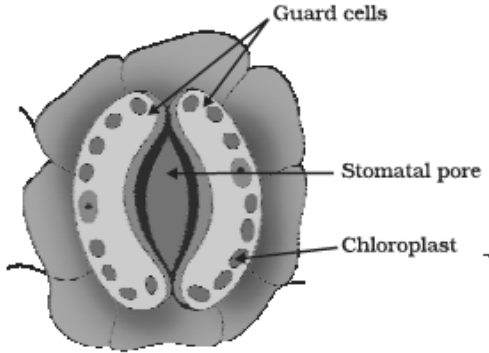


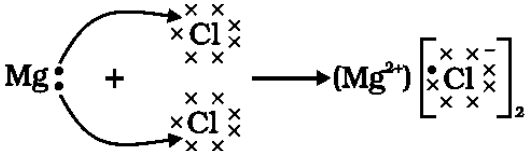
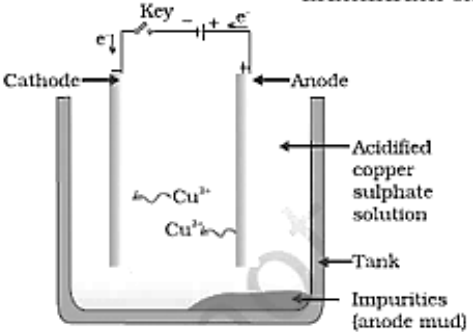


	<p>Gametes: <math>\text{T}</math>, <math>\text{T}</math>    <math>\text{t}</math>, <math>\text{t}</math></p> <p style="text-align: center;"> <math>\swarrow</math>                      <math>\searrow</math>  <math>\text{F}_1</math>                      <math>\text{Tt}</math>  All Tall plants </p> <p>Observations:</p> <ul style="list-style-type: none"> <li>• No medium or short height plants were observed in F1 generation.</li> <li>• All progeny resembles one of the parents.</li> <li>• All plants were tall.</li> </ul> <p style="text-align: right;">(any two observations)</p>	$\frac{1}{2}$  <b>1</b>  $\frac{1}{2}$  $\frac{1}{2}$	<b>3</b>
<b>15.</b>	<p>(a) (i) Opening of stomata during the day is minimised to prevent loss of water by evaporation. / Transpiration (loss of water in the form of water vapour) is minimised.</p> <p>(ii) Stomata</p> <p style="text-align: center;"><b>OR</b></p> <p>(b) (i)</p> <ul style="list-style-type: none"> <li>• Absorption of light energy by Chlorophyll.</li> <li>• Conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen</li> <li>• Reduction of Carbon Dioxide into Carbohydrates</li> </ul> <p>(ii) At night.</p> <p>(iii) Diagram of Open stomatal pore.</p> <div style="text-align: center;">  <p style="margin-left: 100px;">Guard cells</p> <p style="margin-left: 100px;">Stomatal pore</p> <p style="margin-left: 100px;">Chloroplast</p> </div> <p style="text-align: right;">Diagram - 1 Mark Labelling - 1 Mark</p>	<b>2</b>  <b>2</b>  <b>1</b>  <b>1</b>  <b>2</b>	<b>4</b>
<b>16</b>	<p>(a) (i)</p> <ul style="list-style-type: none"> <li>• Structure: <i>Bryophyllum</i> leaf</li> <li>• Type: Vegetative propagation / Asexual reproduction</li> </ul> <p>(ii)</p> <ul style="list-style-type: none"> <li>• <u>Advantage</u>: Genetically identical plants, maintaining desirable traits of the parents. / Bear flowers and fruits</li> </ul>	$\frac{1}{2}$  $\frac{1}{2}$  <b>1</b>	

