(35)

Samriddhi Singh X-C

Cheating Replaces Learning

PREBOARD-I

BVP/X/Science/2024-25

M.M: 80
Time: 3 hrs.

GENERAL INSTRUCTIONS

(i) All the questions are compulsory.
(ii) This question paper consists of 39 questions in 5 sections.
(iii) Section A consists of 20 objective type questions carrying 1 mark each.
(iv) Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
(v) Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
(vi) Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
(vii) Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

SECTION-A

Q1. Which of the following represents the formula of carboxylic acid?

(a) C_2H_4 (b) C_4H_{10} (c) CH_4O (d) $C_2H_4O_2$

Q 2. An element with atomic number_____ will form a basic oxide.

(a) 7(2,5) (b) 17(2,8,7) (c) 14(2,8,4) (d) 11(2,8,1)

Q 3 Identify the substance oxidised in the given reaction:

$MnO_2(s) + Al(s) \longrightarrow Mn(l) + Al_2O_3(s) + Heat$

(a) Al (b) MnO_2 (c) Mn (d) both (b) and (c)

Q 4. In the soap micelles:

(a) The ionic end of soap is on the surface of the cluster while the carbon chain is in the interior of the cluster.
(b) The ionic end of soap is in the interior of the cluster and the carbon chain is out of the cluster.
(c) Both ionic end and carbon chain are in the interior of the cluster.
(d) Both ionic end and carbon chain are on the exterior of the cluster.

Q 5. Which option gives the process of extraction of mercury from its ore?

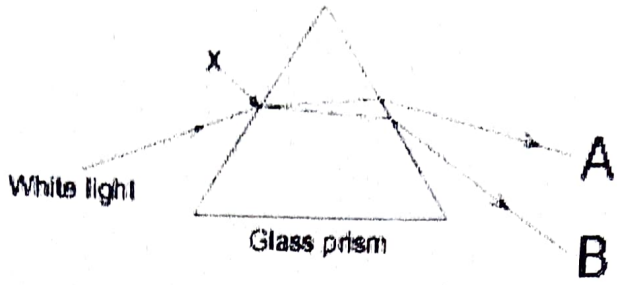
(a) Cooling Cinnabar in the presence of excess air
(b) Cooling Cinnabar to convert into HgO and then heating it
(c) Heating Cinnabar in air to convert into HgO and then heating it again
(d) Heating Cinnabar in limited supply of air and then adding small amount of water.

Q 6. Substance W does not conduct electricity under any condition, X conducts electricity only in aqueous solution, Y conducts electricity in both the molten and solid states while Z conducts electricity in both the molten state and in aqueous solution.

Substances W, X, Y and Z could be respectively

(a) HCl, S, NaCl and Pb
(b) Pb, HCl, NaCl and S
(c) S, HCl, Pb and NaCl

Q 14. Choose the correct option for the colour of rays for A and B.



S.No.	Colour of Ray A	Colour of Ray B
(a)	Blue	Red
(b)	Green	Yellow
(c)	Red	Violet
(d)	Violet	Indigo

Q 15. An electric motor rated 1100W is connected to 220V mains. The electric energy consumed, if the Electric motor is used for 5 hours daily for 6days is

(a) 33kwh (b) 545khr (c) 55kwh (d) 220kwh

Q 16. Which of the following features relates to biodegradable substances?

(a) Broken down by biological processes (b) Remain inert

(c) Persist in environment for long time (d) May harm the ecosystem

Q. no 17 to 20 are Assertion - Reasoning based questions. These consist of two statements – Assertion (A) and Reason (R). Answer these questions 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

Q 17. **Assertion**: Sodium, calcium and magnesium are obtained by the electrolysis of their molten oxides.
Reason: These metals have more affinity for oxygen than carbon.

Q18. **Assertion**: Height in pea plants is controlled by efficiency of enzymes and is thus genetically controlled.
Reason: Cellular DNA is the information source for making protein in the cell.

Q19. **Assertion**: The rainbow is a natural spectrum of sunlight in the sky.
Reason: Rainbow is formed in the sky when the sun is overhead and water droplets are also present in air.

Q20. **Assertion**: Anaerobic respiration in muscle tissue produces lactic acid as the end product.
Reason: The build-up of lactic acid in our muscles during heavy exercise cause cramps.

SECTION-B

Q21. Name a test which can distinguish between butter and cooking oil. Write the chemical equation

Q 7. In one of the industrial processes used for the manufacture of sodium hydroxide, a gas X is formed as-by- product. The gas X reacts with lime water to give a compound Y which is used as bleaching agent in chemical industry. The compound X and Y could be:

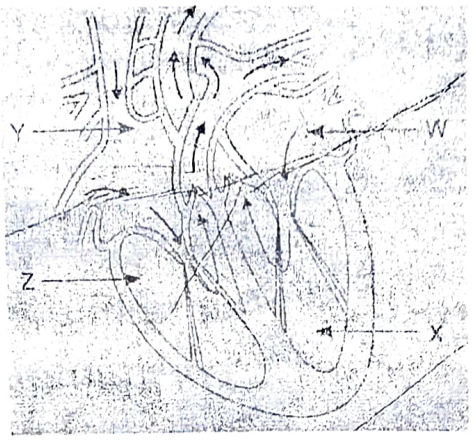
(a) X is chlorine, Y is baking soda

(b) X is chlorine, Y is bleaching powder

(c) X is hydrogen, Y is potash

(d) X is hydrogen, Y is plaster of paris.

