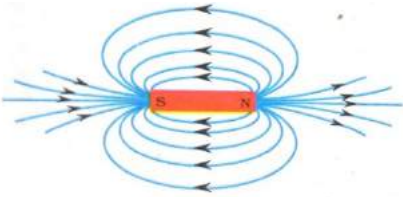
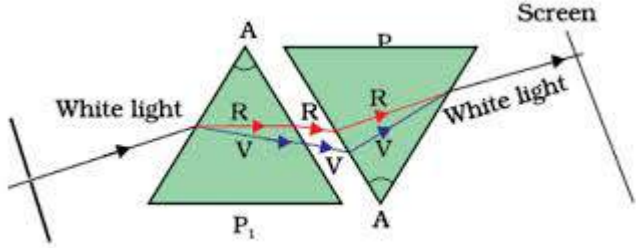
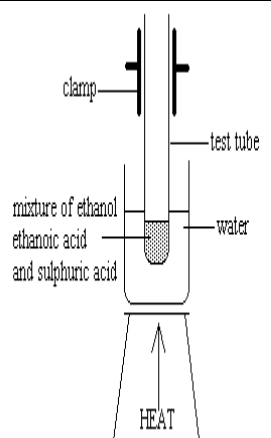
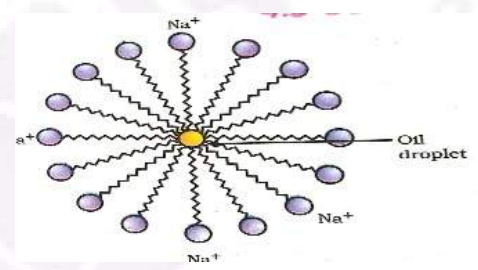
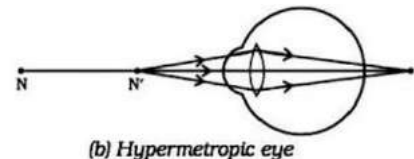


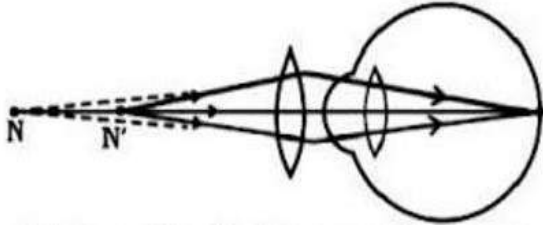
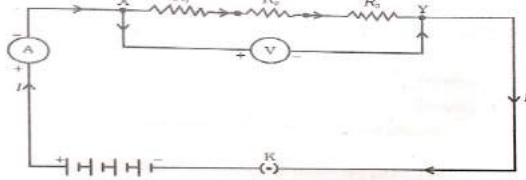
SET 31 / 4 / 1

Q. No.	Value Point / Expected Answer	Value	Total Marks
1	<ul style="list-style-type: none"> Resistance is the property of a conductor to resist the flow of charges through it ohm (Ω) 	$\frac{1}{2}$ $\frac{1}{2}$	1
2	<ul style="list-style-type: none"> Silicon, silver 	$\frac{1}{2}$ $\frac{1}{2}$	1
3	<ul style="list-style-type: none"> First law: The incident ray, the reflected ray and the normal to the surface at the point of incidence all lie in the same plane. Second law: Angle of incidence is equal to angle of reflection. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> Refractive index of a transparent medium with respect to vacuum or air is called absolute refractive index. Mathematically <p>Absolute refractive index of a medium = $\frac{\text{Speed of light in vacuum or air}}{\text{Speed of light in the medium}}$ $n = c/v$</p>	1 1 1 1	2
4	<p>Field pattern</p>  <p style="text-align: right;">Polarity Direction of field lines</p> <p style="text-align: right;">Diagram Labelling</p>	1 1	2
5	<ul style="list-style-type: none"> Propyl alcohol gets oxidized to propanoic acid. $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH} \xrightarrow{\text{alk } \text{KMnO}_4} \text{CH}_3\text{CH}_2\text{COOH}$ <ul style="list-style-type: none"> Alkaline KMnO_4 is an oxidizing agent. 	$\frac{1}{2}$ 1 $\frac{1}{2}$	2
6	<ul style="list-style-type: none"> Fossils are dead remains or traces of preserved plants and animals buried under the earth's crust. Relative Dating: Digging the earth shows that the fossils closer to the earth surface are more recent than those in the deeper layers. Carbon Dating: Detecting the ratios of different isotopes of the same element in the fossil material. 	$\frac{1}{2} + \frac{1}{2}$ 1 1	3
7	<ul style="list-style-type: none"> Cause of dispersion: <p>(i) Shape of prism</p> <p>(ii) Different colours bend with different angles (different colour has different refractive index or different speed)</p> <p>diagram</p> <p>Arrow & labelling</p>	1 1	