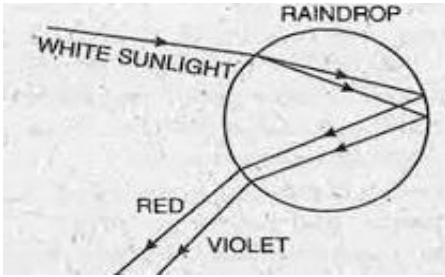
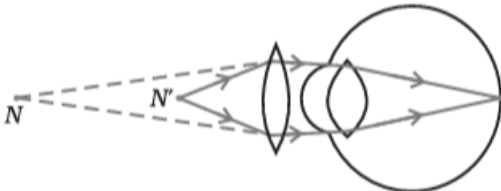
	<p>earlier than those plants which are grown from seeds / Used for the plants that have lost their capacity to produce seeds. (any one)</p> <ul style="list-style-type: none"> <li>• <u>Disadvantage</u>: No genetic variation.</li> </ul> <p>(iii) As DNA of single parent is involved without gamete fusion. / Offsprings are produced by mitosis hence similar genetic makeup thus, no variation.</p> <p>(iv) It creates genetic variation, enhances chances of survival in changing environment and drives evolution.</p> <p style="text-align: center;"><b>OR</b></p> <p>(b) (i) Name: Multiple Fission Type: Asexual reproduction</p> <p>(ii) In stage P, many daughter cells are produced by multiple fission / Repeated nuclear divisions followed by cytoplasmic divisions.</p> <p>(iii) <i>Plasmodium</i> (any other)</p> <p>(iv)</p> <ul style="list-style-type: none"> <li>• Vegetative propagation</li> </ul> <p><u>Advantages</u> –</p> <ul style="list-style-type: none"> <li>• All the plants produced are genetically similar to the parent plant</li> <li>• Such plants can bear flowers and fruits earlier than those produced from seeds.</li> </ul> <p style="text-align: right;">( any other advantage)</p>	<p>1</p> <p>1</p> <p>1</p> <p>½</p> <p>½</p> <p>1</p> <p>½</p> <p>½</p> <p>1</p> <p>1</p>	<p>5</p>
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**SECTION – B**  
**(Chemistry)**

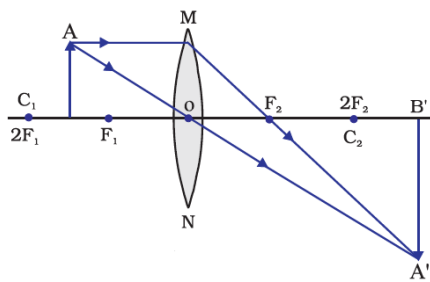
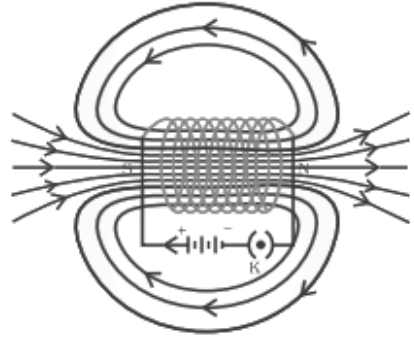
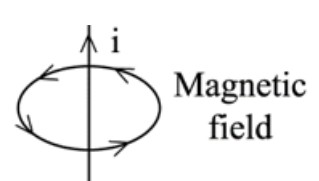
17.	(B)/ The reaction of a reactive metal with dilute acid.	1	1
18.	(C)/ Copper (II) chloride, which is blue-green in colour.	1	1
19.	(A)/ 2,2	1	1
20.	(D)/ (iii) and (iv)	1	1
21.	(C)/ Exothermic, but the heat evolved is not sufficient for the hydrogen to catch fire.	1	1
22.	(D)/ Case (iii) only	1	1
23.	(C)/ $\text{Na}_2\text{ZnO}_2$	1	1
24.	(A)/ Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).	1	1
25.	<p>(i)</p> $  \begin{array}{c}  \text{Na} \cdot \\  \text{Na} \cdot  \end{array}  \begin{array}{c}  \curvearrowright \\  \curvearrowleft  \end{array}  \begin{array}{c}  \times \times \\  \times \times \\  \times \times \\  \times \times  \end{array}  \text{O}  \begin{array}{c}  \times \times \\  \times \times \\  \times \times \\  \times \times  \end{array}  \longrightarrow  \left[ \text{Na}^+ \right]_2  \left[ \begin{array}{c}  \times \times \\  \times \times \\  \times \times \\  \times \times  \end{array}  \text{O}^{2-} \right]  $ <p>(ii)</p>	1	

