammonia

2.Distinguish between the following pair of compounds by a good chemical test: (1x5)

   a. Zinc salt and Lead salt

   b.Ferrous salt and Ferric salt

   c.Ammonium hydroxide and sodium hydroxide solution

   d. Calcium salt and cupric salt

   e.Ammonia gas and Nitrogen gas

3.Carry out the conversions: (1x5=5)

$$NH_3 \xrightarrow{A} N_2 \xrightarrow{B} NH_3$$

with $NH_3 \xrightarrow{C} NO$, then $HNO_3 \xleftarrow{E} NO_2 \xleftarrow{D} NO$

4.State proper observations :   (1x5)

   a. Ammonia gas is passed over heated cupric oxide

   b.Ammonia gas reacts with excess chlorine gas

   c. Aluminium nitride reacts with warm water

   d. Sodium hydroxide is reacted with calcium chloride

   e.Ammonia gas burns in oxygen

5.Explain :   (1x10)

a.During Haber's Process high pressure is required.

b. Ammonia gas is basic in nature.

c. Fountain experiment proves the solubility of ammonia in water.

d. All alkalis are bases but the reverse is not true.

e. On passing ammonia solution dropwise to copper sulphate solution a pale blue ppt

f.Liquid ammonia can be used as a coolingagent.

g.H_3PO_3 is adia basic acid.

h. Ammonia has a huge application in medical field.

i. During Haleer's process finely divided iron is used as a positive catalyst.

j. A dilute solution of hydrochloric acid is stronger than the concentrated solution of acetic acid.

6.Name the following :   (1x5=5)

a) A salt of ammonia used in dry cell.
b) An insoluble chloride which dissolves in hot water.
c) An acidic salt.
d) The reagent which can be used to identify Zn^{2+} ion.
e) A coloured gas that can be used as a bleaching agent.

7. Define the following :   (1x5)

a) Universal indicator.
b) Ph
c) Tetrabasic acid
d) Acidity of a base
e) Dessicator.

8. Give balanced equation :   (1x5)

a) Zinc hydroxide is treated with caustic potash solution.
b) Aluminium oxide is reacted with sodium hydroxide solution.
c) Lead oxide is dissolved in caustic potash solution.
d) Catalytic oxidation of ammonia .
e) Lead oxide is reduced by ammonia gas.

KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II
Class: X
Subject: Commercial Applications

FM 50

SECTION-A

Q1.

   a) Define the term sales.
   b) What is Accounting Principal?
   c) What is Receipt and Payment Account?
   d) Define the term Balance Sheet.
   e) What is a Fixed Deposit Account?

SECTION –B

Answer the following questions:

Q2.

   a) Discuss the various stages of Product Life Cycle.
   b) Distinguish between a product and service.
   c) Discuss the non traditional markets.

Q3.

   a) Distinguish between marketing and sales.
   b) Discuss the qualities of good salesman.
   c) Discuss the functions of Central Bank.

Q4.

A

   i)Discuss the functions of Commercial Bank.

   ii)Discuss the basic principles of Accounting.

                                   OR

B

i)Discuss the elements of marketing mix.

ii)Write short notes on skimming of pricing and penetration pricing.

KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II
Class: X
Subject: Commercial Studies

FM 50

SECTION-A

Answer the following the questions: (|5x2)

Q1

   a) What is pricing ?
   b) Define the term advertising ?
   c) What do you mean by consumer exploitation ?
   d) What is E- commerce?
   e) Define the term revenue expenditure?

SECTION-B

   Answer any four questions :   (4x10=4)

Q2.

   a) Discuss the function of capital market.
   b) Distinguish between capital expenditure and revenue expenditure.

Q3

   a) Write any five expenditure of creditors from the business.
   b) Distinguish between marketing and selling.

Q4.

   a) Discuss the objectives of marketing.
   b) Discuss the benefits of E-commerce over traditional commerce.

Q5.

   a) Discuss the importance of consumer awareness.
   b) Discuss the demerits of advertising.