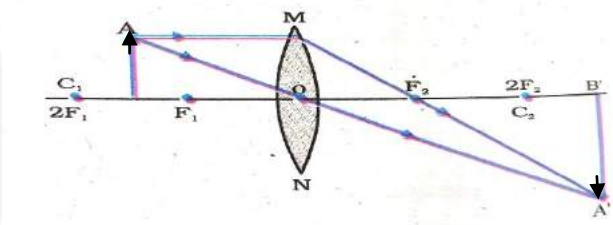
	 <p style="text-align: center;">OR</p> <p>Scattering of light means to throw light in all possible direction when light interact with particles of medium.</p> <p>(i)The Sun appears reddish at sun-rise : the Sun rays have to travel through a large atmospheric distance near the horizon .As the wave length of red light is maximum in the visible range , hence the scattering is least . The blue light and shorter wavelengths are scattered away by the particles .This gives rise to the reddish appearance of the sun./diagrammatic answers may be given fig:11.12</p> <p>(ii)The sky appears blue: Blue colour has shorter wavelength than red. When sunlight passes through the atmosphere, the fine particles in the air scatter the blue light more strongly than red. Hence the clear sky appears blue.</p>	<p style="text-align: center;">1</p> <p style="text-align: center;">1</p> <p style="text-align: center;">1</p> <p style="text-align: center;">1</p>	<p style="text-align: center;">3</p>				
<p>8</p>	<p>a) i) double displacement reaction ii) combination reaction iii) decomposition reaction iv) displacement reaction b) $3BaCl_2 + Al_2(SO_4)_3 \rightarrow 2AlCl_3 + 3BaSO_4$ OR a) Yellow, lead iodide b) $2KI + Pb(NO_3)_2 \rightarrow PbI_2 + 2KNO_3$ c) Double displacement, precipitation reaction</p>	<p style="text-align: center;">$\frac{1}{2} \times 4$</p> <p style="text-align: center;">1</p> <p style="text-align: center;">$\frac{1}{2} + \frac{1}{2}$</p> <p style="text-align: center;">1</p> <p style="text-align: center;">$\frac{1}{2} \times 2$</p>	<p style="text-align: center;">3</p>				
<p>9</p>	<p>(a)</p> <table border="1" style="margin-left: 40px;"> <tr> <td style="padding: 5px;">Manmade ecosystem</td> <td style="padding: 5px;">Natural ecosystem</td> </tr> <tr> <td style="padding: 5px;">no microbes to clean the water</td> <td style="padding: 5px;">microbes to clean the water</td> </tr> </table> <p>(b) The micro-organisms that breakdown the complex organic substances into simple inorganic substances.</p> <ul style="list-style-type: none"> • No decomposition would take place. • Soil would be unsuitable for crops/it would result in imbalance in Ecosystem • nutrients would not returned back to the nutrient pool • Land pollution/affect soil fertility or any other. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • The higher energy UV radiations split apart some molecular oxygen into free oxygen atoms . These atoms then combine with molecular oxygen to form ozone.. $O_2 \xrightarrow{UV} O + O$ $O_2 + O \longrightarrow O_3$ <ul style="list-style-type: none"> • It prevents harmful UV radiation to reach the earth. • CFC/chlorofluoro carbon/aerosol • Skin cancer/reduction in immune system/cataract/damages eyes. 	Manmade ecosystem	Natural ecosystem	no microbes to clean the water	microbes to clean the water	<p style="text-align: center;">1</p> <p style="text-align: center;">1</p> <p style="text-align: center;">1</p> <p style="text-align: center;">1 ½</p> <p style="text-align: center;">½</p> <p style="text-align: center;">½</p> <p style="text-align: center;">½</p>	<p style="text-align: center;">3</p>
Manmade ecosystem	Natural ecosystem						
no microbes to clean the water	microbes to clean the water						

