NEW HORIZON GURUKUL
Pre-Board Examination 2 (2025-26)

Class: X

Subject: Science (086)

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10338

Max Marks: 80

Time: 3 hours

General Instructions

i) This question paper consists of 39 questions in 3 sections. Section A is Biology Section B is Chemistry and Section C is Physics.

ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

SECTION A

1) The breakdown of glucose has taken the following pathway : 1

Glucose (a) ⟶ Pyruvate + Energy (b) ⟶ Lactic acid + Energy

The sites 'a' and 'b' respectively are :

(A) Mitochondria and Oxygen deficient muscle cells

(B) Cytoplasm and Oxygen rich muscle cells

(C) Cytoplasm and Yeast cells

(D) Cytoplasm and Oxygen deficient muscle cells

2) The correct/true statement(s) for a bisexual flower is/are : 1

(i) They possess both stamen and pistil.

(ii) They possess either stamen or pistil.

(iii) They exhibit either self-pollination or cross-pollination.

(iv) They cannot produce fruits on their own.

(A) (i) only (B) (iv) only (C) (i) and (iii) (D) (i) and (iv)

3) If pea plants with round and green seeds (RRyy) are crossed with pea plants having wrinkled and yellow seeds (rrYY), the seeds developed by the plants of F1 generation will be : 1

(A) 50% round and green (B) 75% wrinkled and green

(C) 100% round and yellow (D) 75% wrinkled and yellow

4) The percentage of solar energy which is not converted into food energy by the leaves of green plants in a terrestrial ecosystem is about : 1

(A) 1 % (B) 90% (C) 10% (D) 99%

5) Which of the following groups do not constitute a food chain? 1

(i) Wolf, rabbit, grass, lion

(ii) Plankton, man, grasshopper, fish

(iii) Hawk, grass, snake, grasshopper, frog

(iv) Grass, snake, wolf, tiger

(A) (i) and (iv) (B) (ii) and (iii) (C) ((i) and (iii) (D) (ii) and (iv)

6) One-cell thick blood vessels are known as : 1

(A) Alveoli (B) Capillaries (C) Veins (D) arteries

7) Identify from the following a group containing all non-biodegradable substances. 1

(A) Leather, Glass, Plastic (B) Cotton, Wood, Nylon

(C) DDT, Polyester, Glass (D) Leather, Silk, Wool

The following two questions consists of two statements – Assertion(A) and Reason (R) Answer these questions by selecting the appropriate option given below:

(A) Both A and R are true, and R is the correct explanation of A.
(B) Both A and R are true, and R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true

8) **Assertion (A):** A human child bears all the basic features of human beings. 1

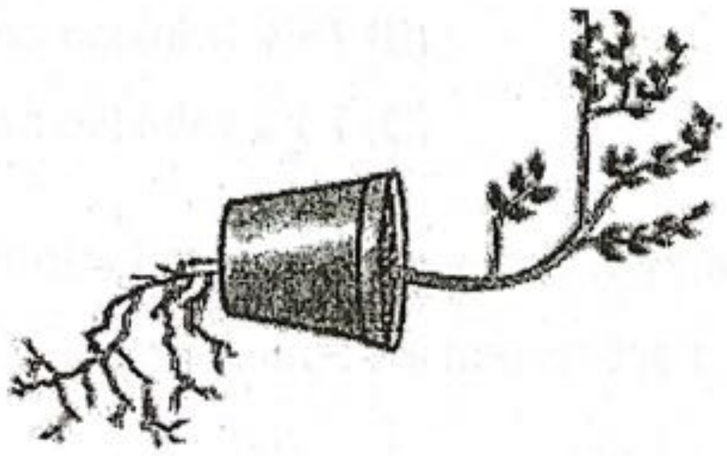
Reason (R): It looks exactly like its parents, showing very little variations. C

9) **Assertion (A):** In our actions of writing or talking, our nervous system communicates with the muscles. 1

Reason (R): Cranial nerves and spinal nerves form the peripheral nervous system. a

10) Study the given diagram and write the type of movement exhibited by : 2

(a) Root and (b) Shoot, mentioning the stimulus in each case.



