SECONDARY SCHOOL EXAMINATION, 2025

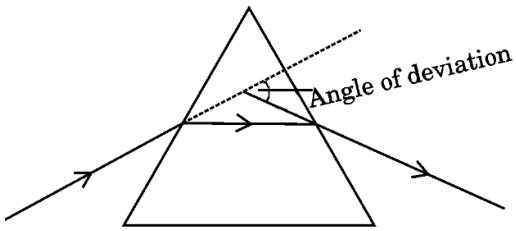
MARKING SCHEME

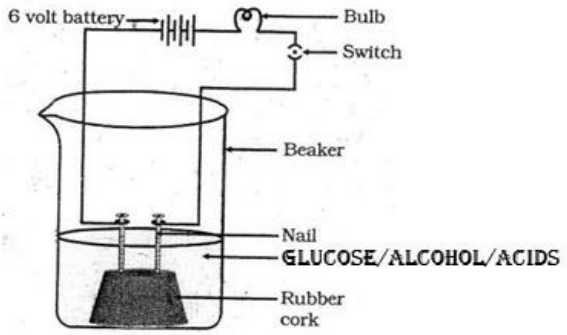
CLASS: X SCIENCE (Subject Code–086)

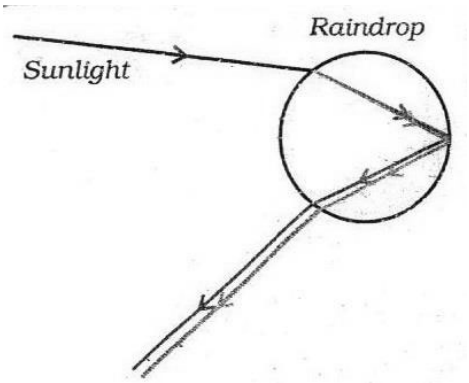
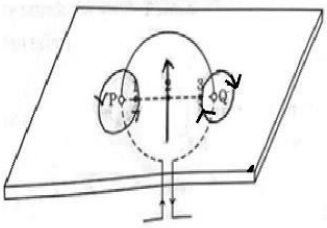
[Paper Code: 31/3/1]

Maximum Marks: 80

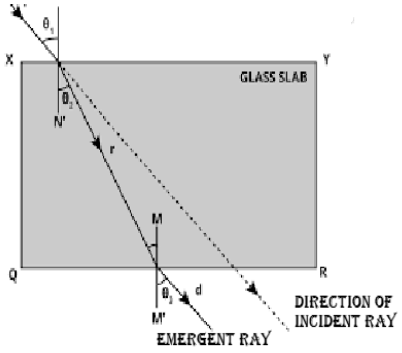
Q. No.	EXPECTED ANSWERS / VALUE POINTS	Marks	Total Marks
	SECTION A		
1	(C) / 2, 3, 1, 3	1	1
2	(B) / $K_2SO_4, Na_2SO_4, CaSO_4$	1	1
3	(A) / Reduction with carbon	1	1
4	(C) /(ii) and (iii)	1	1
5	(D) / It is an addition reaction which occurs in the presence of an acid catalyst.	1	1
6	(D) / a-(iii), b-(ii), c-(i), d-(iv)	1	1
7	(C) / Cerebellum	1	1
8	(B) / Cytokinins	1	1
9	(B) / *Hibiscus* and mustard	1	1
10	(C) / Mucus and Pepsin	1	1
11	**NOTE: - Full credit of one mark to all the students**.	1	1
12	(C) /Blue	1	1
13	(C) /9R	1	1
14	(D) /The direction of magnetic field lines inside a bar magnet is from its north pole to its south pole.	1	1
15	(D) / Radius of the coil of the solenoid	1	1
16	(D) /(ii) and (iv)	1	1
17	(C) / Assertion (A) is true, but Reason (R) is false.	1	1
18	(B) / Both Assertion (A) and Reason (R) are true, but Reason (R) is ***not*** the correct explanation of Assertion (A).	1	1
19	(B) / Both Assertion (A) and Reason (R) are true, but Reason (R) is ***not*** the correct explanation of Assertion (A).	1	1
20	(A) /Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).	1	1
	SECTION B		
21	(a)Heat, light, electricity $2\ AgBr(s) \xrightarrow{Sunlight} 2\ Ag(s) + Br_2(g)$ (or any other example or statement) **OR** (b) Observation: Water droplets on upper part of the test tube/Colour changes from green to white/White to brown on heating strongly/Pungent smell of burning Sulphur. $Fe\ SO_4.7H_2O \rightarrow FeSO_4 + 7H_2O$ $2FeSO_4 \xrightarrow{Heat} Fe_2O_3 + SO_3 + SO_2$	1 1 ½ ½ 1	2