10	<p>a) Plaster of Paris $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$ (Calcium sulphate hemihydrate)</p> <p>b) Heating calcium sulphate dihydrate, or gypsum, to 373°K. $\text{CaSO}_4 \cdot 2\text{H}_2\text{O} \xrightarrow{373\text{ K}} \text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O} + 1\frac{1}{2}\text{H}_2\text{O}$</p> <p>(c) on addition of water it sets into hard mass. $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O} + 1\frac{1}{2}\text{H}_2\text{O} \rightarrow \text{CaSO}_4 \cdot 2\text{H}_2\text{O}$</p> <p>d) Making sculptures/statues / Decorative items/POP walls</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p> <p>$\frac{1}{2}$</p>	3
11.	<p>a) Deflection in the galvanometer in one direction.</p> <ul style="list-style-type: none"> Increase in magnetic field associated with coil. <p>b) Deflection in the galvanometer in the opposite direction</p> <ul style="list-style-type: none"> Decrease in magnetic field associated with coil. <p>c) Galvanometer shows no deflection</p> <ul style="list-style-type: none"> No change of magnetic field associated with coil so no induced current in the coil. 	<p>$\frac{1}{2} + \frac{1}{2}$</p> <p>$\frac{1}{2} + \frac{1}{2}$</p> <p>$\frac{1}{2} + \frac{1}{2}$</p>	3
12.	<p>a) i) Saliva –contains salivary amylase, converts starch to sugar ii) HCl in stomach- medium acidic/kills pathogen (germs) iii) Bile-emulsifies fats/neutralizes acidic food in the duodenum iv) Villi -increases surface area for absorption</p> <p>b) i) Pepsin: digest protein . ii) Lipase: digest fats</p>	<p>$\frac{1}{2} \times 4$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p>	3
13	<p>(a) The plant will immediately change the shape by changing the amount of water in them (swelling or shrinking) thus bringing movement.</p> <p>(b) (i) Gibberellin/Auxin (ii) Cytokinin</p>	<p>1</p> <p>1</p> <p>1</p>	3
14	<ul style="list-style-type: none"> The existence of a variety of species of plants and animals. Forests are rich in different life forms. Urbanisation/Pollution/Overgrazing/Over exploitation/population explosion /any other. 	<p>1</p> <p>1</p> <p>$\frac{1}{2} \times 2$</p>	3
15	<ul style="list-style-type: none"> The Metals high up in reactivity series are very reactive, because of difference in their reactivity. Methods of extraction of metals depends on their reactivity. Electrolytic reduction followed by electrolytic refining. 	<p>1</p> <p>1</p> <p>1</p>	3
16	<p>(a) $\text{C}_2\text{H}_5\text{OH} + \text{CH}_3\text{COOH} \rightarrow \text{CH}_3\text{COO C}_2\text{H}_5 + \text{H}_2\text{O}$ (esterification) Alcohol Acid Ester Water</p> <p>$\text{CH}_3\text{COOC}_2\text{H}_5 + \text{NaOH} \rightarrow \text{C}_2\text{H}_5\text{OH} + \text{CH}_3\text{COONa}$ (saponification) Ester Base Alcohol Salt</p> <p>b) Diagram for esterification</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p>	

