

13	Which statement is true for the reflection of light? (a) The angle of incidence and reflection are equal. (b) The reflected light is less bright than the incident light. (c) The sum of the angle of incidence and reflection is always greater than 900. (d) The beams of the incident light, after reflection, diverge at unequal angles.	1
14	An object is placed at a distance of 40cm in front of a concave mirror of a focal length of 20 cm. The image produced is: (a) virtual and inverted (b) real and erect (c) real, inverted and of the opposite size as that of the object (d) real, inverted and of the same size as that of the object	1
15	The amount of energy that flows from one trophic level to another in a food chain is (a) 5% (b) 10 % (c) 20 % (d) 15 %	1
16	The primary consumers are (a) Carnivores (b) Herbivores (c) Omnivores (d) Producers	1
	Question No. 17 to 20 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.	
17	Assertion (A) : Decomposition of vegetable matter into compost is an example of exothermic reactions. Reason (R) : Exothermic reaction are those reactions in which heat is evolved.	1
18	Assertion(A) : Spores are unicellular bodies. Reason (R) : The parent body simply breaks up into smaller pieces on maturation.	1
19	Assertion(A) : The strength of the magnetic field produced at the centre of a current carrying circular coil increases on increasing the current flowing through the coil. Reason (R) : Magnetic field strength is inversely proportional to the current flowing in the coil.	1
20	Assertion(A): Biodegradable substances result in the formation of compost and natural replenishment. Reason (R): It is due to breakdown of complex inorganic substances into simple organic substances	1
Section-B Question No. 21 to 26 are very short answer questions		

21	A silver article generally turns black when kept in the open for a few days. The article, when rubbed with toothpaste again, starts shining. Why do silver articles turn black when kept in the open for a few days? Name the phenomenon involved.	2
22	What will happen if mucus is not secreted by the gastric glands?	2
23	Rate of breathing in aquatic organisms is much faster than that in terrestrial organisms. Give reasons. Or Complete the following pathway showing the breakdown of glucose.	2
$\begin{array}{c} \text{Glucose} \\ \text{(6-carbon} \\ \text{molecules)} \end{array} \xrightarrow{\text{in cytoplasm}} \text{(i)} \xrightarrow{\begin{array}{c} ? \\ \text{(3-carbon} \\ \text{molecules} \\ \text{+ energy} \end{array}} \xrightarrow{\begin{array}{c} \text{Presence of O}_2 \\ \text{in mitochondria} \end{array}} \text{(ii)} \xrightarrow{?} + \text{H}_2\text{O} + \text{Energy}$		
24	What is the magnification of the images formed by plane mirrors and why?	2
25	Draw a ray diagram to explain the term angle of deviation. or What happens when a narrow beam of a monochromatic light passes through (a) glass slab and (b) glass prism?	2

26	Give any two methods which could be applied to reduce our intake of pesticides through food to some extent.	2
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Section-C

Question No. 27 to 33 are short answer questions

27	(a) Why does calcium start floating when it reacts with water? Write the balanced chemical equation of the reaction. (b) Name two metals which do not react with water.	3
28	Complete and balance the following chemical equations: (i) $\text{Al}_2\text{O}_3 + \text{HCl} \rightarrow$ (ii) $\text{K}_2\text{O} + \text{H}_2\text{O} \rightarrow$ (iii) $\text{Fe} + \text{H}_2\text{O} \rightarrow$ Or (i) Write two properties of gold which make it the most suitable metal for ornaments. (ii) Name two metals which are the best conductors of heat. (iii) Name two metals which melt when you keep them on your palm.	3
29	(a) Define reflex arc. Draw a flow chart showing the sequence of events which occur during sneezing. (b) List four plant hormones. Write one function of each.	3

30	(a) Why is the F1 progeny always of tall plants when a tall plant is crossed with a short pea plant? (b) How is F2 progeny obtained by self-pollination of F1 progeny different from F1 progeny? Give reason for this observation. (c) State a conclusion that can be drawn on the basis of this observation.	3
31	A person may suffer from both myopia and hypermetropia defects. (a) What is this condition called? (b) When does it happen? (c) Name the type of lens often required by the persons suffering from this defect. Draw labelled diagram of such lenses.	3
32	State and explain Ohm's law. Define resistance and give its SI unit. What is meant by 1 ohm resistance? Draw V-I graph for an ohmic conductor and list its two important features.	3

33	Calculate the resistivity of the material of a wire of length 1 m, radius 0.01 cm and resistance 20 ohms.	3
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Section-D
Question No. 34 to 36 are long answer questions.

