SECONDARY SCHOOL EXAMINATION, 2025

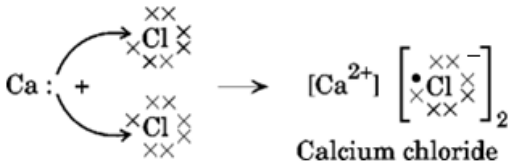
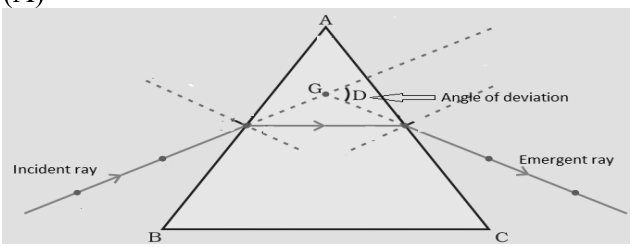
MARKING SCHEME

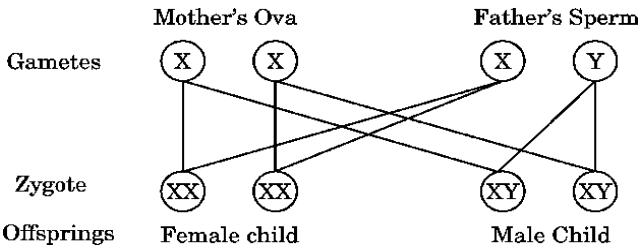
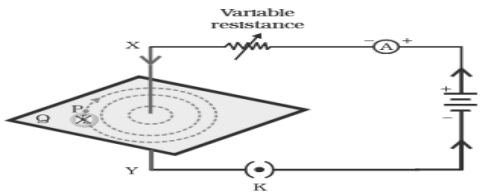
CLASS: X SCIENCE (Subject Code–086)

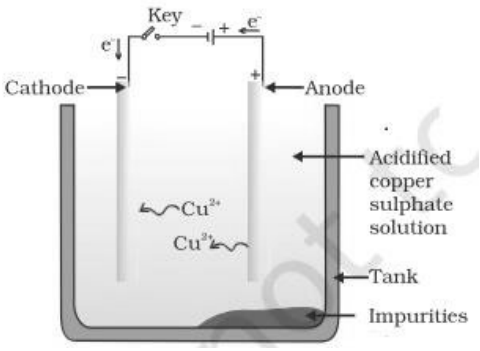
[Paper Code:31/4/3]

Maximum Marks: 80

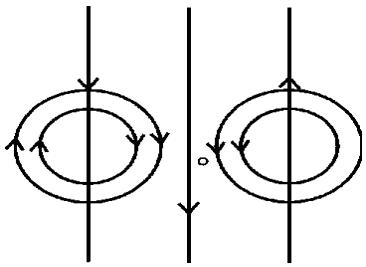
Q. No.	EXPECTED ANSWERS / VALUE POINTS	Marks	Total Marks
	SECTION A		
1	(c)/ DDT	1	1
2	(c)/ plants-→ man	1	1
3	(b)/ magnesium	1	1
4	(c)/ glass slab	1	1
5	(d)/ 9	1	1
6	(d)/ Melting of glaciers	1	1
7	(a)/ Calcium chloride	1	1
8	(d)/ Propyne	1	1
9	(b)/ Nitrogen	1	1
10	(c)/ 60	1	1
11	(a)/ 4400 Ω	1	1
12	(b)/ B and D	1	1
13	(c)/ seeds	1	1
14	(c)/ 100%; 75%	1	1
15	(a)/ anther	1	1
16	(c)/ 40cm	1	1
17	(a) / / Both Assertion and Reason are true and Reason (R) is the correct explanation of Assertion (A).	1	1
18	(d) / / Assertion (A) is false but Reason (R) is true.	1	1
19	(d) / / Assertion (A) is false but Reason (R) is true.	1	1
20	(b) / Both Assertion and Reason are true and Reason (R) is not the correct explanation of Assertion (A).	1	1

