

SECONDARY SCHOOL EXAMINATION, 2025

MARKING SCHEME

CLASS: X SCIENCE (Subject Code–086)

[Paper Code: 31/6/1]

Maximum Marks: 80

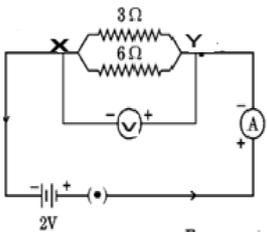
Q. No.	EXPECTED ANSWERS / VALUE POINTS	Marks	Total Marks
SECTION A			
1	(C)/(i) and (iii)	1	1
2	(D) / $B < A < C$	1	1
3	(C) / It is an endothermic reaction	1	1
4	(C)/ C_7H_{14}	1	1
5	(B) / Pale green	1	1
6	(D) / Tartaric acid	1	1
7	(B) / (ii) and (iii)	1	1
8	(D) / 100% tall with round seeds	1	1
9	(D) / Hypothalamus and Pineal	1	1
10	(C) / P – 3, Q – 4, R – 1, S – 2	1	1
11	(A) / Nephron	1	1
12	(B) / Hydrochloric acid, Pepsin and Mucus	1	1
13	(C)	1	1
14	(D) Pupil	1	1
15	(D) / 5000 kJ	1	1
16	(C) / It is used as a refrigerant and in fire-extinguishers	1	1
17	(A) / Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).	1	1
18	(C) / Assertion (A) is true, but Reason (R) is false.	1	1
19	(A) / Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).	1	1
20	(C) / Assertion (A) is true, but Reason (R) is false.	1	1
SECTION B			
21	<ul style="list-style-type: none"> • P – Fe • Q – Zn / Mg <p>• Chemical reaction:</p> $FeSO_4 + Zn \longrightarrow ZnSO_4 + Fe \quad /$ $FeSO_4 + Mg \rightarrow MgSO_4 + Fe$ <ul style="list-style-type: none"> • More reactive metal will displace less reactive metal from its salt solution. / Zn or Mg are more reactive than Fe. 	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	2
22	(a) Brain is protected in bony box / skull / cranium / fluid filled balloon.	1	
	(b) Region of brain: Hind brain and its part is cerebellum.	$\frac{1}{2} + \frac{1}{2}$	2
23	(a)The height of plant depends upon amount of particular plant hormone. This hormone depends upon the efficiency of enzyme (protein) which depends upon a DNA sequence (gene). If the enzyme works efficiently, lot of hormones are made and the plant will be tall.	2	
OR			

	(b) Each cell has two copies of each chromosome, one each from male and female parents. During gamete formation, the gamete takes one chromosome from each pair. When two such gametes having a single set of genes combine together, they restore the normal number of chromosomes in the progeny ensuring the stability of DNA of the species. (Any other explanation)	2	2
24	(a) Medium 2 (b) Ray bends away from the normal because it is travelling from optically denser medium to rarer medium / speed of light in medium 2 increases. (c) $n_{21} = \frac{\text{Speed of light in medium 1}}{\text{Speed of light in medium 2}}$	$\frac{1}{2}$ $\frac{1}{2}$ 1	2
25	(a) (i) Scattering of light is not prominent at such heights. (ii) The red colour is least scattered by smoke or fog. / Red colour has longer wavelength. OR (b) <ul style="list-style-type: none"> Rainbow is a natural spectrum appearing in the sky after a rain shower. After rain, small water droplets act as a tiny prism, when light enters, it gets refracted and dispersed. 	1 1 1 1	2
26	Ponds or lakes have natural cleansing agents like microbes which clean the ponds or lakes. whereas an aquarium or a swimming pool is an artificial/man-made ecosystem and do not have decomposers. If we do not clean the aquarium regularly the waste material will go on increasing which is harmful for fishes and aquatic plants.	1 1	2
SECTION C			
27	(a) $3\text{Fe} + 4\text{H}_2\text{O} \rightarrow \text{Fe}_3\text{O}_4 + 4\text{H}_2$ (b) $\text{CH}_4 + 2\text{O}_2 \longrightarrow \text{CO}_2 + 2\text{H}_2\text{O}$ (c) $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O} + \text{Energy}$	1 1 1	3
28	(a) (i) Baking soda is used as an antacid because it is a mild non-corrosive basic salt hence neutralises excess acid. (ii) Baking soda liberates carbon dioxide (CO ₂) gas on reaction with mild edible acid. (iii) In fire extinguishers, it acts as a base to react with acid to produce carbon dioxide (CO ₂) gas to extinguish fire. OR (b) (i) $\text{Zn} + 2\text{HCl} \longrightarrow \text{ZnCl}_2 + \text{H}_2$ Metal Acid Zinc chloride	1 1 1 1	