11) Differentiate between gamete and zygote. State their significance in sexual reproduction 2

12) (a) Write one function each of the following, in a seed : 2

(i) Seed coat (ii) Cotyledon (iii) Radicle (iv) Plumule

OR

(a) Write the main steps to culture yeast in the laboratory.

13) Plants have neither a nervous system nor muscles, even then they respond to stimuli. 3
For example, the leaves of chhui-mui (touch-me-not) plant when touched begin to fold up and droop.

(a) How is the information communicated in "touch-me-not" plants?
(b) What enables the plant cells to bring out the observable response?
(c) Differentiate the movement mentioned above from the movement of tendrils in a pea plant.

14) (a) Write the essential function performed by ozone at the higher levels of the 3
atmosphere.
(b) How is it formed in the upper atmosphere?
(c) Write the name of the group of chemicals mainly responsible for the depletion of ozone layer.

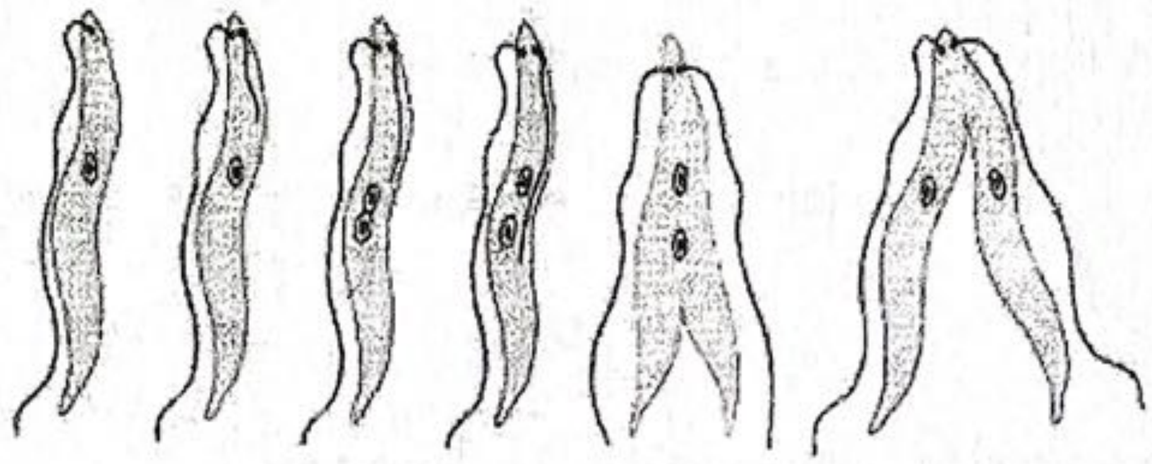
15) The maintenance functions of all living organisms must go on even when they are not 4
doing anything particular. Even when we are just sitting in a class or even asleep, this maintenance job has to go on. These maintenance processes require energy to prevent damage and break-down of cells and tissues, which is obtained by the individual organism from the food prepared by the autotrophs, called producers.

(a) Name and define the process by which green plants prepare food.
(b) Write chemical equation involved in the above process.
(c) State in proper sequence the events that occur in synthesis of food by desert plants.

OR

(c) Explain giving reasons what happens to the rate at which the green plants will prepare food
(i) during cloudy weather
(ii) when stomata get blocked due to dust.

16) (i) Name the type of asexual mode of reproduction shown in the given figure. 5



(a) (b) (c) (d) (e) (f)

(ii) Identify the unicellular organism in the diagram.

(iii) List any two advantages of asexual reproduction over sexual reproduction.

(iv) Name and explain any one mode of asexual reproduction observed in Hydra.

OR

(i) What happens to the egg and the uterine lining if the fertilization does not take place? Explain .

