

**MODEL EXAM 2**  
**MARKING SCHEME 2024-25**  
**Class X Science (086)**

<b>SECTION – A</b>		
1	b. Displacement reaction	1
2	c. Copper and silver	1
3	d. weak acid and strong base	1
4	b. $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$	1
5	a. $\text{Zn}(\text{NO}_3)_2 + \text{Ag}$	1
6	c. X- $\text{P}_4\text{O}_{10}(\text{s})$ , Y- $2\text{MgO}(\text{s})$	1
7	b. They release heat	1
8	c. ii and iii	1
9	b. (i) Amino acids, (ii) glucose, (iii) fatty acids and glycerol respectively	1
10	b. Faster because the amount of dissolved oxygen in water is fairly low	1
11	c. Large amount of water flows out from the guard cells.	1
12	c. To reabsorb essential nutrients from the blood.	1
13	c. i and ii	1
14	a. Myopia	1
15	b. i and iii	1
16	b. ii and iii	1
17	a. Both A and R are true and R is the correct explanation of A	1
18	d. A is false but R is true.	1
19	d. A is false but R is true	1
20	b. Both A and R are true but R is not the correct explanation of A.	1
<b>SECTION – B</b>		
21	(i) Double displacement or precipitation reaction. (ii) $\text{Pb}(\text{NO}_3)_2 + 2\text{KI} \longrightarrow \text{PbI}_2 + 2\text{KNO}_3$	2
22	i. pyruvate      ii. $\text{CO}_2$	2
23	A. (i) Translocation (ii) Transport of soluble products or food prepared by photosynthesis through phloem in the sieve tubes with the help of companion cells, both in upward and downward directions by utilizing energy. B. (i) Hydrochloric acid: Creates an acidic medium for facilitating the action of enzyme / kills microorganisms. (ii) Villi: Increases the surface area for absorption of digested food. (iii) Anal Sphincter: Exit of waste material from anus is regulated. (iv) Lipase: Breakdown / digestion of emulsified fats or lipids	2
24	When the magnification is +6, the mirror is concave and the image is virtual and six times larger than the object.	2
25	The switch should always be connected to the live wire so that when it is off no current flows through the appliance as the circuit is open.	2

26	According to Lindeman's 10% law, only 10% of energy is transferred to the next level. If energy available at first trophic level is 10,000 Joules, then at second trophic level energy available will be 10% of 10,000 which equals to 1000.	2
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**SECTION C**

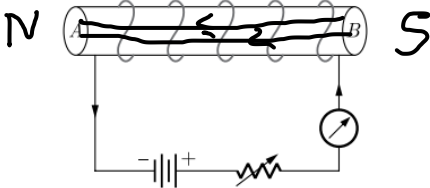
27	a. Metal A can be obtained by chemical reduction using carbon or carbon monoxide are reducing agent. b. Metal B can be obtained by electrolytic reduction. c. Metal C can be reduced to by reducing agents like aluminum.	1 1 1
28	a. $\text{HCl} + \text{H}_2\text{O} \rightarrow \text{H}_3\text{O}^+ + \text{Cl}^-$ b. $\text{H}^+ + \text{H}_2\text{O} \rightarrow \text{H}_3\text{O}^+$ c. $\text{NaOH}_{(s)} + \text{H}_2\text{O} \rightarrow \text{Na}^+_{(aq)} + \text{OH}^-$	1 1 1

29	The three events that occur during the process of photosynthesis are (i) Absorption of light energy by chlorophyll. (ii) Conversion of light energy to chemical energy (in the form of ATP and NADPH) and splitting of water molecules into hydrogen and oxygen. (iii) Reduction of carbon dioxide to carbohydrates (carbon assimilation).	3
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30	<p>(a) F<sub>1</sub> progeny will have green stemmed tomato plants as green is dominant over purple stemmed tomato plants. (b) If F<sub>1</sub> plants are self-pollinated, then the percentage of purple stemmed plant in F<sub>2</sub> progeny will be 25%.</p> <div style="text-align: center;"> <p>Gg<sup>♀</sup> × Gg<sup>♂</sup></p> <p>Gametes : G g G g</p> <p>F<sub>2</sub> Progenies :</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="border: none;"></td> <td style="border: none;">♀</td> <td style="border: none;">G</td> <td style="border: none;">g</td> </tr> <tr> <td style="border: none;">♂</td> <td style="border: none;"></td> <td style="border: none;">G</td> <td style="border: none;">g</td> </tr> <tr> <td style="border: none;">G</td> <td style="border: none;"></td> <td style="text-align: center;">GG Green stemmed</td> <td style="text-align: center;">Gg Green stemmed</td> </tr> <tr> <td style="border: none;">g</td> <td style="border: none;"></td> <td style="text-align: center;">Gg Green stemmed</td> <td style="text-align: center;">gg Purple stemmed</td> </tr> </table> <p>Phenotypic : 3 : 1 ratio Green : Purple Stemmed Stemmed</p> </div> <p>(c) Ratio of GG and gg plant in F<sub>2</sub> generation will be 1:1.</p>		♀	G	g	♂		G	g	G		GG Green stemmed	Gg Green stemmed	g		Gg Green stemmed	gg Purple stemmed	3
	♀	G	g															
♂		G	g															
G		GG Green stemmed	Gg Green stemmed															
g		Gg Green stemmed	gg Purple stemmed															