	SECTION B		
21	• Silver bromide (AgBr) / Silver chloride (AgCl) • Endothermic Reaction. Justification: Requires energy/requires sunlight for breaking down the reactant.	1 ½ ½	2
22	(A) • $Ca \longrightarrow Ca^{2+} + 2e^-$ $Cl + e^- \longrightarrow Cl^-$ •  Calcium chloride OR (B) • Amphoteric oxide can react with both acids as well as bases to form salt and water. • Reactions: $Al_2O_3 + 6HCl \rightarrow 2AlCl_3 + 3H_2O$ $Al_2O_3 + 2NaOH \rightarrow 2NaAlO_2 + H_2O$ (ignore balancing)	½ ½ 1 1 ½ ½	2
23	• Xylem and Phloem • Xylem – transports water and minerals obtained from the soil into the different parts of the plant. • Phloem – Transports food from leaves to other parts of the plant./ translocation of soluble products.	½ +½ ½ ½	2
24	(A)  (one mark for diagram and ½ for labelling.) • Angle of deviation	1½ ½	

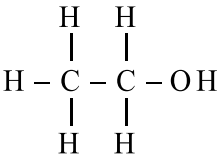
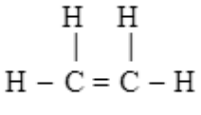
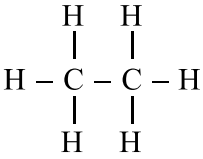
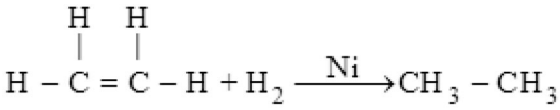
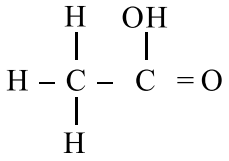
	OR (B) I. • Bi-focal lens. • Bi-focal lens having upper portion consists of a concave lens and lower portion consists convex lens. / • to facilitate the distant and near vision respectively. II. • convex lens. • Convex lens is thickened at the middle as compared to edges • to facilitate the near vision. ***(either of I or II)***	½ 1 ½ ½ 1 ½	2
25	Flowchart  • If a sperm carrying X chromosomes fertilizes an ovum which carries X chromosome, then the child born will be a girl. • If a sperm carrying Y chromosome fertilizes an ovum which carries X-Chromosome, then the child born will be a boy.	2	2
26	•  	1	

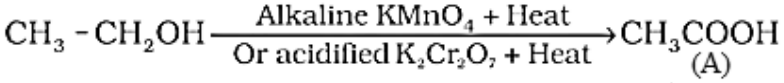
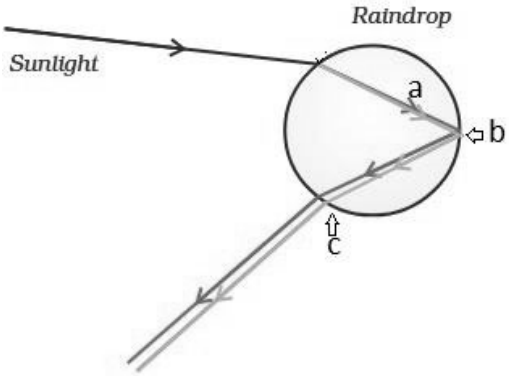
	• Right hand thumb rule.	1	2
	SECTION C		
27	Object should be placed between F and P / At less than 18cm distance from the mirror. Mirror formula = $\frac{1}{v}+\frac{1}{u}=\frac{1}{f}$ Magnification m = +2 f = – 18 cm m = $-\frac{v}{u}=+2$ $\therefore \quad v = -2u$ $\frac{1}{-2u}+\frac{1}{u}=\frac{1}{-18\text{ cm}}$ $\therefore \frac{1}{2u} = \frac{1}{-18\text{ cm}}$ u = – 9 cm	1 ½ 1 ½	3
28	• Electrolytic refining • In this process, the impure metal is made the anode and thin strip of pure metal is made the cathode. A solution of metal salt is used as an electrolyte; on passing the current through the electrolyte the pure metal from the anode dissolves into the electrolyte. An equivalent amount of pure metal from the electrolyte is deposited on the cathode. The soluble impurities go into the solution, whereas, the insoluble impurities settle down at the anode and are known as anode mud. /  (award marks if explained diagrammatically)	1 2	3