34	Two carbon compounds X and Y have the molecular formula C_4H_8 and C_5H_{12} respectively. Which one of these is most likely to show addition reaction? Justify your answer. Also give the chemical equation to explain the process of addition reaction in this case. Or (a) Write the respective chemical equations to show what happens when (i) ethanol is heated with concentrated sulphuric acid at 443 K ? (ii) ethanol reacts with ethanoic acid in the presence of an acid acting as a catalyst? (b) Complete the following chemical equations : (i) $CH_3COOC_2H_5 + NaOH \rightarrow$ (ii) $CH_3COOH + NaOH \rightarrow$ (iii) $C_2H_5OH + CH_3COOH \xrightarrow{\text{Conc. } H_2SO_4}$	5
35	(a) Draw labelled diagrams to illustrate budding in Hydra. (b) How do Plasmodium and Leishmania reproduce? Write one difference in their mode of reproduction.	5
36	(a) The image formed by a concave mirror is observed to be virtual, erect and larger than the object. Where should the position of the object be relative to the mirror? Draw ray diagram to justify your answer. (b) The linear magnification produced by a spherical mirror is $+1/3$. Analysing this value state the (i) type of mirror and (ii) position of the object with respect to the pole of the mirror. Draw any diagram to justify your answer. Or (a) List two possible ways in which a concave mirror can produce a magnified image of an object placed in front of it. State the difference if any between these two images. (b) Draw ray diagrams for the following cases when a ray of light: (i) passing through centre of curvature of a concave mirror is incident on it. (ii) parallel to principal axis is incident on convex mirror. (iii) is passing through focus of a concave mirror incident on it.	4

SECTION - E

Question No. 37 to 39 are case-based/data -based questions with 2 to 3 short sub-parts.

37	<p>Carbon compounds exhibit a unique property - they can be easily oxidized through combustion. This process involves the reaction of a substance with oxygen, producing heat and often light. Kabir observed that this complete oxidation of carbon compounds is a common phenomenon in various natural and industrial processes. He also discovered that certain substances play a vital role in adding oxygen to others during oxidation reactions. These substances are known as oxidizing agents. They facilitate the transfer of oxygen atoms, promoting the oxidation of the reactants.</p> <p>(a) What is the primary characteristic of carbon compounds during combustion? (b) Complete the reaction: $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH} + \text{Alk. KMnO}_4 \rightarrow ?$ (c) Provide two examples of oxidizing agents and their roles in oxidation reactions.</p> <p style="text-align: center;">Or</p> <p>What is the reason for incomplete combustion? Combustion is an oxidation or reduction type of reaction?</p>	4
38	<p>Andre Marie Ampere suggested that a magnet must exert an equal and opposite force on a current carrying conductor, which was experimentally found to be true. But we know that current is due to charges in motion. Thus, it is clear that a charge moving in a magnetic field experience a force, except when it is moving in a direction parallel to it.</p> <p>(a) Direction of magnetic force is given by which rule? Explain it. (b) How will the magnetic field be affected on: (i) increasing the current through the conductor (ii) reversing the direction of flow of current in the conductor?</p> <p style="text-align: center;">Or</p> <p>Draw the magnetic field lines through and around a single loop of wire carrying electric current.</p>	4
39	<p>Reema collected some pond water which was dark green in color in a test tube. She took out green-colored mass from it and separated its filaments by using needles. She broke some filaments into small fragments and put them in a Petri dish containing clean water. She observed that after a few days the small fragments gave rise to complete filaments.</p> <p>(a) What do you think the mass of green filament was ? (b) The small fragment gave rise to new filament. What does it indicate ? (c) How will an organism be benefited if it reproduces through spores?</p> <p style="text-align: center;">Or</p> <p>(i) State one feature of reproduction that is common to Amoeba, Spirogyra and yeast . (ii) Write two organisms in which asexual reproduction takes place through budding .</p>	4

DOE, Delhi