31	(i) 3 ohm (ii) 2 A	3
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32	<p>(i) The melting point and resistivity of tungsten are very high. It does not burn readily at a high temperature. The electric lamps glow at very high temperatures. Hence, tungsten is mainly used as heating element of electric bulbs.</p> <p>(ii) Copper and aluminum have very low resistivity. Hence, when an electric current flows through a wire of copper or aluminum, heat produced is comparatively low. Therefore, for electric power transmission, copper or aluminum wire is used.</p>	3
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33	<div style="text-align: center;">  </div> <p>(iii) Increase the number of turns and increase the number of cells</p>	3
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SECTION D

34	<p>A. (i) <math>\text{CH}_3 - \text{C} - \text{C} - \text{CH}_2 - \text{CH}_3 + \text{H}_2\text{O}</math></p> <div style="text-align: center;"> <math display="block">\begin{array}{c}    \\ \text{O} \end{array}</math> </div> <p>(ii) <math>\text{CH}_3\text{Cl} + \text{HCl}</math></p> <p>(iii) <math>\text{CH}_2 = \text{CH}_2 + \text{H}_2\text{O}</math></p> <p>B. The two features of carbon that give rise to a large number of compounds are as follows:</p> <p>(i) Catenation: It is the ability to form bonds with other atoms of carbon.</p> <p>(ii) Tetravalency: With the valency of four, carbon is capable of bonding with four other atoms.</p> <p style="text-align: center;">OR</p> <p>A. Add Sodium Carbonate (<math>\text{Na}_2\text{CO}_3</math>)/Sodium Hydrogen Carbonate (<math>\text{NaHCO}_3</math>) solution to ethanol and ethanoic acid. With ethanol it will produce brisk effervescence of carbon dioxide (<math>\text{CO}_2</math>) gas whereas no effervescence is seen with ethanol.</p> <p>B. (i) Iodine dissolves in ethanol. Thus, ethanol is used as a solvent in the preparation of tincture iodine.</p> <p>(ii) Ethanoic acid kills bacteria. Therefore, it is used in the preparation of pickles as a preservative.</p>	<p>3</p> <p>2</p> <p>2</p> <p>3</p>
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35	A. The correct answers are: (a) Callus (b) Tissue culture (c) Plant hormones (d) i. Many plants can be produced from a single plant in a small space and short period of time. ii. Diseases can be eliminated by quickly dividing cells.	1 1 1 2
	OR B. (a) Zygote (b) Placenta (c) Umbilical cord (d) From mother's blood to embryo: Oxygen and Nutrients From embryo to mother's blood: Waste	1 1 1 2
36	a. Right hand thumb rule	2
	b. Fleming's left hand rule	2
	c. Fig b. Magnetic field lines never intersect	1

**SECTION E**

37	a. Ethene b. $C_6H_{12}$ c. $C_nH_{2n}O$	1 1 2
	$\begin{array}{c} O \\    \\ CH_3 - C - CH_2CH_3 \end{array}$	
38	A. Thigmotropism or curvature movement that occurs on response to contact.	1
	Less Auxin is present in the region of contact. The free side having more auxin shows more growth. This causes the tendril to coil over the support.	3
	OR	
	B. i. Touch. The shape of the leaves changes by changing the amount of water in them.	$\frac{1}{2} \times 2 = 1$
ii. No. Growth of a part of plant in response to the pull of earth or gravity is called geotropism.	$\frac{1}{2} \times 2 = 1$	
iii. Positive geotropism – Movement of plant part towards the earth's gravity. Example – Roots grow downwards. Negative geotropism - Movement of plant part away from the force of gravity. Example – Shoots grow upwards.	$2 \times 1 = 2$	
39	(a) i	1
	(b) ii	1
	(c) iii	1
	(d) ii	1