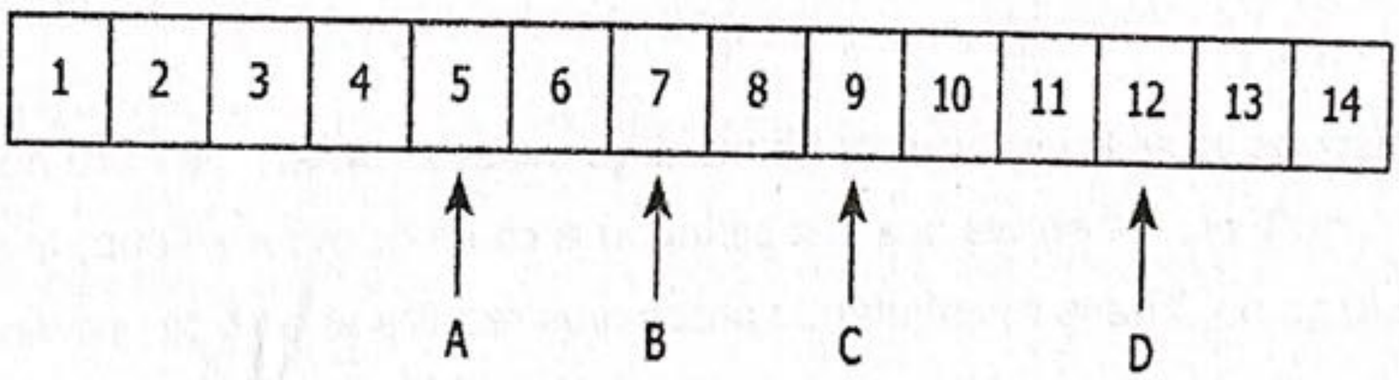
(ii) Where are the testis located in human males & why?

(iii) Mention 2 functions of testis.

(iv) Name the surgical procedure in males & females to prevent pregnancy

SECTION B

17) The image shows the pH values of four solutions on a pH scale. 1



The nature of the salt formed when solution of A combine with solution D is

(A) Acidic (B) Basic (C) Neutral (D) Amphoteric

18) As the molecular mass increases in a homologous series, how do the melting point and solubility of the compounds generally change? 1

(A) Melting point decreases, solubility increases

(B) Melting point increases, solubility decreases

(C) Melting point remains the same, solubility increases

(D) Melting point increases, solubility remains the same.

19) A metal, 'X', on treatment with sodium hydroxide liberates a gas 'G'. It also liberates the same gas, 'G', on treatment with dilute sulphuric acid. Based on the above information, 'X' and 'G' respectively are 1

(A) Copper and Sulphur dioxide

(B) Zinc and Sulphur dioxide

(C) Zinc and Hydrogen

(D) Copper and Hydrogen

20) Select the option that correctly matches column A with column B 1

Name of the Oxide (A)	Example (B)
(a) Basic oxide	(i) ZnO
(b) Acidic oxide	(ii) Na_2O
(c) Neutral oxide	(iii) CO_2
(d) Amphoteric oxide	(iv) CO

(A) (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

(B) (a)-(iii), (b)-(ii), (c)-(i), (d)-(iv)

(C) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)

(D) (a)-(i), (b)-(iv), (c)-(iii), (d)-(ii)

21) The correct balanced equation for the reaction below is: 1

__ $CaCl_2$ + __ $Na_3PO_4 \rightarrow$ __ $Ca_3(PO_4)_2$ + __ NaCl is

(A) 2, 2, 2, 1 (B) 1, 1, 1, 1 (C) 3, 2, 1, 6 (D) 3, 2,1, 3

22) Farmers neutralize the effect of acidity on the soil by adding 1

(A) Slaked lime (B) Gypsum (C) Caustic soda (D) Baking soda

23) Which of the following pairs of compounds undergo double displacement reactions: 1

(i) Silver nitrate and sodium chloride

(ii) Sodium sulphate and barium chloride

(iii) Sodium hydroxide and hydrochloric acid

(iv) Magnesium chloride and potassium hydroxide

(A) (i) and (ii)

(B) (i), (ii), (iv)

(C) (i), (ii), (iii)

(D) (i), (ii), (iii), (iv)

24) **Assertion (A):** Carbon is the only element that can form a large number of compounds. 1

Reason (R): Carbon is tetravalent and shows the property of catenation.