	<p>(ii) $2\text{NaOH} + \text{H}_2\text{SO}_4 \longrightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$ Base Acid Sodium Sulphate</p> <p>(iii) $\text{Na}_2\text{CO}_3 + 2\text{HCl} \longrightarrow 2\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2$ Salt Acid Sodium chloride</p> <p style="text-align: center;">(Any other relevant equation in all three) (Give marks if written with carbonate ion)</p>	1					
		1					
			3				
29	<p>(i) Pulmonary vein</p> <p>(ii) Vena cava</p> <ul style="list-style-type: none"> • Right atrium • After receiving blood, the right atrium contracts • As a result blood passes into the right ventricle • Then the ventricle contracts and the deoxygenated blood flows into the lungs through pulmonary artery. 	1/2					
		1/2					
		1/2					
		1/2 x 3	3				
30	<p>(a) All plants were purple flowered/ No mixed coloured flowers were observed / No white flowered plants were observed / Only dominant parental trait was observed. (Any two observations)</p> <p>(b) (i) 25% (ii) 1 : 2 : 1 / 1WW:2Ww:1ww</p> <p>(c)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Dominant Trait</th> <th style="padding: 5px;">Recessive Trait</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">A trait that can express itself in the presence of its unexpressed contrasting trait / Trait express itself always</td> <td style="padding: 5px;">A trait that remains unexpressed in the presence of its contrasting form.</td> </tr> </tbody> </table> <p style="text-align: center;">(Any other difference)</p>	Dominant Trait	Recessive Trait	A trait that can express itself in the presence of its unexpressed contrasting trait / Trait express itself always	A trait that remains unexpressed in the presence of its contrasting form.	1/2 x 2	
Dominant Trait	Recessive Trait						
A trait that can express itself in the presence of its unexpressed contrasting trait / Trait express itself always	A trait that remains unexpressed in the presence of its contrasting form.						
		1/2					
		1/2					
		1					
			3				
31	<p>(a) Focal length = + 15 cm (Ignore units) Reason: when object distance and image distance are same i.e. object is at 2F, image is also formed at 2F on the other side ∴ 2f = 30 cm</p> <p>(b) Observation No. 8 Reason: here the object is between optical centre and principal focus of the lens hence image is formed on the same side as the object and v is not equal to + 120 cm. (it should be -120 cm)</p> <p>(c) Ray diagram</p>	1/2					
		1/2					
		1/2					
		1/2					

	<p style="text-align: center;">Any one ray diagram</p>	1	3
32	<p>(a) Hypermetropia</p> <p>(b) Two causes:</p> <ul style="list-style-type: none"> • Eye ball has become too small /Eye ball is shortened • The focal length of the eye Lens is long / eye lens becomes less convergent <p>(c) Focal length = $\frac{1}{P}$ $= \frac{1}{2} = +0.5 \text{ m}$</p>	1 $\frac{1}{2} \times 2$ $\frac{1}{2}$ $\frac{1}{2}$	3
33	<p>(a) It means 1 joule of work is done to move a charge of 1 coulomb from one point of the conductor to the other.</p> <p>(b) (i)</p> <ul style="list-style-type: none"> • Ammeter. • Ammeter is used to measure electric current <p>(ii)</p> <ul style="list-style-type: none"> • Rheostat or variable resistance • Rheostat is used in a circuit to vary the resistance of the circuit 	1 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	3
SECTION D			
34	<p>(a) • Ethanol and Ethanoic acid</p> $ \begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H} - \text{C} - \text{C} - \text{OH} \\ \quad \\ \text{H} \quad \text{H} \end{array} \quad / \quad \text{CH}_3\text{CH}_2\text{OH}, $ $ \begin{array}{c} \text{H} \\ \\ \text{H} - \text{C} - \text{C} \\ \quad // \\ \text{H} \quad \text{O} \\ \quad \quad \\ \quad \quad \text{OH} \end{array} \quad / \quad \text{CH}_3\text{COOH} $ <ul style="list-style-type: none"> • On adding alkaline KMnO_4 /acidified $\text{K}_2\text{Cr}_2\text{O}_7$ to alcohol, it gets oxidised to Carboxylic acid. • An Ester is formed 	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	