	 <p>Description 1mL ethanol, 1mL glacial acetic acid and a few drops of conc. H₂SO₄ ↓ Warmed in a water bath ↓ Water is poured into the beaker ↓ Fruity smell is produced</p> <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Soaps are sodium salts of fatty acids. • Detergents are sodium salts of sulphonic acids. Soaps do not act in hard water due to formation of scum while detergents do. • Cleansing action of soaps: In soaps carbon chain dissolves in oil and the ionic end dissolves in water to form micelle  <ul style="list-style-type: none"> • Hard water contains Ca²⁺ / Mg²⁺ ions that react with soap and form precipitates called scum. • By using detergents in hard water / boiling hard water 	<p>1+1</p> <p>½ x 4</p> <p>1½</p> <p>2</p> <p>1</p> <p>½</p>	<p>5</p>
<p>17</p>	<p>(a) Hypermetropia / farsightedness Causes: i. Shortening of eyeball ii. Curvature of eye lens decreases / focal length of eye lens increases.</p> <p>b)</p>  <p style="text-align: center;"><i>(b) Hypermetropic eye</i></p>	<p>½</p> <p>½</p> <p>½</p> <p>1</p> <p>½</p>	

	<p>(c) Convex lens $1/f = 1/v - 1/u$ $= 1/(-50\text{cm}) - 1/(-25\text{cm})$ $= 1/50\text{cm}$ Hence, $f = 50\text{ cm} = 0.5\text{m}$ Therefore power $= (1/0.5)D = 2D$ (d) Correction of Hypermetropia</p> 	<p>$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$</p>	<p>5</p>
<p>18</p>	<p>a) Valency depends on valence electron. It is the number of electrons taken or lost from the valence shell: Atomic no = 9 Electronic Configuration = 2, 7. Valency $8 - 7 = 1$</p> <p>b) i) D (2.8.8.1) ii) A (2.2) and E (2.8.8.2) (same valency-2) iii) D has larger radius as the atomic radii shrinks in moving from left to right in the same period due to addition of electrons in the same shell.</p>	<p>1 1 1 1 1</p>	<p>5</p>
<p>19</p>	<p>(a) It is the rate at which electrical energy is dissipated or consumed in an electrical circuit is called electric power .</p> <p>We know $V = W/Q$ $W = VQ$ $W/t = VQ/t$ $P = VI$ $P = IR.I$ $P = I^2R$</p> <p>(b) Bulb I: $I = P/V, 100W\ 220V$ $I_1 = 100/220A$ $= 5/11A$ Bulb II : $60W\ 220V$ $I_2 = 60/220A$ $= 3/11 A$ Total current $(5/11 + 3/11)A = 8/11A = 0.72A$</p> <p style="text-align: center;">OR</p> <p>(a)</p>  <ul style="list-style-type: none"> • Three resistors R_1, R_2, R_3 are joined. • They are connected with <p>the battery and ammeter and a plug key.</p> <ul style="list-style-type: none"> • The ammeter reading is noted. • Position of ammeter is changed to different position and readings taken 	<p>1 2 2 2½</p>	