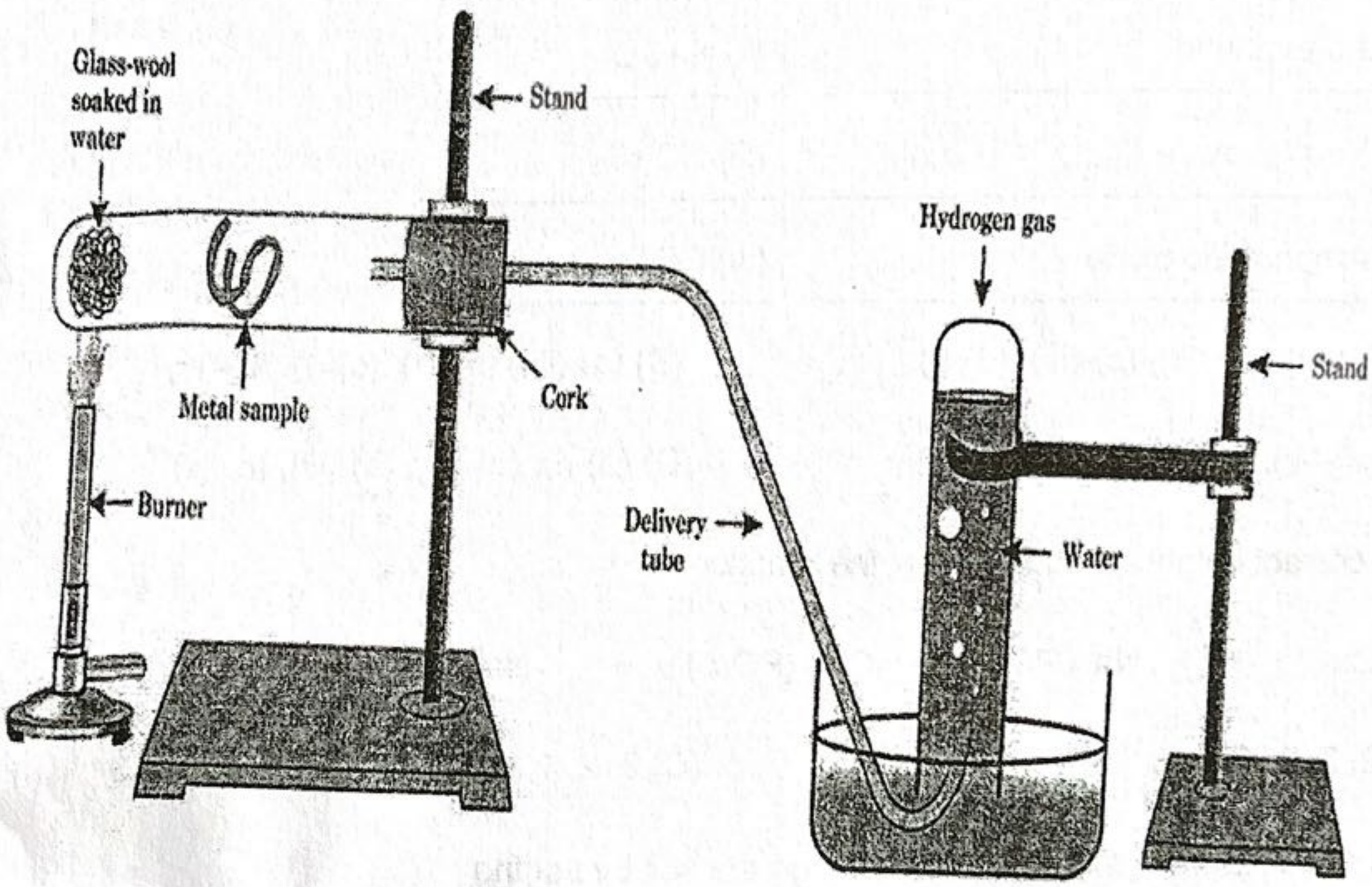
(A) Both A and R are true, and R is the correct explanation of A.