Q 8. Which is the first chamber to receive oxygenated blood from the lungs in the figure given below?



(a) W (b) X (c) Y (d) Z

Q 9. The fermentation of glucose by yeast normally yields

(a) Alcohol, CO_2 and 36 ATP (b) CO_2, H_20, and 36 ATP

(c) Alcohol, CO_2 and 2 ATP (d) lactic acid, CO_2 and 2 ATP

Q 10. In cross between pure pea plants (TT) and pure dwarf pea plants (tt) the offspring's of F1 generation were all tall. When F1 generation was self-crossed, the gene combinations of the offspring's of F2 generation will be

(a) TT:Tt:tt (b) TT:tt (c) Tt:tt (d) TT:Tt

Q 11. The role of cytokinins in plants is to

(a) Improve the quality of fruits (b) prevent the growth of lateral buds

(c) Regulate opening and closing of stomata (d) promote cell division

Q 12. Select the INCORRECT match (between the plants and its vegetative part) from the following:

(a) *Bryophyllum*, leaf (b) Potato, stem (c) Money plant, stem (d) Rose root

Q 13. 2A current is flowing through a conductor from a 10V source then resistance of conductor is

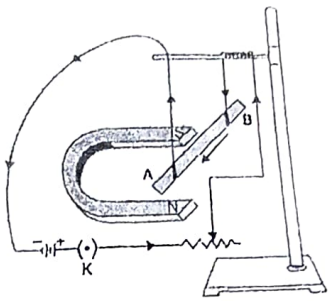
(a) 20ohm (b) 5ohm (c) 12ohm (d) 8ohm

Q22. An alkali metal A gives a compound B (molecular mass= 40) on reacting with water. The compound B gives a soluble compound C on treatment with Aluminium oxide. Identify B, C and give the reaction involved.

Q23. In which region of the brain (a) medulla and (b) cerebrum located? State one function of each.

Q24. "Ozone, although a deadly poison, performs an essential function for the life on the earth. "Justify this statement.

Q25. As shown in the diagram an aluminium rod AB is suspended horizontally between the two poles of a strong horse shoe magnet in such a way that the axis of rod is horizontal and the direction of the magnetic field is vertically upward. The rod is connected in series with a battery and a key.



State giving reason:

(a) What is observed when a current is passed through the aluminium rod from end B to end A?

(b) What change is observed in a situation in which the axis of the rod "AB' is moved and aligned parallel to the magnetic field and current is passed in the rod in the same direction?

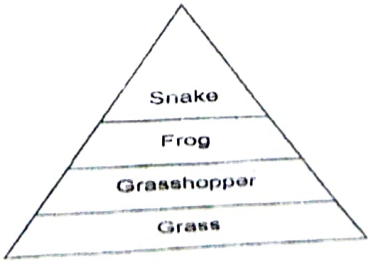
Q26. List the factors on which the resistance of a uniform cylindrical conductor of a given material depends.

SECTION-C

Q27. A reddish brown metal 'X', when heated in air, gives a black compound 'Y', which when heated in presence of H_2 gives 'X' back. 'X' is refined by the process of electrolysis. This refined form of 'X' is used in electrical wiring. Identify X and Y. Draw a well- labelled diagram to represent the process of refining 'X'.

Q28. A sulphate salt of group 2 element of the periodic table is a white, soft substance, which can be moulded into different shapes by making its dough. When this compound is left open for some time, it becomes a solid mass and cannot be used for moulding purposes. Identify the sulphate salt and why does it shows such behaviour? Give the reaction involved.

Q29. Mehak studies the diagram showing the various trophic levels comprising various organisms in each trophic levels in the food chain. She is curious to know what will happen to the members of different trophic levels in the food chain, if all the frogs of that area are removed.

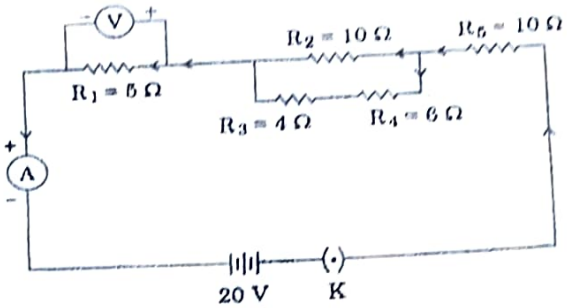


Q30. Give reasons:

(a) Absorption of digested food mainly occurs in small intestine.
(b) Ventricles have thicker walls than atria.
(c) The rate of breathing in aquatic organisms is much faster than that seen in terrestrial organisms.