Q6.

   a) Distinguish between a product and a service
   b) Discuss the salient features of Consumer Protection Act 1986.

(PART –I IS COMPULSORY AND ATTEMPT ANY TWO QUESTIONS FROM PART-II)

PART-I

(ATTEMPT ALL QUESTIONS)   (10X2=20)

Question – 1

   a) Give 2 examples of monopolist market in India.
   b) A list of goods is given for each of these state whether it is Fixed / Circulating capital
      i.   Office Furniture
      ii.   Raw Material
      iii. Fuel
      iv. Motorcar owned by a doctor

   c) Is a multiple –use power generating machine owned by a factory ,sunk capital or floating capital .Give 2 arguments in support of your view.

   d) Identify the market forms for the two sellers of goods A and B .given the following information .Give reasons

Output sold (units)	Price of A(Rs)	Price of B(Rs)
10	5	5
20	5	4
30	5	3

   e) The government imposes sales tax on a commodity. Indicate , through a diagram its impact on the supply curve

   f) What is the implication of a :

   i.   Vertical supply curve
   ii.   Supply curve that starts from y-axis and positively slope

g) Diagrammatically differentiate between :contraction of supply and Decrease in supply.

h) Identify the market forms:

   1) The RBI issues currency notes.
   2) Goods sold are homogeneous
   3) Computer soft ware market in India
   4) Market for soaps in India

i) State 2 difference between perfect competition market and monopoly market.

j) With two valid examples ,explain the concept of Product Differentiation .

PART-II

(ATTEMPT ANY TWO QUESTIONS)

Question :2

a) Find out any 5 different point elasticities of supply on a non-linear supply curve.
b) Differentiate between monopoly and monopolistic competition market on the following grounds:
   1) Nature of product
   2) Entry and Exit
   3) Advertisement Cost
   4) Demand Curve faced by each firm (draw separate diagram)   (7+8)

Question:3

a) With proper illustration explain the following elasticities of supply:
   1) $e_s = \infty$
   2) $e_s > 1$
   3) $e_s = 1$
b) Explain the following characteristics of capital:
   1) Capital depreciates
   2) Capital is productive
   3) Capital varies over time
   4) Capital is a passive factor   (7+8)

Question:4

a) How is market supply curve for 100 firms derived from an individual supply schedule?
b) "Entrepreneurs are/ must be good planners ,good organizers , innovates and coordinators"------ justify the validity of the statement.   (7+8)

Krishnagar Academy

Half-yearly Examination Phase 2

Class: X

Subject: English - I

FM: 50

Question 1:   15

Write a composition(in approximately 250-300 words)on any one of the following subjects:(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.)

(a) A dream is not what you experience in your sleep. A dream is that is that which does not let you sleep. State your views.

(b)You have been given a chance to spend a day in the past. Which age in the history of mankind would you choose and why? Describe how you spent this day.

(c)Suppose you were in Japan the day when it was hit by a tsunami. Describe how the tsunami changed the landscape and affected the human life. Have your views about human life changed after you and your family miraculously escaped from the disaster?

Question 2:

a.Your friend has fractured his leg and has been confined to bed for a month. Write a letter to him sympathizing with his plight and giving him details about the happenings in school.   10

Question 3:

a.You are the secretary of the Quiz Club. Write a notice for the school notice board, inviting students from classes 9 and 10 to take part in the Inter-House Quiz Competition.   3

b.Write an e-mail to a well known Quiz Master , requesting him to conduct the quiz.   3

Question 4 :

Answer sections(a),(b) and(c).

Do as directed :   (5+2+2)

1.   A.: India is the largest democracy in the world.
  Begin :No other

2.A. :He finished his work and put away his tools.
Begin :Having

3. A.:Search his pockets and you will find the wallet.
Begin :If you

4.A.:Do as I tell you,or you will regret it.
(Use : Unless)

5.A.: He jumped into the water as soon as the ship touches the shore.
 B.:No sooner

(b) Fill in the blank with a suitable word. (Do not write the sentences.)