(B) Both A and R are true, and R is not the correct explanation of A.

(C) A is true, but R is false.

(D) A is false, but R is true

25) Study the experimental setup given in the figure and answer the following questions: 2



(i) Identify the metals from the following, which can be used as a "metal sample" in the given set-up:

Aluminium, Copper, Iron, Lead, Silver

(ii) Write balanced chemical equations for the reaction in each case.

26) (a) Show the formation of Aluminium Nitride (AIN) by the transfer of electrons. [At. No of Al = 13; At. no. of N = 7] 3

(b) "Aluminium oxide is an amphoteric oxide." Justify this statement, giving a chemical equation for the reactions involved.

27) Identify the type of reaction taking place in each of the following cases and write the balanced chemical equation for each reaction. 3

(a) Zinc reacts with silver nitrate to produce zinc nitrate and silver.

(b) Potassium iodide reacts with lead nitrate to produce potassium nitrate and lead iodide.

(c) Lead nitrate on heating produces lead oxide, nitrogen dioxide, and oxygen.

28) Common salt is an essential chemical compound in our daily lives. Its chemical name is sodium chloride, and it is used as a raw material in the manufacture of caustic soda, washing soda, baking soda, etc. It is also used in the preservation of pickles, butter, and meat, among other things. 4

(a) State briefly the methods of preparation of (i) caustic soda and (ii) baking soda from common salt. Write the balanced chemical equations for the reactions involved."

(b) Giving reason, state the advantage of using baking powder over baking soda for the preparation of bread or cakes.

OR

(b) State the nature (acidic/basic/neutral) of sodium chloride. Give a reason for the justification of your answer.

29) (a) Write the molecular formula of ethyne and draw its electron-dot structure. 5

(b) Write the chemical equations for the reactions of ethanol with:

(i) sodium metal

(ii) ethanoic acid in the presence of an acid catalyst.

(c) Write the chemical equation for the oxidation of ethanol.

(d) Name the products formed in the reactions given in parts (b) and (c).

OR

(a) A carbon compound 'A' is widely used as a preservative in pickles and has a molecular formula $C_2H_4O_2$. This compound reacts with ethanol to form a sweet-smelling compound 'B'. Identify the compound 'A' and write its structure.

(b) How can 'A' be obtained from ethanol? Write a balanced chemical equation.

(c) Name the gas produced when compound 'A' reacts with washing soda. Write the balanced chemical equation.

(d) Write the balanced chemical equation of the saponification reaction.

SECTION C

30) Absolute refractive index of water and glass is $\frac{4}{3}$ and $\frac{3}{2}$ respectively. If the speed of light in glass is 2×10^8 m/s, the speed of light in water is : 1

(A) $\frac{9}{4} \times 10^8$ m/s (B) $\frac{7}{3} \times 10^8$ m/s (C) $\frac{16}{9} \times 10^8$ m/s (D) $\frac{9}{8} \times 10^8$ m/s

31) When a beam of white light passes through a region of very fine dust particles, the colour of light that scatters the most in that region is : 1

(A) red (B) orange (C) blue (D) yellow

32) **Assertion (A) :** Magnetic field lines around a bar magnet never intersect each other. 1

Reason (R) : Magnetic field produced by a bar magnet is a quantity that has both magnitude and direction.

(A) Both A and R are true and R is the correct explanation of A.

(B) Both A and R are true, and R is not the correct explanation of A.

(C) A is true but R is false.

(D) A is false but R is true.

