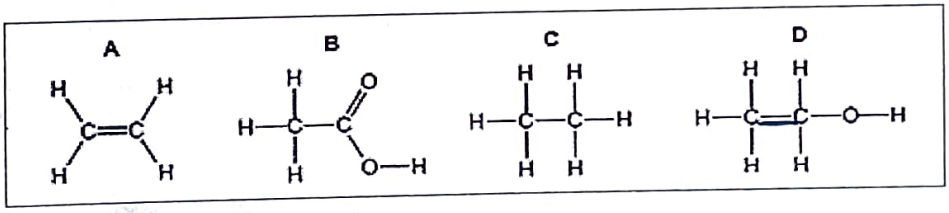
Class - X
Pre-Board
(2022-23)
Science

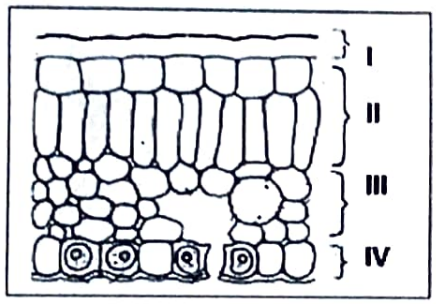
Date : 30 Jan. 2023
Time: 3hrs.

Roll No.:.....
M.M : 80

General Instructions :

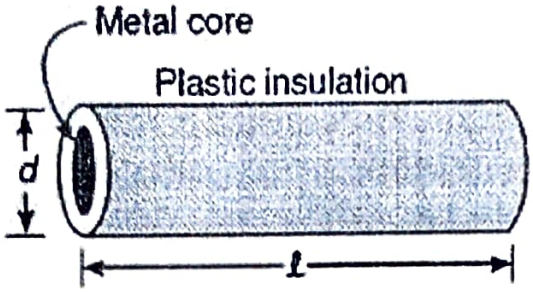
- This question paper consists of 39 questions in 5 sections.
- All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- Section A consists of 20 objective type questions carrying 1 mark each.
- Section B consists of 6 Very Short Answer type questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.
- Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words
- 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.
- Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

	Section-A	**Marks**
1.	A substance which oxidizes itself and reduces other is known as _____. a) Oxidising agent b) Reducing agent c) Both (a) and (b) d) None of these	(1)
2.	The formulae of four organic compounds are shown below. Choose the correct option.  (a) A and B are unsaturated hydrocarbons (b) C and D are saturated hydrocarbons (c) Addition of hydrogen in presence of catalyst changes A to C (d) Addition of potassium permanganate changes B to D	(1)
3.	Which of the following is a neutral salt? (a) NaCl (b) Na_2SO_4 (c) KCl (d) All of the above	(1)
4.	What happens when a solution of an acid is mixed with a solution of a base in a test tube? (i) Temperature of the solution decreases (ii) Temperature of the solution increases (iii) Temperature of the solution remains the same (iv) Salt formation takes place	(1)

	(a) (i) and (iv) (b) (i) and (iii) (c) (ii) only (d) (ii) and (iv)	
5.	The highly reactive metals like Sodium, Potassium, Magnesium, etc. are extracted by _____. (a) electrolysis of their molten chloride (b) electrolysis of their molten oxides with carbon (c) reduction by aluminium (d) reduction by carbon	(1)
6.	Which of the following will undergo addition reactions? (a) CH_4 (b) C_3H_8 (C) C_2H_6 (d) C_2H_4	(1)
7.	When iron fillings are dipped in copper sulphate solution the colour of the solution with turn_____. (a) Light green (b) Light blue (c) No change (d) Yellow	(1)
8.	Which part of leaf is designed to collect light energy and uses that energy for production of food?  a) I b) II c) II and III d) III and IV	(1)
9.	Which of the following is an example of a unisexual flower? (a) Papaya (b) Hibiscus (c) Mustard (d) Petunia	(1)
10.	Which part of the excretory system is responsible for eliminating urine from the human body? (a) ureters (b) kidneys (c) urinary bladder (d) urethra	(1)
11.	In Rhizopus, tubular thread like structures bearing sporangia at their tips are called_____. (a) filaments (b) hyphae (c) rhizoids (d) roots	(1)
12.	A man with blood group A marries a woman having blood group O. What will be the blood group of the child? (a) O only (b) A only (c) AB (d) Equal chance of acquiring blood group A or blood group O.	(1)
13.	The refractive index of transparent medium is greater than one because : (a) Speed of light in vacuum < speed of light in tansparent medium	(1)

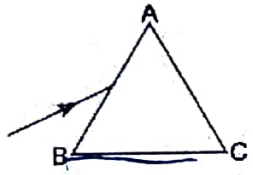
(b) Speed of light in vacuum > speed of light in tansparent medium
(c) Speed flight in vacuum = speed of light in tansparent medium
(d) Frequency of light wave changes when it moves from rarer to denser medium

