SECONDARY SCHOOL EXAMINATION, 2025

MARKING SCHEME

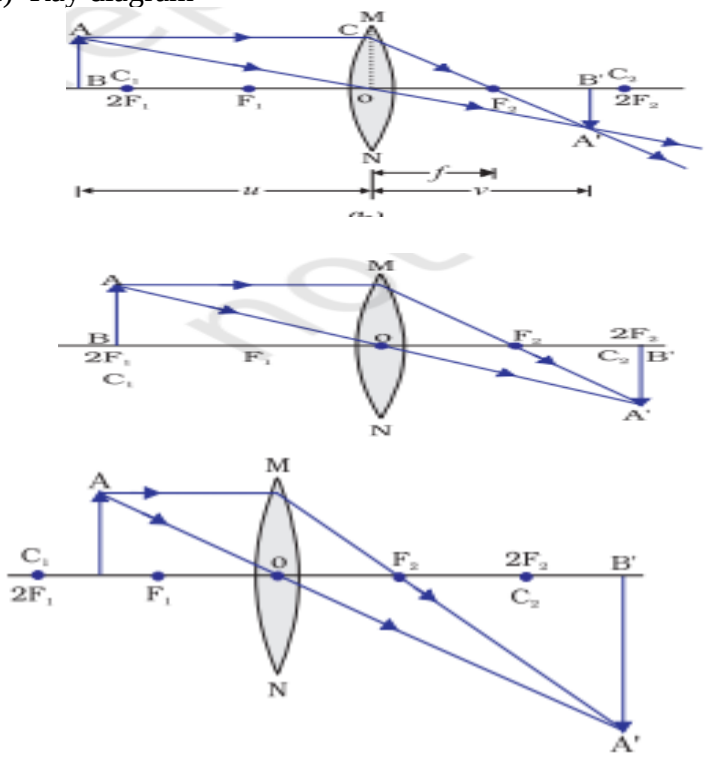
CLASS: X SCIENCE (Subject Code–086)

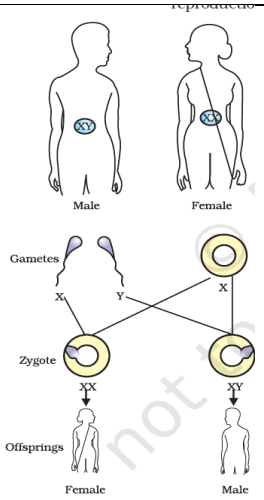
[Paper Code: 31/6/3]

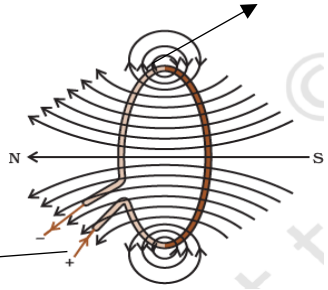
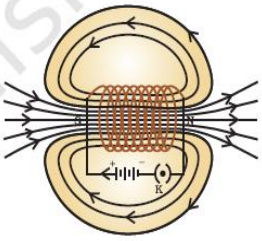
Maximum Marks: 80

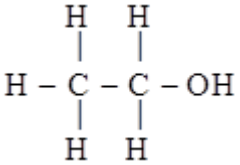
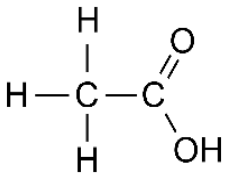
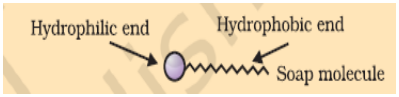
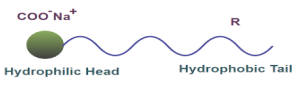
Q. No.	EXPECTED ANSWERS / VALUE POINTS	Marks	Total Marks
1	(D) / (ii) and (iv)	1	1
2	(D) / B < A < C	1	1
3	(A) / Aluminium	1	1
4	(B) / Pale green	1	1
5	(C) / C_7H_{14}	1	1
6	(B) / (ii) and (iii)	1	1
7	(D) / Tartaric acid	1	1
8	(B) / Dendrite → Cell body → Axon → Nerve ending	1	1
9	(D) / 100% tall with round seeds	1	1
10	(A) / Nephron	1	1
11	(B) / Starch	1	1
12	(B) / Hydrochloric acid, Pepsin and Mucus	1	1
13	(D) / increases or decreases as the case may be	1	1
14	(C)	1	1
15	(B) / Empty medicine bottles, Milk packets, Aluminium cans	1	1
16	(D) / 5000 kJ	1	1
17	(C) / Assertion (A) is true, but Reason (R) is false.	1	1
18	(A) / Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).	1	1
19	(C) / Assertion (A) is true, but Reason (R) is false.	1	1
20	(A)/ Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).	1	1
21	(i) Copper/Silver/ Gold/ Platinum • At the bottom of reactivity series of metals. (ii)Sodium / Potassium/Calcium/Magnesium/Aluminium • At the top of reactivity series of metals / Zinc/Iron/Lead/Copper • At the middle of activity series. **(any one)**	½ ½ ½ ½	2
22	(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) $n_{21} = \frac{\text{Speed of light in medium 1}}{\text{Speed of light in medium 2}}$	½ ½ 1	2
23	(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**	1 1	