22	(a) (i) H^+ / H_3O^+ (ii) OH^- (b) Dry HCl does not dissociate into hydrogen ions in absence of water.	½ ½ 1	2
23	• Veins carry deoxygenated blood from different organs and bring it back to the heart. • Because blood flows at low pressure inside veins.	1 1	2
24	(a) Tallness depends on the amount of plant hormone, synthesis of plant hormone depends on the efficiency of enzymes (proteins), synthesis of enzymes (proteins) depends on specific DNA sequence(gene). More the synthesis of hormone, more the pea plant will be taller. (b) Gene	1 1	2
25	(a) Hypermetropia /Farsightedness/Longsightedness. Reasons: (i) Focal length of the eye lens is too long (ii) Eyeball becomes too small. Correction Convex lens /Converging lens **OR** (b)  DIAGRAM DIRECTION OF RAYS MARKING OF ANGLE	½ ½ ½ ½ 1 ½ ½	2
26	P = 1000 W, V = 230 V; Formula = $P = \frac{V^2}{R}$ $R = \frac{V^2}{P}$ $= \frac{(230)^2}{1000}$ $= 52{\cdot}9\ \Omega$	½ 1 ½	2

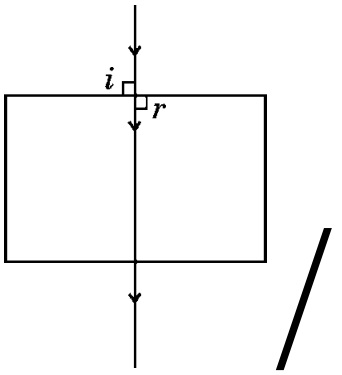
	SECTION C		
27	(a) • A series of metals arranged in the order of their decreasing reactivity/ activity. • By performing displacement reactions • Calcium, Aluminium, Lead, Copper (b) $Fe_2O_3 + 2\,Al \longrightarrow Al_2O_3 + 2\,Fe + Heat$	½ ½ 1 1	3
28	(a) (i) Electricity is passed through an aqueous solution of NaCl (brine), it decomposes to form NaOH. / Chlor-Alkali Process $2\,NaCl(aq) + 2\,H_2O \longrightarrow 2\,NaOH(aq) + Cl_2 + H_2$ (ii) When brine reacts with carbon dioxide and ammonia, sodium hydrogen carbonate and ammonium chloride are formed $2\,NaCl + H_2O + CO_2 + NH_3 \longrightarrow NaHCO_3 + NH_4Cl$ (b) **OR**  Bulb does not glow when solution of alcohol and glucose are taken but glows when acids solution are taken. (Award marks if explained in words) **Reason:-** Acidic solutions liberate ions but glucose and alcohol do not liberate ions .Hence bulb only glows for acidic solutions.	½ 1 ½ 1 2 1	3
29	(a) Aerobic – carbon dioxide+water Anaerobic - Lactic Acid (b) Respiration –carbon dioxide Photosynthesis – oxygen (c) Terrestrial Animals – lungs / skin Fish– Gills	½ ½ ½ ½ ½ ½	3
30	(a) Round, yellow (b) round yellow : 9 round green : 3 wrinkled yellow : 3	1 1	