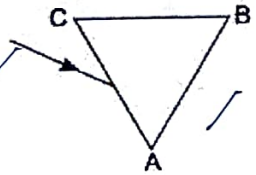
14. Plastic insulation surrounds a wire having diameter d and length l as shown below. A decrease in the resistance of the wire would be produced by an increase in the _____. **(1)**

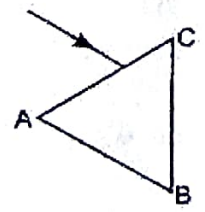


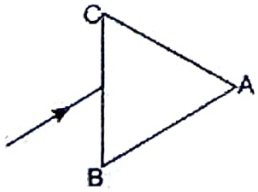
(a) length l of the wire
(b) diameter d of the wire
(c) temperature of the wire
(d) thickness of the plastic insulation

15. A prism ABC (with BC as base) is placed in different orientations. A narrow beam of white light is incident on the prism as shown in the figure. In which of the following cases, after dispersion, will the third colour from the top correspond to the colour of the sky? **(1)**

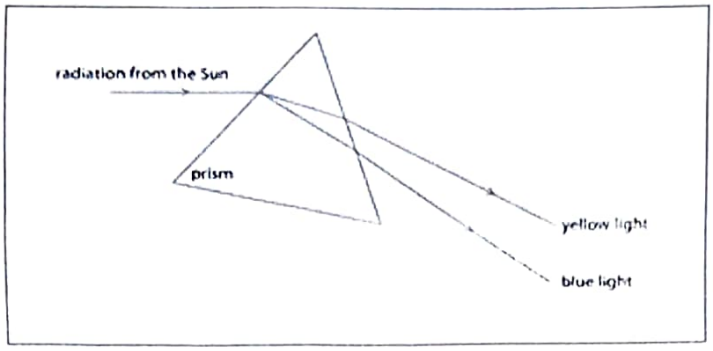
(a)


(b)


(c)


(d)


16.	If R_1 and R_2 be the resistance of the filament of 40 W and 60 W respectively operating 220 V, then (a) $R_1 < R_2$ (b) $R_2 < R_1$ (c) $R_1 = R_2$ (d) $R_1 \geq R_2$ **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 but R is not the correct explanation of A (c) A is true but R is false (d) A is False but R is true	(1)
17.	Assertion (A) : Hydrogen gas is not evolved when a metal reacts with nitric acid. Reason (R) : Nitric acid is a strong oxidising agent.	(1)
18.	Assertion (A): Arteries are thick-walled and elastic in nature. Reason (R) : Arteries transport blood away from the heart.	(1)
19.	Assertion(A): A geneticist crossed two pea plants and got 50% tall and 50% dwarf in the progeny. Reason (R) : One plant was heterozygous tall and the other was dwarf.	(1)
20.	Assertion(A): A compass needle is placed near a current carrying wire. The deflection of the compass needle decreases when the magnitude of electric current in the wire is increased. Reason (R) : Strength of a magnetic field at a point near the conductor increases on increasing the current.	(1)
	Section-B	
21.	Write two differences between calcination and roasting.	(2)
22.	Give reasons for the following: a) The chemical properties of ethanol are different from ethanoic acid. b) Calcium oxide forms an ionic compounds.	(1) (1)
23.	Patients whose gallbladder is removed are recommended to eat less oily food. Why? Or What is chemotropism? Give one example to explain chemotropism..	(2)
24.	What is ozone and how does it affect the ecosystem ?	(2)
25.	State the phenomena observed in the diagram given below. Explain with reference to the diagram, which of the two lights mentioned above will have the higher wavelength?	(2)



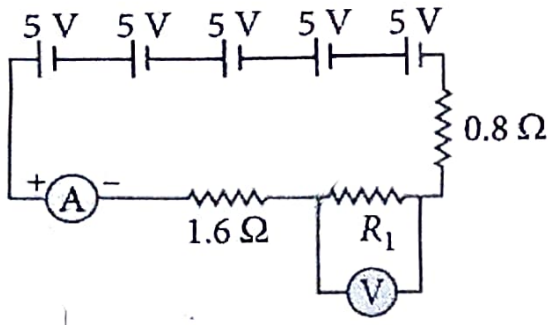
Or

Define magnification. Give one use of concave mirror and one rule for image formation by convex mirror. **(2)**

26. The potential difference between the terminals of an electric heater is 60 Volts when it draws a current of 4 Ampere from a source. What current will the heater draw if the potential difference is increased to 120 Volt. **(2)**

Section-C

27. The current in the circuit is 10 A. Find the value of potential difference across R_1. **(3)**



28. The image of a candle flame placed at a distance of 30 cm from a mirror is formed on a screen placed in front of the mirror at a distance of 60 cm from its pole. What is the nature of the mirror? Find its focal length. If the height of the flame is 2.4 cm, find the height of its image. State whether the image formed is erect or inverted. **(3)**

29. Draw a diagram of human brain and label the following parts : **(3)**
(i) Cerebrum
(ii) Hypothalamus
(iii) Medulla Oblongata

30. Explain law of segregation. **(3)**

31. 'The breathing cycle is rhythmic whereas exchange of gases is a continuous process'. Justify this statement. **(3)**

Or

Explain the process of breakdown of glucose in a cell.