1. The balcony juts out……………………………… the street.
2. The noise from the adjacent building prevented me ………………………………. Sleeping.
3.She is acquainted……………………….the latest technology.
4.People who are averse……………………..hardwork,do not succeeed in life.

(c)Fill in the blanks in the passage given below with the appropriate form of the verb given in the brackets.Do not rewrite the passage but write down the verbs in the correct order:

  The achievement of science in the 20th century has been great.Its significance can be ………….(1)(feel)in every sphere of life.From the small pins and needles to the huge iron sheets and joints,most of the things we……………………(2)(require)for our everyday use,………………………(3)(come)out of factories where scientific principles……………………..(4)(utilise)for practical ends.

Questions 4:

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

Doctor Faustus became dissatisfied with the limits of traditional forms of knowledge-logic medicine,law and religion.He,therefore,turned to magic.He felt magic would bring him not only wealth,but power and glory.He imagined that by means of magic he would make spirits bring him gold from India, pearls from oceans and delicious fruits from all the corners of the New world.

Once when Faustus was fantasizing about the power and pleasures that he would be able to enjoy by means of magic,two Angels-a Good Angel and a Bad Angel-appeared before him.The Good Angel advised him to give up the pursuit of magic,whereas the Bad Angel tempted him to study magic and become as powerful on Earth as God in the sky.Faustus ignored the advice of the Good Angel and learned the fundamentals of Black Magic from his two friends,Valdes and Cornelis.One night,Faustus decided to test the efficiency of magic and used incantations and spells to summon the devil,Mephistophilis.

When Mephistophilis appeared before him,Faustus was elated at the devil's compliance with his orders.But Faustus was greatly surprised when the devil told him that he had he had appeared before him not because of his magic spell.The devil said that the agents of the devil waste no time is rushing to a man who had decided to renounce God.As Faustus had done so,the devil had come to him.However,despite the Devil's warning about the horrors of hell,Faustus requested him to return to his master,Lucifer,with an offer of Faustus's soul in exchange for twenty-four years of service from Mephistophilis.Mephistophilis returned to Faustus with a word that Lucifer had accepted his offer.As a part of the agreement ,Faustus wrote a deal with his blood and offered his soul in exchange for twenty-four years of power,with Mephistophilis as servant.

Armed with his new powers and attended by Mephistophilis,Faustus explored the heavens and the earth from a chariot drawn by dragons.He performed many tricks and illusions and became a renowned magician and scholar.When the twenty-fourth year of Faustus's life of power and pleasures drew to a close,Faustus tried to forget himself in merry-making.One day an old man came to him and scolded him for his wicked and sinful ways.He urged Faustus to seek the mercy of God.Faustus felt overwhelmed by his sense of sin and rebuked himself for having signed the bond by which he pledged his soul to the devil.He recalled the wonders that he had performed and found that he had lost everything.For vain pleasures of twenty-four years,he had lost eternal joy and peace.Just when an hour was left for his damnation,Faustus appealed to the planets to stop moving so that he might get the time to repent and save his soul.Faustus even made an appeal to God for mercy.When the clock struck the hour of midnight,a roar of thunder was heard and the devil,appeared before him.Faustus was terrified to see the fierce look in the eyes of the devil,As Faustus begged God and the devil for mercy,the devil dragged him to hell,In the morning Faustus's friends found Faustus's body torn to pieces.

(a)(i)Given the meaning of the following words as used in the passage :   (1)
 1.pursuit
 2.spell
 (b)Answers the following questions as briefly as possible in your own words: (1+1+2)
(i)What did Doctor Faustus wish to achieve by learning magic?
(ii)What reason did Mephistophilis give for appearing before Faustus?
(iii)What was the deal which Doctor Faustus signed with Lucifer?
\
(c)Summarise (Within words) Doctor Faustus's alliance with the devil and its consequences.   (5)

KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II
Class: X
Subject: English Paper-II

FM 50

Answer all the questions.