		1	2
26.	<ul style="list-style-type: none"> <li>Thermal decomposition reaction</li> <li> <math display="block">2\text{FeSO}_4(\text{s}) \xrightarrow{\text{heat}} \text{Fe}_2\text{O}_3(\text{s}) + \text{SO}_2(\text{g}) + \text{SO}_3(\text{g})</math>           (deduct ½ mark if no / incorrect balancing)         </li> <li>Endothermic reaction</li> </ul>	1 1 1	3
27.	<p>(a) (i) When acid is added to water, it does not cause excessive local heating/ does not splash out and cause burns.</p> <p>(ii) Because dry HCl does not ionize/produce H<sup>+</sup> ions whereas in dilute HCl, H<sup>+</sup> ions are present.</p> <p>(iii) Because of loss of 5 molecules of water of crystallisation.</p> <p style="text-align: center;"><b>OR</b></p> <p>(b) (i) <math>2\text{NaCl}(\text{aq}) + 2\text{H}_2\text{O}(\text{l}) \xrightarrow{\text{electricity}} 2\text{NaOH}(\text{aq}) + \text{H}_2(\text{g}) + \text{Cl}_2(\text{g})</math></p> <p>(ii) <math>\text{NaCl} + \text{H}_2\text{O} + \text{NH}_3 + \text{CO}_2 \rightarrow \text{NaHCO}_3 + \text{NH}_4\text{Cl}</math></p> <p>(iii) <math>\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}</math></p> <p>(Deduct ½ mark if no/ incorrect balancing in each case)</p>	1 1 1 1 1 1	3
28.	<p>(a) During electrolytic refining of a metal, the insoluble impurities which settle down at the bottom of the anode is called anode mud.</p> <p>(b) Anode: Impure copper rod Cathode: Pure copper strip</p> <p>(c) (i) <math>2\text{Cu}_2\text{S} + 3\text{O}_2(\text{g}) \xrightarrow{\text{heat}} 2\text{Cu}_2\text{O}(\text{s}) + 2\text{SO}_2(\text{g})</math></p> <p><math>2\text{Cu}_2\text{O} + \text{Cu}_2\text{S} \xrightarrow{\text{heat}} 6\text{Cu}(\text{s}) + \text{SO}_2(\text{g})</math></p> <p style="text-align: center;"><b>OR</b></p> <p>(c) (ii)</p>  <p>(Diagram- 1 mark, Labelling-1 mark)</p>	1 ½ ½ 1 1 2	4