32.	A metal 'A' which is used in thermite process, when heated with oxygen gives an oxide B, which is amphoteric in nature. Identify A and B. Write down the reactions of oxide B with HCl and NaOH.	(3)
33.	A magnesium ribbon is burnt in oxygen to give a white compound X accompanied by emission of light. If the burning ribbon is now placed in an atmosphere of nitrogen, it continues to burn and forms a compound Y. (a) Write the chemical formulae of X and Y. (b) Write a balanced chemical equation, when X is dissolved in water. Or Write the name and molecular formula of an organic compound having its name suffixed with 'ol' and having two carbon atoms in the molecular formula. With the help of a balanced chemical equation indicate what will happen when it reacts with ethanoic acid in the presence of hot conc. H_2SO_4	(3)
	Section-D	
34.	i) What is the color of phenolphthalein in a basic solution? ii) Which by-product of chlor-alkali process is used for manufacturing bleaching powder? iii) Name an indicator which indicates the various levels of hydrogen ion concentration of solutions. iv) Why does a milkman add small amount of baking soda to fresh milk during summer season? v) Why is tap water a good conductor of electricity and pure water is not? Or Explain the following: (a) Reactivity of Al decreases if it is dipped in HNO_3 (b) Silver and copper are alloyed with gold to make jewellery items. (c) NaCl is not a conductor of electricity in solid state whereas it does conduct electricity in aqueous solution as well as in molten state. (d) Iron articles are galvanised. (e) Metals like Na, K, Ca and Mg are never found in their free state in nature.	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
35.	Answer the following questions. a) Explain the process of binary fission in Amoeba with the help of diagram. b) Give 4 reasons for adopting contraceptive methods. c) Name one viral and one bacterial sexually transmitted disease each.	(2) (2) (1)
36.	Draw the following diagrams. a) Formation of a rainbow(ray diagram) b) A magnified real image in case of a converging mirror c) Structure of the human eye Or	(1½) (1½) (2)

a) Why is magnification produced by a concave lens always less than 1? **(1)**

b) You have two lenses A and B of focal lengths +10 cm and -10 cm, respectively. State nature and power of each lens. Which of the two lenses will form a virtual and magnified image of an object placed 8 cm from the lens. Draw a ray diagram to justify answer. **(2)**

c) Define refractive index. Write its unit. **(2)**

Section–E

37. While bathing with hard water, foam is formed with difficulty and an insoluble substance (scum) remains after washing with water. This is caused by the reaction of soap with the calcium and magnesium salts, which cause the hardness of water. Hence we need to use a larger amount of water.

1) Which end of the soap molecule dissolves in water? **(1)**

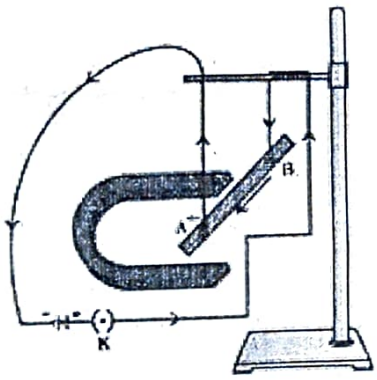
2) Why does soap not form lather with hard water. **(1)**

3) Write two differences between soaps and detergents. **(2)**

Or

Explain soap micelle formation with the help of a diagram.

38.



Aisha sets this apparatus and notes the deflection of the rod using two horse shoe magnets differently. Then she brings the magnets together and notes down her observations. The rod happens to move faster in the second case.

1) What will Aisha observe in the deflection of rod using first horse shoe magnet? **(1)**

2) What will happen if the magnetic field is increased in the apparatus? **(1)**

3) Which law is associated with this activity? State the law **(2)**

39. Human body is made up of five important components of which water is the main component. Food as well as potable water is essential for every human being. The food is obtained from plants through agriculture. Pesticides are being used extensively for a high yield in the fields. These pesticides are absorbed by the plants from the soil along with water and minerals and from the water bodies these pesticides are taken up by the aquatic animals and plants. As these chemicals are not biodegradable, they get

accumulated progressively at each trophic level The maximum concentration of these chemicals gets accumulated in our bodies and greatly affects the health of our mind and body.

a) Give one method which could be applied to reduce our intake of pesticides through food to some extent. **(1)**

b) Various steps in a food chain represent _____ **(1)**

c) Why is the concentration of pesticides found in human beings maximum?

Or

"Energy flow in a food chain is unidirectional". Justify **(2)**