33) A student has difficulty in reading his textbooks but can read the blackboard clearly while sitting in the last row. Name the defect of vision the student is suffering from. List two reasons due to which this defect arises. Write the nature of the lenses required to correct this defect 2

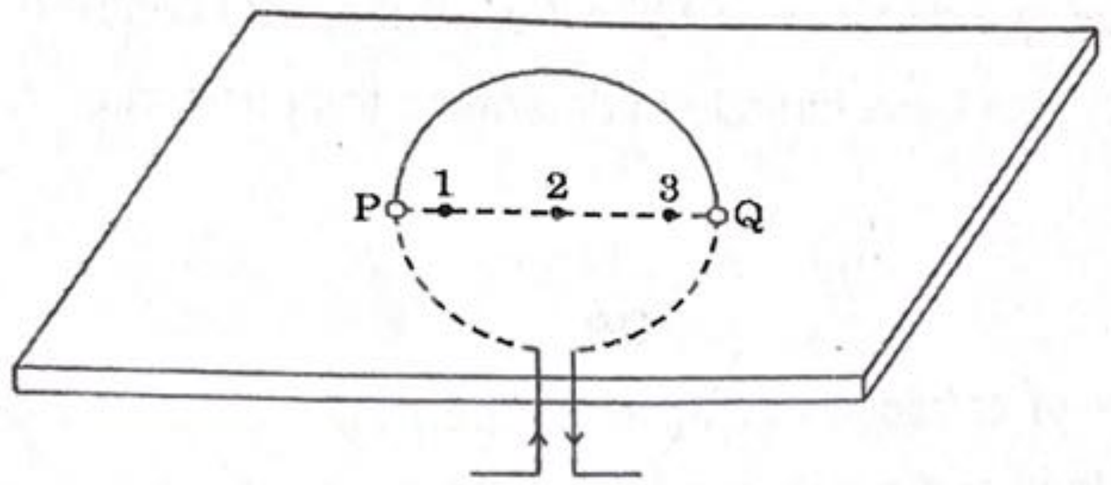
34) Draw a ray diagram to show the path of a ray of light falling obliquely on one of the refracting faces of a triangular glass prism and mark the angle of deviation on it. 2

35) (a) A wire of resistance R is cut into three equal parts. If these three parts are then joined in parallel, calculate the total resistance of the combination so formed. 3

(b) Define electric power. When do we say that the power consumed in an electric circuit is 1 watt?

36) Consider a rectangular cardboard having two holes P and Q through which a current carrying circular loop has been inserted as shown in the diagram. 3

(a) Make this diagram on your answer sheet and draw three magnetic field lines, one each passing through the points 1 (near P), 2 (at the centre of the loop) and 3 (near Q).



(b) List two factors on which the intensity of the magnetic field produced at the centre of the loop depends.

(c) Name the rule you will apply to determine the direction of magnetic field produced dué to a current carrying straight conductor.

37) (a) Write the relationship between resistivity and resistance of a cylindrical conductor of length l and area of cross-section A. Hence derive the SI unit of resistivity. 3

(b) Why are alloys used in electrical heating devices?

38) In our homes, we receive the supply of electric power through a main supply also called mains, either supported through overhead electric poles or by underground cables. In our country the potential difference between the two wires (live wire and neutral wire) of this supply is 220 V. 4

(a) Write the colors of the insulation covers of the line wires through which supply comes to our homes.

(b) What should be the current rating of the electric circuit (220 V) so that an electric iron of 1 kW power rating can be operated?

(c) What is the function of the earth wire? State the advantage of the earth wire in domestic electric appliances such as electric iron.

OR

(c) List two precautions to be taken to avoid electrical accidents. State how these precautions prevent possible damage to the circuit/appliance.

39) (a) "In refraction of light through a rectangular glass slab, the emergent ray is always parallel to the direction of the incident ray." Why? Explain with the help of a ray diagram. What happens when a ray of light falls normally on one of the faces of a rectangular glass prism? Draw diagram. 5

(b) An object is placed at a distance of 30 cm from the optical centre of a concave lens of focal length 20 cm. Use Lens formula to determine the position of the image formed in this case.

OR

(a) State Snell's law of refraction of light. Differentiate between the virtual images formed by a convex lens and a concave lens on the basis of :

(i) object distance

(ii) magnification.

(b) A convex mirror used for rear-view on an automobile has a focal length of 3·0 m.If a bus is located at 6·0 m from this mirror, use mirror formula to find the position of the image of the bus as seen in the mirror.

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