29.	<p>(a) (i)</p> <ul style="list-style-type: none"> <li>A series of compounds in which the same functional group substitutes for hydrogen in a carbon chain. / Can be represented by a single general formula and successive members differ by <math>-\text{CH}_2</math> unit or 14u.</li> <li><math>\text{C}_2\text{H}_4</math> and <math>\text{C}_4\text{H}_8</math> belong to the same homologous series/ are alkenes.</li> </ul> <p>(ii) (I) <math>\text{CH}_3\text{CH}_2\text{OH} + \text{CH}_3\text{COOH} \xrightarrow{\text{Acid}} \text{CH}_3\text{COOC}_2\text{H}_5 + \text{H}_2\text{O}</math>            (II) <math>\text{C}_2\text{H}_5\text{OH} + 3\text{O}_2 \xrightarrow{\text{Burning}} 2\text{CO}_2 + 3\text{H}_2\text{O}</math>            (balancing may be ignored)</p> <p>(iii) The ionic end of soap interacts with water while the carbon chain interacts with oil/dirt. The soap molecules thus form a structure called micelle.</p> <p style="text-align: center;"><b>OR</b></p> <p>(b) (i) (I) Propanone/acetone            (II) Propyne            (ii) Hydrogenation/addition reaction.</p> <p>(iii) <math>\text{C}_4\text{H}_{10}</math> will have higher melting point, as it has a higher molecular mass than <math>\text{C}_3\text{H}_8</math> and melting point increases with the increase in molecular mass.</p> <p>(iv) Sodium ethoxide (<math>\text{C}_2\text{H}_5\text{ONa}</math>) is formed and hydrogen gas is evolved.</p> <p style="text-align: center;">/</p> <p style="text-align: center;"><math>2\text{Na} + 2\text{CH}_3\text{CH}_2\text{OH} \rightarrow 2\text{CH}_3\text{CH}_2\text{O}^-\text{Na}^+ + \text{H}_2</math>            (balancing may be ignored)</p> <p>(v) <math>\text{CH}_3\text{COON C}_2\text{H}_5 + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{C}_2\text{H}_5\text{OH}</math></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p><math>\frac{1}{2} + \frac{1}{2}</math></p>	<p>5</p>
<b>SECTION – C</b> <b>(Physics)</b>			
30.	(C) /Ammeter in series and voltmeter in parallel.	1	1
31.	(C) /Colour of ray 1- Red; Colour of ray 2 - Violet	1	1
32.	(D)/Assertion (A) is false, but Reason (R) is true.	1	1
33.	<p>(a) Medium A is optically denser than B because light ray is going away from the normal NN'.</p> <p>(b) <math>n_{BA} = \frac{v_A}{v_B}</math></p>	<p>1</p> <p>1</p>	2
34.	<p>(a) (i) Mainly blue coloured light is scattered because very fine particles scatter shorter wavelength.</p> <p>(ii) Scattered light may appear white because very large size particles scatter light of all wavelengths.</p>	<p>1</p> <p>1</p>	

	<p style="text-align: center;"><b>OR</b></p> <p>(b)</p>  <p>A natural spectrum like rainbow is formed when sunlight passes through tiny water droplets present in the atmosphere. The water droplets disperse the incident light ray, then reflect it internally and finally refract it again when it comes out of the raindrop. (any other phenomenon of spectrum in nature)</p>	1  1	2
35.	<p>(a)</p> <ul style="list-style-type: none"> <li>• Hypermetropia/ Far -Sightedness</li> <li>• Behind the retina.</li> </ul> <p>(b)</p> <ul style="list-style-type: none"> <li>• Focal length of the eye lens is too long.</li> <li>• The eye ball has become too small.</li> </ul> <p>(c)</p> 	1/2 1/2  1/2 1/2  1	3
36.	<p>(a) (i) Battery / Electric cell (ii) Rheostat / Variable resistance</p> <p>(b) Resistance of the heater, <math>R = \frac{V}{I}</math></p> $R = \frac{110}{5}$ $R = 22 \Omega$ <p>Current through the heater, <math>I' = \frac{V'}{R}</math></p> $= \frac{220}{22}$ $= 10 \text{ A}$ <p style="text-align: center;">/</p> <p><b>Alternate answer for (b):</b></p> <ul style="list-style-type: none"> <li>• According to Ohm's law, potential difference is directly proportional to current.</li> <li>• When the potential difference is doubled, current will also be doubled. So, value of current will be 10A.</li> </ul>	1/2 1/2  1/2  1  1 1	3
37.	<p>(a) <math>4 \Omega</math> and <math>1 \Omega</math> are in series, <math>R_s = 4\Omega + 1 \Omega = 5 \Omega</math></p>		