1."It was bitterly cold, snow was falling and darkness ………………………………………….. when she left home, but what good were they?"

a) what was special about the particular evening in the story?   [3]

b) What kind of weather was there in the evening?   [3]

c) Why was the girl out in the cold? What prevented her from going back home?   [4]

2."I go in the rain and ,more than needs ,……………..

…….stones at me for my year's misdeeds."

a)Where is' I' going in the rain ?What does the rain symbolise in the context?(3)

b)Whose forehead bleeds ?How was he treated earlier?(3)

c)Give the meaning and significance of "A rope cuts both my wrists behind".(4)

3."He gave out a cry of frustration and anguish………And lifted the lad to his feet."

a)Who gave out a cry ? Why did he cry ?(3)

b)What were his dreams ? What happened to the dreams?(3)

c)State in your own words what the eight other runners did. What did their action reflect on their attitude?(4)

4. "she struck another-------it burnt clearly ……………….she could see right into the room."

a)Who is 'she' referred to in the extract ?Where was she ?what happened when she lit the match –stick?(3)

b)What did the girl see in the room when she lit the second match ?What happened to these things after a moment?(3)

c)Explain how the girls visions are symbolic of her undying hope.(4|)

5." Suddenly all the tension seemed to ebb out of my body…………..I qualified with almost a foot to spare."

a)Why was Owens tensed?What was "the truth " that hit owens ?What was the effect of this truth on him?(3)

b)Where did Owens go the night he qualified for the finals ?What did he do there?(3)

c)State briefly how Luz and Owens performed in the finals.(4)

KRISHNAGAR ACADEMY

Half Yearly Examinations Phase II
Class: X
Subject: Geography

FM 50

Question 1: On the outline map of India mark and name the following :   (1x10=10)
   a) Himalayas
   b) Eastern Ghats
   c) Chotanagpur Plateau
   d) Thar desert
   e) River Indus
   f) River Narmada
   g) Mt. k2
   h) Khasi hills
   i) River Bramhaputra
   j) Niligiri hills

Question-2
   a) Under what conditions do the tidal forests evolve. Name an important tree of this vegetation and mention its use.   (2)
   b) Give two reasons why a variety of vegetation ranging from tropical to alpine is found on the slopes of the Himalayas ?State one use of the chir pine.   (2)
   c) What is social forestry? State two reason to conserve forests.   (3)
   d) i)State the rainfall range which tropical monsoon deciduous forest grow.
      ii)Why this forest are economically important?
      iii)Name one most commercially important tree of this vegetation and mention its use.   (3)

Question-3
   a) Explain two reasons why irrigation is required in India.   (2)
   b) With reference to cannal irrigation answer the following: (1+2)
         i.Cannal irrigation is mainly concentrated in Punjab, Haryana,UP. Explain why?
         ii.State one merit and one demerit of this irrigation.
   c)i. What is watershed management?
    ii.   State two reason to harvest rainwater.   (2)
    d)i.State two reasons why tank irrigation is popular in peninsular states.
      ii.Mention one advantage and one disadvantage of tank irrigation   (3)

Questiuon-4
   a) State the uses of iron-ore .And name one centre of iron ore each from Chattisgarh and Jharkhand.   (3)
   b) i)Why manganese is used in iron and steel industry?
      ii)Why copper is used in electrical industry?   (2)
   c) State the use of manganese other than using for iron and steel.   (2)
   d) Name of centre of manganese and copper for the following satates---- Madhya Pradesh,Andhra Pradesh and Maharashtra.   (3)