	(b) • 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	2
24	(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. **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	2
25	(a) Brain is protected in bony box / skull / cranium / fluid filled balloon. (b) Region of brain: Hind brain and its part is cerebellum.	1 ½ +½	2
26	1% • Most of the energy is lost as heat to the environment and some amount goes into digestion, growth & reproduction of that trophic level. • An average of 10% is turned into its own body and made available for the next level / primary consumer	1 1	2
	SECTION C		
27	Because energy is released during the process of respiration. $C_6H_{12}O_6 + 6\,O_2 \longrightarrow 6\,CO_2 + 6\,H_2O + Energy$ (**Balancing of equation)**	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) $Zn + 2HCl \longrightarrow ZnCl_2 + H_2$ Metal Acid Zinc chloride (ii) $2NaOH + H_2SO_4 \longrightarrow Na_2SO_4 + 2H_2O$ Base Acid Sodium Sulphate	1 1 1 1 1	

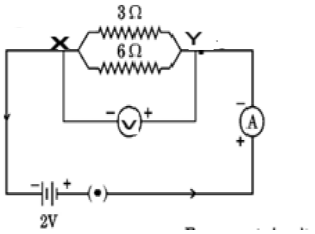
	(iii) $Na_2CO_3 + 2HCl \longrightarrow 2NaCl + H_2O + CO_2$ Salt Acid Sodium chloride **(Any other relevant equation in all three)** **(Give marks if written with carbonate ion)**	1	3
29	(a) Focal length = + 15 cm (**Ignore units**) Reason: when object distance and image distance are same i.e. object is at 2F, image is also formed at 2F on the other side $\therefore$ 2f = 30 cm (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) (c) Ray diagram  **– Any one ray diagram**	½ ½ ½ ½ 1	3

30	 (**any other flow diagram)** (b)In few reptiles, the temperature at which fertilised eggs are kept determines whether the animals developing in the eggs will be male or female. / In other animals, such as snails, individuals can change sex	2 1	 3
31	(i) Pulmonary vein (ii) Vena cava • Right atrium • After receiving blood, the right atrium contracts • As a result, blood passes into the right ventricle • When the right ventricle contracts and the deoxygenated blood flows into the lungs through pulmonary artery.	½ ½ ½ ½ x 3	 3
32	(a)Myopia / Near Sightedness/ Short sightedness (b)Two causes: • Excessive curvature of eye lens • Eye ball is elongated (c) f(m) = 1/P = 1/- 0.5= -2 m	1 ½ ½ 1	 3
33	(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. (b) (i) Ammeter. Ammeter is used to measure electric current (ii) Rheostat or variable resistance Rheostat is used in a circuit to vary the resistance of the circuit	1 ½ ½ ½ ½	 3
	SECTION D		
34	(a) Magnetic field lines are the imaginary lines around the magnet •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 – MAGNETIC FIELD LINES	½ ½	