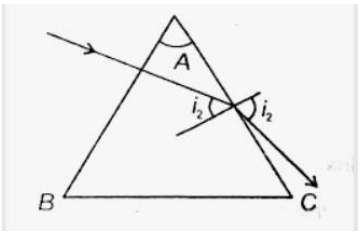
	wrinkled green : 1 (c) Traits are inherited independently/Independent assortment of the traits.	1	3
31	A rainbow is a natural spectrum appearing in the sky after a rain shower.  (Deduct half mark if arrows are not marked)	1 2	3
32	(a)  Marking magnetic lines for points 1,2 and 3 (b) • Strength of the current in the loop • No. of turns of loop (c) Right hand thumb rule	½x3 ½x2 ½	3
33	(a) • The energy captured by plants does not revert to solar input and the energy which passes to the herbivores does not revert back to autotrophs. • As energy moves progressively through the various trophic levels it is no longer available to the previous level. • The energy available at each trophic level gets diminished progressively due to loss of energy at each level. **(any two)** (b) 100 J • Autotrophs ⟶ Primary consumer ⟶ secondary 10000 J (1000 J) consumer (100 J)	1x2 ½ ½	

	/ Only 10% energy of the organic matter of previous trophic level is transferred to next trophic level. /10% law		3
	SECTION-D		
34	(a) (i) (I) Ag, (II) Al, (III) K, (IV) Cu	½ ½ ½ ½	
	(ii) Metal oxides which react with both acids as well as bases to produce salts and water are called amphoteric oxides.	1	
	$Al_2O_3 + 6\,HCl \longrightarrow 2\,AlCl_3 + 3\,H_2O$	½	
	$Al_2O_3 + 2\,NaOH \longrightarrow 2\,NaAlO_2 + H_2O$ (Do not deduct marks if equation is not balanced)	½	
	(iii) Water soluble bases are called Alkalis. NaOH / KOH / Sodium Hydroxide / Potassium Hydroxide **(any one)**	½ ½	
	OR		
	(b) (i) (I) $2\,HgS(s) + 3\,O_2(g) \xrightarrow{Heat} 2\,HgO(s) + 2\,SO_2(s)$ (cinnabar)	1	
	$2\,HgO(s) \xrightarrow{Heat} 2\,Hg(l) + O_2(g)$	1	
	(II) $2\,CuS + 3\,O_2(g) \xrightarrow{Heat} 2\,Cu_2O(s) + 2\,SO_2(g)$	1	
	$2\,Cu_2O + Cu_2S \xrightarrow{Heat} 6\,Cu(s) + SO_2(g)$ (Deduct half mark each for unbalanced equation)	1	
	(ii) (I) Silver sulphide /Ag_2S (II) Basic Copper carbonate/ $Cu(OH)_2$. $CuCO_3$	½ ½	5
35	(a) (i) 'X' – Stigma 'Y' – Anther	½+ ½	
	(ii) Pollen grains	1	
	(iii) Pollination	1	
	(iv) After the transfer of pollen grains from anther into stigma, a pollen tube grows out of the pollen grain and travels through the style to reach the ovary. Male germ cell fuses with the		

	female germ cell to form a zygote which divides several times to form an embryo within the ovule. The ovule develops a tough coat and is gradually converted into a seed.	2	
	OR		
	(b)		
	(i) Binary fission	½	
	(ii) *Leishmania*	½	
	(iii) Produces a greater number of offsprings within a short period of time /Ensures better chances of survival of organisms in unfavorable conditions/Formation of genetically similar organisms /gamete formation is not required. **(any two)**	1+1	
	(iv)		
	Budding	1	
	A bud develops as an outgrowth due to repeated cell division at a specific site, develop into tiny individuals, and after being matured, detach from parent body and become new independent individuals.	1	
	(Award marks if explained through labelled diagram) (or any other mode of reproduction)		5
36	(a) (i)		
	The extent of bending of the ray of light at the opposite parallel faces of the rectangular glass slab is equal and opposite. This is why the ray emerges parallel to the incident ray.	1	
		1	

NORMAL INCIDENCE





1

(ii) u = – 30 cm , f = – 20 cm

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f} \quad \text{or} \quad \frac{1}{v} = \frac{1}{u} + \frac{1}{f}$$ ½

$$\frac{1}{v} = \frac{1}{-30\ \text{cm}} + \frac{1}{-20\ \text{cm}}$$ ½

$$= \frac{1}{-12\ \text{cm}} \text{ or } v = -12\ \text{cm}$$ 1

The image is at – 12 cm on the same side of the lens.