Question-5
   a) Give reason: (2)
      i)Mangalore and Chennai lie on the same parallel ,yet Mangalore re3ceives 200cm rainfall and Chennai only 70cm.
      ii)Cherrapunji receives 1250cm of rainfall and shilong only 200cm
   b) Explain two factors which cause variation in temperature over the land mass of India   (2)
   c) Give reasons :   (3)
      i.Coromandel coast receives very less rainfall in june to September.
      ii. Thar desert is an arid region.
      iii. Chennai's rainy season extends from June to January.
   d)i. Name the source of winter rain in Punjab.
    ii. How does the state benefit from it?   (3)

KRISHNAGAR ACADEMY
Half Yearly Examinations Phase II
Class: X
Subject: Physics

FM: 50

THIS QUESTION PAPER IS DIVIDED INTO TWO SECTION SECTION-1 COMPULSORY SECTION -2 IS ALSO COMPULSORY. INTENDED MARKS FOR QUESTIONS OR PARTS OF QUESTIONS ARE GIVEN IN BRACKETS ()

SECTION-I
(Attempt all questions)
(30 marks)

Q1. a)

   i.   Does an object having movement always has energy?

   ii.   Does an object having energy always has energy ?   (2)

b)   State the use of single fixed pully.   (2)

c)   For the same kinetic energy of a body what should be the change in its velocity if its mass becomes four times?   (2)
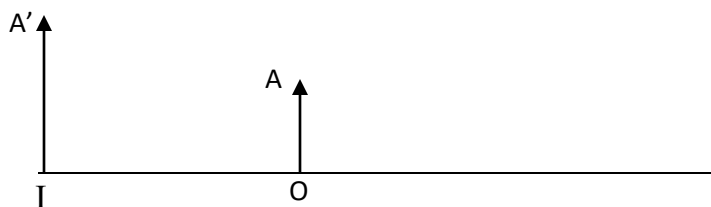
d)   What do you mean by ----

   i.   Centripetal force ?

   ii.   Centrifugal force ?

Is centripetal force, the force of reaction of centrifugal force?   (2)

e)   Can the movement of force be zero even if the force is not zero? If so when?   (2)

Q2.

  a)   Complete the ray diagram in the case given below to show the foundation of image. Find the position ,nature and focal length of the lens :   (2)

  b)   (Red +blue + yellow) light is incident on a glass block and on a prism. Show the diagrams by drawing the refracted and emergent rays.   (2)

  c)   Name two sources each of ultraviolet radiation and infrared radiation.   (2)

  d)   Why do we prefer magnifying glass of smaller focal length ?   (2)

  e)   Calculate the velocity of light in glass of refracted index 1.5 velocity of light in vacuum is $3x \ 10^8 ms^{-1}$.   (2)
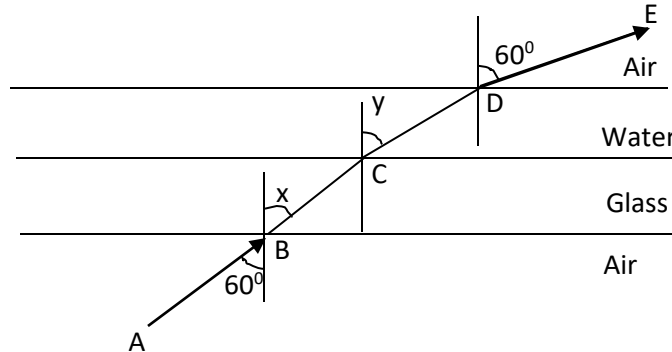
Q3.

  a)   Why are the stringed instruments provided with a sound box ?   (2)

  b)   Draw waves of different pitch (low and high).   (2)

  c)   Name the waves which are used in :

     i.   Sound navigation and ranging to find the depth of sea.

     ii.   Radio detection and ranging to detect the presence of an enemy's aeroplane in its path.   (2)

  d)   John and Maria were playing on their identical guitars whose strings were adusted to give notes of the same pitch. Will the quality of the two notes be the same ? if not why?(2)

  e)   Why is there a time delay between observing a flash and hearing a thunder?   (2)

SECTION –II
(Attempt all questions)
(20 marks)

Q4.