	<p>each time.</p> <ul style="list-style-type: none"> The reading remain same. <p>(If it is explained by diagram, give full credit)</p> <p>(b)</p> <p>(i) $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2}$ $\frac{1}{R_1} = \frac{1}{R_1} + \frac{1}{R_1}$ $R_t = R_p + 12 \Omega$ $R_t = 24 \Omega$</p> <p>$V = IR_T$ $I = 6/24 = 0.25$ Ampere</p> <p>(ii) Same readings of A_1 and A_2</p>	1½	
20	<p>a) Reproduction through vegetative parts of a plant like Roots / stem / leaves/Artificial / Layering / Grafting (any two)</p> <p>b)</p> <p>(i) In some plants which produce non viable seeds. (ii) It consumes less time / fast method</p> <p>c) Budding in hydra:</p> <p style="text-align: right;">Diagram Labelling</p> <p>(if student writes explanation award marks) OR</p> <ul style="list-style-type: none"> Prevention of unwanted pregnancy. Method : <p>(i) mechanical barrier – condom</p> <p>(ii) surgical method – tubectomy / vasectomy</p> <p>(iii) chemical – Oral and vaginal pills</p> <p>(iv) IUCD / copper -T</p> Reasons: <p>(i) Gap between children</p> <p>(ii) mother's health</p> <p>(iii) better living standard</p> <p>(iv) population under control</p> <p style="text-align: right;">or any other relevant points.</p>	1 ½ x2 2 1 1 ½ x 4 ½ x4	5

21	<p>a) Height (tall and dwarf) and Shape (round and wrinkled) of seeds, colour of flower (white and violet) (any two)</p> <p>Tall x Short TT x tt</p> <p>F₁ – Tt(tall)</p> <p>Both TT and Tt are tall plants ,tt are short plants. Single copy of T is tall hence dominant hence tt are recessive.</p> <p>b) Male x Female XY XX Gametes: X,Y X Zygote: XX XY Girl Boy</p> <p>Sex determination is purely by chance. The fusion of a particular sperm with an egg is purely a matter of chance</p>	<p>½x2</p> <p>½</p> <p>½</p> <p>1</p> <p>½x2</p> <p>½</p> <p>½</p>	5
22	<ul style="list-style-type: none"> No Change In solid form (powder no reaction will take place because H⁺/H₃O⁺ (ions) are not available. Na₂ SO₄ + BaCl₂ → NaCl + BaSO₄(white ppt) <p style="text-align: center;">OR</p> <p>Cu < Fe < Zn < Al</p> <p>i) Deposition of brown colour on iron. ii) Blue Colour change is to green.</p>	<p>1</p> <p>½ + ½</p> <p>1</p> <p>½</p> <p>½</p>	2
23	<p>(i) X- acidic, pH of X is < 7 (ii) Y- basic, pH of Y is > 7</p>	<p>1</p> <p>1</p>	2
24	<p>Mistakes :F₁ and F₂ are not equidistant from the optical center of the lens. OF₁ ≠ OF₂; 2OF₁ ≠ 2OF₂ Image should form beyond 2F₂ Image should be magnified</p> <p style="text-align: right;">(any two)</p>  <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> Prism should be within the boundary all through the experiment . Pins should be fixed vertically and the feet of the pins should be observed. Protractor should be used correctly . Angle should be taken between 30° and 60° to observe the refraction clearly. Separation between the pins should be kept at least 5cm . <p style="text-align: right;">(any four)</p>	<p>½ x2</p> <p>1</p> <p>½ x4</p>	2
25	<ul style="list-style-type: none"> Set up A is correct. Ammeter should be connected in series whereas voltmeter should be connected in parallel to the resistor across which potential difference is to be measured. Positive of voltmeter and ammeter should be connected to the positive of supply voltage. 	<p>½</p> <p>½ + ½</p> <p>½</p>	2

26	<ul style="list-style-type: none"> • Taking out the leaf peel and mount on the slide_ • stain with safranin • mount with glycerin • place cover slip and observe under microscope. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> i)To prevent the entry of oxygen/escape of CO₂/air ii)KOHabsorb CO₂ gas iii)KOH absorb CO₂ gas/Partial vacuum created 	<p style="text-align: center;">½ x4</p> <p style="text-align: center;">1 ½ ½</p>	2
27	<ul style="list-style-type: none"> • Nucleus elongates • Constriction in cytoplasm / cell membrane 	1 1	2