	 **(1 Mark for each labelling)**	2	
	• Amount of the electric current flowing through it. • The number of turns in the circular coil • The radius of circular coil **(Any two)**	2	
	OR (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.	1	
		1	
	•Magnetic field lines are equidistant and parallel i.e. the magnetic field is the same at all points inside the solenoid.	1	
	• Number of turns • Amount of current in solenoid, • Core material inside the solenoid **(Any two)**	1x2	5
35	(a)Binary Fission • Amoeba splits into two parts in any plane of the body • In Leishmania, division occurs in a definite orientation in relation to the structure.	1 1	
	(b)Asexual reproduction is the process of producing new organisms from a single parent/without the involvement of sex cells or gamete	1	
	Budding: • A bud develops due to repeated cell division at one specific site. • These buds develop into tiny individuals and when they mature, they get detached from the parent body as new independent individuals. / or explanation through diagram	1	
	(c) Layering and grafting **OR** (a)(i)Attract insects for pollination (ii) Produces pollen grains	½ + ½	

	(iii)Provides the path through which the pollen tube grows and reaches the ovary (iv)Contains ovules which has an egg cell / female gamete (b) Unisexual flower – Papaya / Watermelon Bisexual flower – Hibiscus / Mustard **(Any other)** Post fertilization changes: • Zygote divides several times to form an embryo within the ovule. • Ovule develops a tough coat and changes into a seed. • Ovary grows rapidly and ripens to form a fruit. • Petals, sepals, stamens and style, etc. shrivel/dry and fall off	½ x 4 ½ ½ ½ X 4	5
36	(a) • Ethanol and Ethanoic acid  / CH_3CH_2OH ,  / CH_3COOH • On adding alkaline $KMnO_4$ /acidified $K_2Cr_2O_7$ to alcohol, it gets oxidises to Carboxylic acid . • An Ester is formed $C_2H_5OH \xrightarrow[\text{heat}]{\text{Alkaline } KMnO_4} CH_3COOH$ $C_2H_5OH + CH_3COOH \xrightarrow[\text{Catalyst}]{\text{Acid}} CH_3COOC_2H_5 + H_2O$ **OR** (b) • Soaps are sodium or potassium salts of long chain carboxylic acids. •  /  / soap molecule consists of a hydrophobic(water repelling)end and a hydrophilic (water loving)end. • Most dirt is oily in nature, oil does not dissolve in water. The ionic-end (hydrophilic) of soap interacts with water while the carbon chain(hydrophobic) interacts with oil. The soap molecules reacts with dirt, thus form structures called micelles. This forms an emulsion in water. The soap micelle	½ +½ ½ ½ ½ ½ 1 1 1 1	

	thus helps in pulling out the dirt in water and we can wash our clothes clean	1	
	• Hard water contains salts of Ca and Mg, which reacts with soap to form scum (an insoluble substance) and no foam is formed	1	
	• we can overcome this problem by using detergents as cleaning agents. / By removing hardness of water.	1	5
	SECTION E		
37	(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)	1	
	(II)		
	• Solder	½	
	• Lead (Pb) & tin (Sn)	½	
	(III) (a)		
	• An alloy is a homogenous mixture of two or more metals or a metal and a nonmetal.	1	
	• Brass is an alloy is prepared by mixing Copper and Zinc in definite proportion.	1	
	OR		
	(III) (b)		
	• Stainless steel is an alloy of steel (iron) mixed with nickel and chromium.	1	
	• 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.	½	
	• Prevents rusting **(or any other property)**	½	4
38	(I)'X' – Positive geotropism/Negative Phototropism	½	
	'Y' – Negative geotropism /Positive Phototropism	½	
	(II) (i) Abscisic acid	½	
	(ii) Cytokinin	½	
	(III) (a)		
	• The plants use electrical-chemical means to convey information (touch) from cell to cell.	1	
	• Plant cells change shape by changing the amount of water in them, resulting in swelling or shrinking of cells.	1	
	OR		
	(III) (b)		
	• 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 1	4
39	(I)		



(or Any other way) 1

(II)

(i) in parallel combination. ½

(ii) in series combination. ½

(III) (a) Resistance R = 3 Ω + 6 Ω = 9 Ω 1

V = 2V

$$I = \frac{V}{R} = \frac{2\ V}{9\ \Omega} = 0{\cdot}22\ A$$ 1

OR

(b) $$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R}$$ ½

$$= \frac{1}{3\ \Omega} + \frac{1}{6\ \Omega}$$ ½

$$= \frac{6 + 3}{18\ \Omega}$$

$$\therefore R = 2\text{ohm}$$ 1

4

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