a) A water pump can raise 20 kg of water through a height of 10m in 10s. What is the total work done by the pump? What is its power? (take $g=10ms^{-1}$). (3)

b) A beam of white light incident normally on the surface AB of an equilateral prism ABC
   - i. Draw a neat diagram till the light emerges out of the prism. Mark the angles.
   - ii. While drawing the diagram what assumptions have you made.
   - iii. Give the name the of the phenomena exhibited by light. (3)

c)

Define refractive index. Figure shows glass slab of uniform thickness lying horizontally. Above it is a layer of water, A ray of light AB is incident on the lower surface of glass which is refracted successively at B, C and D. The points where it crosses the interfaces. Calculate

   - i. $< x$
   - ii. $< y$ and
   - iii. Refractive index for light passing from the water to glass.

Refractive indices of glass and water are 3/2 and 4/3 respectively. (4)

Q5. a)

   - i. How air carry sound from a vibrating tuning fork to the ear of a listener?
   - ii. If the tuning fork's frequency is 480 per sound and the velocity of sound in the air is 340 m/s. Calculate the distance travelled by wave in its time period. (3)

b)

   - i. State the conditions necessary for an echo to be heard distinctly.
   - ii. A train approaches a tunnel surrounded by a cliff. The driver sends a short whistle when 1.665 km away. The echo reaches him 9s later. Find the speed of the train if speed of the sound is 340 ms^{-1}. (4)

c)Dew a graph between displacement from mean positio9n and time for a body executed free librations in

   - i. Vacuum
   - ii. In a medium (3)

১)নিম্নলিখিত বিষয়গুলির মধ্যে থেকে একটি বিষয় বেছে নিয়ে একটি রচনা লেখো। (কমবেশি ২৫০টি শব্দের মধ্যে)   ১৫

ক.আন্তর্জাতিক মাতৃভাষা দিবস

খ. কল্পনা কর কোনো পাহাড়ি জায়গায় বেড়াতে গিয়ে ভয়াবহ ধস নামায় আটকে গিয়েছিলে, পরে কিভাবে ফিরলে - এই ঘটনাটির উপর একটি রচনা লেখো।

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

লর্ড কার্জন তখন বাংলাদেশ কে দুভাগ করেছেন। বঙ্গভঙ্গ আন্দোলনে সারাদেশ আলোড়িত। এই আন্দোলনে স্কুলের ছেলেরা পর্যন্ত যোগ দিয়েছে। বঙ্কিমচন্দ্রের 'বন্দেমাতরম ' গান তখন জাগিয়ে তুলেছে দেশকে।বঙ্কিমচন্দ্র দেশের লোক কে বুঝিয়েছেন দেশই আমাদের মা, তিনিই দুর্গা। বৃটিশ সরকার দেশের লোকের আন্দোলনে ক্ষেপে উঠেছে। কড়া নোটিশ পাঠানো হয়েছে, স্কুল কলেজে যাতে ছাত্ররা এই আন্দোলনে যোগ না দেয়।যারা দেবে তাদের কড়া শাস্তি দেওয়া হয় যেন।খোকনের বয়স তখন দশ বছর। মেলার থেকে খোকন একটা মাটির দুর্গা প্রতিমা কিনেছিল।খোকন তার মাকে বলল দুর্গাই দেশমাতা।দুর্গা প্রতিমা অর্থাৎ দেশমাতাকে সে পূজা করবে।

ক. বঙ্গভঙ্গ আন্দোলন বলতে কী বোঝ?

খ. বঙ্কিমচন্দ্রের বন্দেমাতরম কে কীধরনের গান বলা যায়?

গ.বঙ্কিমচন্দ্রের এই গান তাঁর প্রচেষ্টা কে কতদূর সফল করতে সক্ষম হয়েছিল?

ঘ.ছাত্রদের প্রতি সরকার কী নির্দেশ জারি করেছিল?