OR

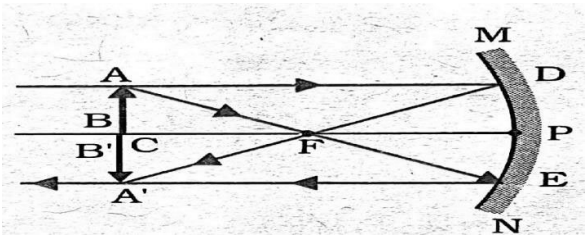
(b)

(i)

Type of Image

Real and Inverted (when candle is beyond F)/ Virtual and Erect (when candle is between P and F) 1

As the object is moved gradually away from the pole of the mirror, the image gets diminished. 1



1

(ii) Object distance, u = – 6·00 m

Image distance, v = ?

Focal length, f = 3·00 m

$$\frac{1}{v} + \frac{1}{u} = \frac{1}{f} \quad \text{or} \quad \frac{1}{v} = \frac{1}{f} - \frac{1}{u}$$ ½

	$\frac{1}{v} = \frac{1}{+3{\cdot}00\ \text{m}} - \frac{1}{(-6{\cdot}00\ \text{m})}$ $= \frac{1}{+3{\cdot}00\ \text{m}} + \frac{1}{6{\cdot}00\ \text{m}} = \frac{2+1}{6\ \text{m}}$ or $v = \frac{6}{3} = 2{\cdot}0\ \text{m}$	½ ½ ½	5
	SECTION E		
37	(a) (III) /Tubewell water +Solution of Salt A (b)	1	

Salt A	Salt B
Soap	Detergent
Na/K salt of long chain carboxylic acids	sodium salt of sulphonic acids or ammonium salts with chloride or bromide ions.
Does not form lather with hard water	Forms lather even with hard water

1

(Any one)

(c) (i)

- Esters are sweet smelling substances used in making perfumes and flavoring agents. / Formed when alcohol and carboxylic acid react in presence of acid to form ester. — 1
- It is converted back to alcohol and a salt of carboxylic acid. — ½

$CH_3COOC_2H_5 + NaOH \longrightarrow C_2H_5OH + CH_3COONa$ — ½

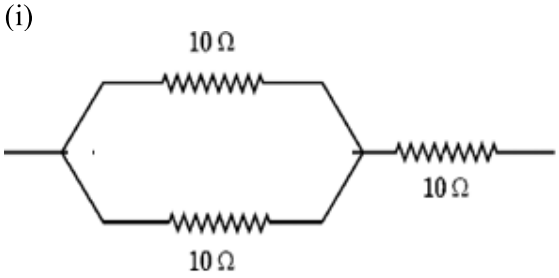
OR

(c) (ii)

- Presence of Ca and Mg salts in water — ½
- Scum — ½
- Soap reacts with calcium and magnesium salts to form insoluble substance. — 1

4

38	(a) (i) Adrenaline **OR** (ii) Adrenal Gland	2	
	(b) Heart beat becomes faster to supply more oxygen to the muscles / blood supply to the digestive system is reduced / blood supply to the skin is reduced / blood is diverted to the skeletal muscles / breathing rate increases/increased contractions of diaphragm and rib muscles. **(Any two)**	1	
	(c) Chemical signal – travel through bloodstream and reach a wide range of target cells across the body.		

	Electrical signal – travels through a nerve cell. **(Any other)**	1	4
39	(a) Graph A (b) Graph D, (c) (i)  $R = \frac{R_1 R_2}{R_1 + R_2} + R_3$ $R = \left(\frac{10 \times 10}{10 + 10} + 10\right)\Omega = 5\ \Omega + 10\ \Omega = 15\ \Omega$ **OR** (c) (ii) • $I = \frac{V}{R} = \frac{6\ V}{(0{\cdot}1 + 0{\cdot}2 + 0{\cdot}3 + 0{\cdot}4 + 0.5)\ \Omega} = \frac{6\ V}{1.5\ \Omega} = 4{\cdot}0\ A$ • same current flows when resistors are connected in series.	1 1 1 ½ ½ 1 1	4