	<p>(ii) Oviduct / fallopian tube (iii) Uterus (iv) Vagina / Vaginal passage</p> <p>(b) (i)</p> <ul style="list-style-type: none"> • Zygote starts dividing in the uterus. • Thickened Uterine lining which is richly supplied with blood vessels nourishes the developing embryo. • Placenta develops, which provides oxygen, food to the embryo and removes waste substances. <p>(ii) The uterine lining slowly breaks down and comes out as blood and mucus along with unfertilised egg.</p>	<p>$\frac{1}{2} \times 4$</p> <p>$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$</p> <p>$1 \frac{1}{2}$</p>	<p>5</p>
<p>36</p>	<p>(a) Magnetic field lines are the imaginary lines around the magnet</p> <ul style="list-style-type: none"> • Magnetic field line directions at a point are determined by placing a small compass needle. • Figure of magnetic field produced by a current carrying circular coil – <div data-bbox="459 857 1149 1176" data-label="Diagram"> </div> <p style="text-align: center;">(1 Mark for each labelling)</p> <ul style="list-style-type: none"> • Amount of the electric current flowing through it. • The number of turns in the circular coil • The radius of circular coil <p style="text-align: right;">(Any two)</p> <p style="text-align: center;">OR</p> <p>(b) • There will be two directions of the field at the same point i.e. the point where the two field lines intersect which is not possible. / At the point of intersection, the compass needle would point towards two directions, which is not possible.</p> <div data-bbox="638 1630 901 1865" data-label="Diagram"> </div> <ul style="list-style-type: none"> • Magnetic field lines are equidistant and parallel i.e. the magnetic field is the same at all points inside the solenoid. • Number of turns 	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>2</p> <p>2</p> <p>1</p> <p>1</p> <p>1</p>	

	<ul style="list-style-type: none"> Amount of current in solenoid, Core material inside the solenoid <p style="text-align: right;">(Any two)</p>	1x2	5
SECTION E			
37	<p>(I) Both electrical conductivity and melting point of an alloy becomes less than that of a pure metal. (Although in some cases the melting point may increases)</p> <p>(II)</p> <ul style="list-style-type: none"> Solder Lead (Pb) & tin (Sn) <p>(III) (a)</p> <ul style="list-style-type: none"> An alloy is a homogenous mixture of two or more metals or a metal and a nonmetal. Brass is an alloy is prepared by mixing Copper and Zinc in definite proportion. <p style="text-align: center;">OR</p> <p>(III) (b)</p> <ul style="list-style-type: none"> Stainless steel is an alloy of steel (iron) mixed with nickel and chromium. Iron is first mixed with small amount of carbon (0.05%) so that it becomes hard and strong when, then it is mixed with Ni and Cr metals, stainless steel is formed. Do not rust <p>(or any other property)</p>	1 1/2 1/2 1 1 1 1/2 1/2	4
38	<p>(I) 'X' – Positive geotropism/ Negative Phototropism 'Y' – Negative geotropism / Positive Phototropism</p> <p>(II) (i) Absciscic acid (ii) Cytokinin</p> <p>(III) (a)</p> <ul style="list-style-type: none"> The plants use electrical- chemical means to convey information (touch) from cell to cell. Plant cells change shape by changing the amount of water in them, resulting in swelling /shrinking of cells. <p style="text-align: center;">OR</p> <p>(III) (b)</p> <ul style="list-style-type: none"> Auxin When light is coming from one side of the plant, auxin diffuses towards the shady side of the shoots. This concentration of Auxin stimulates the cells to grow longer, on the side of the shoot which is away from light. Thus the plant appears to bend towards light. 	1/2 1/2 1/2 1/2 1 1 1 1	4
39	<p>(I)</p>  <p style="text-align: right;">(or Any other way)</p> <p>(II)</p> <p>(i) in parallel combination.</p>	1 1/2	

	<p>(ii) in series combination.</p> <p>(III) (a) Resistance $R = 3 \Omega + 6 \Omega = 9 \Omega$</p> <p style="text-align: center;">$V = 2V$</p> <p style="text-align: center;">$I = \frac{V}{R} = \frac{2V}{9\Omega} = 0.22 A$</p> <p style="text-align: center;">OR</p> <p>(b) $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R}$</p> <p style="text-align: center;">$= \frac{1}{3\Omega} + \frac{1}{6\Omega}$</p> <p style="text-align: center;">$= \frac{6+3}{18\Omega}$</p> <p style="text-align: center;">$\therefore R = 2\text{ohm}$</p>	<p>$\frac{1}{2}$</p> <p>1</p> <p>1</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p>4</p>
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