ঙ. খোকনের বয়স অনুযায়ী তার তখন কোন ক্লাসের ছাত্র হওয়ার কথা?   ২×৫=১০

৩) কোনো ঐতিহাসিক জায়গায় বেড়াতে গিয়ে তোমার মনে হয়েছে যে ইতিহাস যেন জীবন্ত হয়ে তোমার সামনে দাঁড়িয়েছে। এমন সুন্দর অভিজ্ঞতার কথা চিঠির মাধ্যমে তোমার কোনো বন্ধু কে জানাও।

৪) এককথায় প্রকাশ করো।   ৭×১=৭

ক. পা হইতে মাথা পর্যন্ত।

খ.ঈশ্বরে যার বিশ্বাস নেই।

গ. প্রথমে জন্মেছে যে।

ঘ. মধু পান করে যে।

ঙ. যা সহজে ভেঙে যায়।

চ. যে উপকার স্বীকার করে না।

ছ. নিজের বর্ণ লুকায় যে।

বিভাগ 'খ'

৫)" শান বাঁধানো ফুটপাতে

    পাথরে পা ডুবিয়ে কাঠখোট্টা গাছ

   কচি কচি পাতায় পাঁজর ফাটিয়ে

   হাসছে।"

ক. কাঠখোট্টা গাছ কীসের প্রতীক?

খ. প্রশ্নে বলা কথাগুলির মধ্যে দিয়ে কবি কী বোঝাতে চেয়েছেন?   ২+৩=৫

৬) " ঠিক সেই সময়

   চোখের মাথা খেয়ে গায়ে ওঠে, এসে বসল

আ মরণ! পোড়ারমুখ লক্ষ্মীছাড়া প্রজাপতি। "

ক. কার গায়ে প্রজাপতি এসে বসল?

খ. ' ঠিক সেই সময় ' বলতে কোন সময়?   ২+৩=৫

Question 1.

नीचे दिए गए विषयों में से किसी एक विषय पर 200 शब्दों में एक प्रस्ताव लिखिए। (15)

1. गाँव व सुधार   2. भयंकर दुर्घटना

Question 2.

नीचे लिखे विषयों में से किसी एक विषय पर पत्र लिखिए

(i) पुस्तक मँगवाने हेतु प्रकाशक को पत्र (7)

OR

(ii) आप अपने मित्रों के साथ किसी पर्वतीय प्रदेश की यात्रा के लिए गए थे। वहाँ के प्राकृतिक सौन्दर्य का वर्णन करते हुए अपनी माताजी को पत्र लिखिए।

Question 3.

निम्नलिखित गद्यांश को पढ़कर उसके नीचे लिखे प्रश्नों के उत्तर लिखिए।

एक दार्शनिक अपने एक शिष्य के साथ एक छायादार वृक्ष के नीचे बैठा ज्ञान-चर्चा कर रहा था। शिष्य शंकाएं उपस्थित करता था और गुरु उनका समाधान। सहसा शिष्य ने कहा, "गुरुदेव! इस वृक्ष के आकार में मुझे एक भयंकर विषमता दिखाई दे रही है। कृपया प्रश्न करने की आज्ञा दीजिए।" गुरु की अनुमति पाकर शिष्य ने कहा "देखिए, इसका तना कितना मोटा है और शाखाएं उत्तरोत्तर बारीक होती गई है। क्या यह तने की स्वार्थवृत्ति का परिचायक नहीं है?"

गुरु ने क्षण भर के मौन के पश्चात मुस्कुराते हुए उत्तर दिया, "वत्स तुम्हारी शंका सर्वथा निराधार नहीं," परन्तु याद रखो, तना सारे वृक्ष के पोषक तत्व का कोश तथा वितरक है। वह सब शाखाओं को यथा आवश्यकता भोजन देता है, या यूँ कहें कि प्रत्येक शाखा अपने आकारानुसार उससे भोजन ले लेती है। देखो, जो शाखा जितनी मोटी है वह उतना ही अधिक पोषक तत्व लेती है और वह उतनी ही भूमि के पास है अर्थात् नीची है। ऊंचा वही उठता है जो कम लेता है।"