Q31. A tall 4cm tall object is placed perpendicular to the principal axis of convex lens of focal length 24cm. the distance of object from lens is 16cm. find the position and size of image formed.

Q32. Study the following circuit and find:



(a) Effective resistance of the circuit
(b) Current drawn from the battery
(c) Potential difference across the 5Ω resistor

Q33. A student suffering from myopia is not able to see distinctly the objects placed beyond 5m. List two possible reasons due to which this defect of vision may have arisen. With the help of a ray diagram, explain.
(a) Why the student is unable to see distinctly the objects placed beyond 5 m from his eyes.
(b) Which type of corrective lens is used to restore proper vision and how this defect is corrected by the use of this lens?

SECTION-D

Q34. Identify the compound X on the basis of the reactions given below.
Also, write the names and chemical formulas of A, B and C, mentioning each type of reaction.

COMPOUND 'X'

$+Zn \rightarrow A + H_2$

$+HCl \rightarrow B + H_2O$

$+CH_3COOH \rightarrow C + H_2O$

Q35. (a)Write the function of the following parts of a bisexual flower:

(i) Stigma (ii) pollen tube (iii) anther
(b) Name the (i) future shoot and (ii) future root of a germinating seed.
(c) Name of the part of the flower that develop into (i) seed and (ii) fruit after fertilisation.

Q36. A student wants to project the image of a candle flame on a screen 60cm in front of a mirror by keeping the flame at a distance of 15cm from its pole.

(a) Write the type of mirror he should use.
(b) Find the linear magnification of the image produced.
(c) What is the distance between the object and its image?
(d) Draw a ray diagram to show the image formation in this case.

SECTION-E (Case study)

Q37. Given below are the hints given by the quiz master in a quiz: **HINTS**

(i)Substance 'C' is used as a preservative.

(ii) 'C' has two carbon atoms. 'C' is obtained by the reaction of 'A' in presence of alkaline potassium permanganate followed by acidification.

(iii) Misuse of 'A' in industries is prevented by adding Methanol, Benzene and pyridine to 'A'.

(iv) 'F' is formed on heating 'A' in presence of conc. Sulphuric acid.

(v) 'F' reacts with hydrogen gas in presence of nickel and palladium as catalysts.

Answer the following questions:

a) Give the IUPAC names of 'A' and 'F'.

b) Illustrate with the help of chemical equations the changes taking place.

A to C and A to F.

Q38. Pooja has green eyes while her parents and brother have black eyes. Pooja's husband Ravi has black eyes while his mother has green eyes and father has black eyes.

Attempt either subpart (a) **or** (b).

a) Make a cross for Bb(Black eyes) and Bb (black eyes) and Calculate percentage of:-
   i) Black eyes in their heterozygous form
   ii) Green eyes

b) Is having Black eye or green eye an acquired or inherited character. Give reason.

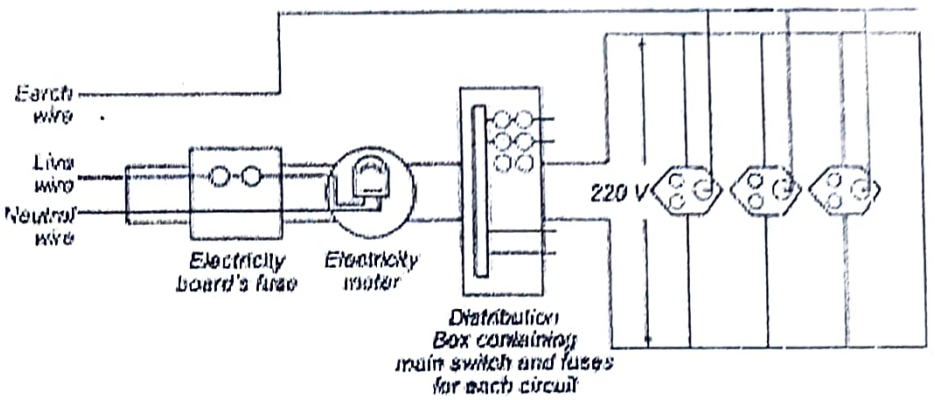
c) On the basis of the above given information, is the green eye color a dominant or recessive trait? Justify your answer.

d) What is the possible genetic makeup of Pooja's brother's eye color?

Q39. An electric circuit serves as a pathway for the flow of electric current. It comprises components that provide energy to the charged particles in the current, such as batteries or generators, devices that utilise this current, like light bulbs, electric motors, or computers, and the connecting wires or transmission lines. Electric circuits can be connected in two main ways: series and parallel.

Series Circuit: In a series circuit, components are connected end-to-end like a single path for electricity.

Parallel circuit: in a parallel circuit, components are connected in multiple branches, like a fork in the road.



(a) Why is it necessary to connect an earth wire to electrical appliances having metallic body?

(b) List two advantages of parallel connection over series connection.

(c) Explain what is short circuiting and overloading in an electric supply.

OR

(d) What is the current rating of the fuse wire in the line to use in :

(i) Lights and fans?

(ii) Appliances of power 2kW?