	<p>Resistance across R and S, <math>\frac{1}{R_1} = \frac{1}{5} + \frac{1}{5}</math></p> $R_1 = \frac{5}{2} \Omega$ <p>2 <math>\Omega</math> and 3 <math>\Omega</math> are in series, <math>R_{s1} = 2\Omega + 3 \Omega = 5 \Omega</math></p> <p>Resistance across P and Q, <math>\frac{1}{R_2} = \frac{1}{5} + \frac{1}{5}</math></p> $R_2 = \frac{5}{2} \Omega$ <p>Total resistance: <math>R = R_1 + R_2</math></p> $= \frac{5}{2} + \frac{5}{2}$ $= 5 \Omega$ <p>(b) <math>I = \frac{V}{R}</math></p> $I = \frac{10}{5}$ $I = 2 \text{ A}$ <p>(c) <math>V = I R</math></p> $V = 2 \times \frac{5}{2}$ $V = 5 \text{ V}$	<p style="text-align: center;"><b>1</b></p> <p style="text-align: center;"><b>1</b></p> <p style="text-align: center;"><b>1</b></p>	<p style="text-align: center;"><b>3</b></p>
<p><b>38.</b></p>	<p>(a) In observation no.3. The object distance is equal to image distance, which is only possible when the object is at 2F (C) =50 cm. Therefore, the focal length is 25 cm.</p> <p>(b)</p> <ul style="list-style-type: none"> <li>• Observation no. 6</li> <li>• Because when object is kept between F and O, image formed by lens will be on same side of object. Hence, image distance(v) should be negative.</li> </ul> <p>(c) (i) <math>m = \frac{v}{u}</math></p> $= \frac{150}{-30}$ $m = -5$ <ul style="list-style-type: none"> <li>• Nature of image: Image will be real and inverted</li> <li>• Reason: because the value of m is negative.</li> </ul>	<p style="text-align: center;"><b>1</b></p> <p style="text-align: center;"><math>\frac{1}{2}</math></p> <p style="text-align: center;"><math>\frac{1}{2}</math></p> <p style="text-align: center;"><math>\frac{1}{2}</math></p> <p style="text-align: center;"><math>\frac{1}{2}</math></p> <p style="text-align: center;"><math>\frac{1}{2}</math></p>	

	<p style="text-align: center;"><b>OR</b></p> <p>(c) (ii)</p>  <p style="text-align: center;">(deduct ½ mark for no or incorrect direction of rays)</p>	2	4
<p><b>39.</b></p>	<p>(a)</p> <p>(i) Solenoid – A coil of many circular turns of insulated copper wire, wrapped closely in the shape of cylinder.</p>  <p>(ii)</p> <ul style="list-style-type: none"> <li>• Current flowing through the solenoid</li> <li>• No. of turns of the coil</li> </ul> <p>(iii)</p>  <p style="text-align: center;">Magnetic field</p> <p>Note: Award marks if a different direction of current is shown with the correct corresponding direction of magnetic field.</p> <p style="text-align: center;"><b>OR</b></p> <p>(b) (i) When current is passed through the conductor, it experiences a force and gets displaced.</p>	1  2  ½ ½  1	

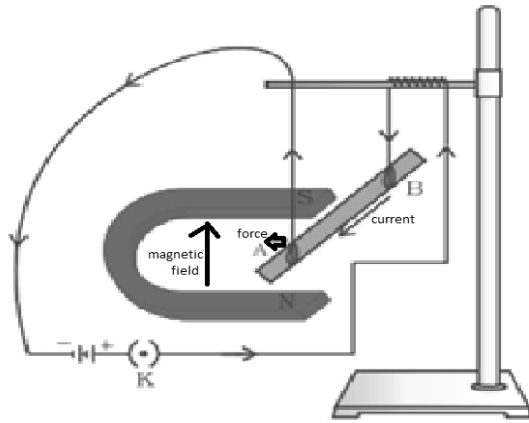


diagram  $1\frac{1}{2}$   
 direction of current  $\frac{1}{2}$   
 direction of magnetic field  $\frac{1}{2}$   
 direction of force  $\frac{1}{2}$

- (ii) (I) Into the plane of paper  
 (II) The direction of force will remain same.

**1**  
**1**

**5**