समाज मुक तना है और सारे सदस्य उसकी शाखाएं, महान् वही बनता है जो समाज से कम लेता है। समाज से लेना अर्थात् अपने अधिकारों की प्राप्ति का प्रयास करना, अधिकार तो कर्तव्य का फूल होता है। अतः कर्तव्य किये बिना अधिकार भोग की इच्छा घोर अन्याय है क्योंकि इस प्रकार व्यक्ति किसी और के कर्तव्य के फल को भोगने का इच्छुक होता है। इस अन्याय को दूर किये बिना कोई भी समाज उन्नति के पथ पर अग्रसर नहीं हो सकता। अतः प्रत्येक व्यक्ति का यह पुनीत कर्तव्य होना चाहिए कि वह इस अन्याय का डटकर विरोध करे ताकि समाज निर्बाध रूप से सतत उन्नति करता रहे।

प्रश्न:

(i) शिष्य किसके पास बैठा था? वे क्या कर रहे थे?   (2)

(ii) शिष्य को वृक्ष के आकार में विषमता क्या दिखाई दी?   (2)

(iii) गुरु ने तने और वृक्ष में क्या सम्बंध बताया है? इससे गुरु ने क्या समझाने का प्रयास किया है? और कैसे   (2)

(iv) समाज और तने में क्या समानता है?   (2)

(v) पुनीत कर्तव्य किसे कहा गया है और क्यों? विस्तार पूर्वक बताओ।   (2)

Question 4.

(i) निम्नलिखित शब्दों में से किन्ही दो शब्दों के विलोम लिखिए (1)
भित्र, बुद्धिमत्ता, याचक

(ii) निम्नलिखित शब्दों के दो-दो पर्यायवाची शब्द लिखो: (1)
सूरज, यश, रक्त   (कोई दो)

(iii) निम्न शब्दों के विशेषण लिखिए: (1)
अंश, विभाजन

(iv) निम्न शब्दों में से किन्ही दो शब्दों को शुद्ध करके लिखो (1)
लागान, त्रितीय, प्रथक्

(v) निम्नलिखित मुहावरों में से किसी एक का अर्थ लिखो व वाक्य बनाओ
ईद का चाँद होना, आसमान सिर पर उठाना, (1)

(vi) निर्देशानुसार वाक्य परिवर्तन कीजिए:-

(a) रानी इसलिए देहरादून नही आई क्योंकि वह बीमार है। (1)
('कारण' शब्द का प्रयोग करके वाक्य पुनः लिखो)

(b) माली के साथ घर के सभी नौकर और कुछ मजदूर भी (1)
काम करते है। (लिंग बदलकर वाक्य पुनः लिखो)

(c) आप परिवार के साथ हमारे घर आएँगे। (रेखांकित (1)
शब्दों के स्थान पर एक शब्द का
प्रयोग करे)

साहित्य - सागर
(गद्य-भाग)

Question 5.

A. "अब आप पूरे सन्त हो गए। अब भेड़ो की सभा में चलेंगे,
मगर तीन बातों का ख्याल रखना ·····"

(i) वक्ता एवं श्रोता कौन है उनका संक्षिप्त परिचय (2)
दीजिए ?

(ii) वह कौन सी तीन बातें थी जिनका ख्याल रखने के लिए कहा गया
(3)

(पद्य भाग)

B.   पानी बाढ़ै नाव में, घर में बाढ़ै दाम।
      दोऊ हाथ उलीचिये, यही सयानो काम॥
      यही सयानो काम, शाम को सुमिरन कीजै,
      पर स्वारथ के काज शीश आगे धर दीजै॥

(i) कवि ने दोनो हाथों से कब, क्या उलीचने की बात
    की है और क्यों?   (2)

(ii) " पर स्वारथ के काज शीश आगे धर दीजै" पंक्ति का
     अर्थ स्पष्ट कीजिए।   (3)