29	• The breakdown of glucose to form *pyruvate* or *pyruvic acid.* • Occurs in *cytoplasm* of the cell. **(i)** In the presence of oxygen: $\text{Glucose} \xrightarrow{\text{In cytoplasm}} \text{Pyruvate} \xrightarrow{\text{Presence of oxygen}} \text{Carbon dioxide + Water + Energy}$ **(ii)** Due to lack of oxygen $\text{Glucose} \xrightarrow{\text{In cytoplasm}} \text{Pyruvate} \xrightarrow{\text{Lack of oxygen}} \text{Lactic acid + Energy}$	½ ½ 1 1	3
30	(A) • The number of atoms of each element remains same before and after a chemical reaction / to satisfy the law of conservation of mass. • Law of conservation of mass. • Mass can neither be created nor destroyed in a chemical reaction. • $3Zn + 2H_3PO_4 \longrightarrow Zn_3(PO_4)_2 + 3H_2$ **OR** (B) Any reaction in which a precipitate (insoluble substance) is formed is called a precipitation reaction. Example: when sodium sulphate solution is added to the barium chloride solution a white precipitate of barium sulphate is formed. $Na_2SO_4\,(aq) + BaCl_2(aq) \longrightarrow \underset{ppt}{BaSO_4}\,(s) + 2NaCl(aq)$ (any other example)	 ½ ½ 1 1 1 1 1	3
31	Decomposers are the microorganisms which breakdown the complex organic substances into simple inorganic substances. Examples: bacteria and fungi The simple substances formed by decomposition go into the soil and are used up once more by the plants, thus maintain balance of an ecosystem.	1 ½+½ 1	3
32	• The work done to move a unit charge from one point to other in a conductor. / (V=W/Q) • volt (V)	1 ½	

	• In a current carrying conductor, when one joule of work is done to move a charge of 1 coulomb from one point to another. • 1 volt = 1 joule/1 coulomb or 1V=1 J C^{-1}	1 ½	3
33	Limitations of electrical impulse: • They reach only those cells that are connected by nervous tissue, and not every cell in the animal body. • Once an electrical impulse is generated in a cell and transmitted, the cell will take some time to reset its mechanism before it can generate and transmit a new impulse. / Takes sometime to reset its mechanism. (any other limitation) • In chemical communication the signals (chemical compound) potentially reach all cells of the body steadily and persistently providing the desired changes.	1 1 1	3
	SECTION D		
34	(A) (i)  Correct Pattern Correct direction (ii) (a) red wire : Live wire black wire : Neutral wire green wire : Earth wire (b) 220 V (c) This is used as a safety measure. It ensures that any leakage of the current to the metallic body of the appliance keeps its potential to that of the earth and the user may not get a severe electric shock. **OR** (B) (i) (a) The conductor AB gets displaced.	1 1 ½x3 ½ 1 1	

	(b) • By reversing the direction of the current • By reversing the direction of the magnetic field (ii)When the direction of current is at right angles to the direction of the magnetic field. (iii)Stretch the thumb, fore finger and middle finger of your left hand such that they are mutually perpendicular. If the first finger points in the direction of magnetic field and the second finger in the direction of the current, then the thumb will point in the direction of the force acting on the conductor.	1+1 1 1	5
35	(A) A – Stigma ; B – Anther • pollen germinate to form pollen tube which carries male germ cells to the egg cell in the ovule of the ovary. • Fusion of germ cells/fertilization gives rise to zygote. • Zygote divides to form an embryo within the ovule. Ovule develops and converted into a seed. • Ovary grows rapidly to form a fruit. Petals, sepals, stamens, style, etc. shrivel and fall off. OR (B) Changes after fertilization: • Fertilisation results in the formation of a zygote. • Zygote starts dividing to form an embryo, which is implanted in the lining of the uterus. • Embryo continues to grow and derive nutrition through placenta. Role of placenta – To provide oxygen and glucose to the embryo from mother's blood To remove waste substances generated by the developing embryo. If the egg is not fertilized: • the lining of the uterus slowly breaks and comes out through the vagina as blood and mucous./ menstruation will occur.	½ + ½ 1x4 1x3 1 1	5

36	(A) Compound A: Ethanol/ Ethyl alcohol ;  / CH_3CH_2OH	½; ½	
	Compound B: Ethene;  / C_2H_4	½; ½	
	Compound C: Ethane ;  / C_2H_6	½ ; ½	
	$CH_3CH_2OH \xrightarrow{Hot\ Conc.\ H_2SO_4} CH_2 = CH_2 + H_2O$ 'A' 'B' Conc. H_2SO_4 is a dehydrating agent.	½ ½	
	 'B' 'C'	½	
	$C_2H_6 + 7/2\ O_2 \longrightarrow 2CO_2 + 3H_2O$ 'C' (ignore balancing)	½	
	OR		
	(B) (i) A – Ethanoic acid ;  / CH_3COOH	½ +½	
	(ii) $CH_3COOH + C_2H_5OH \xrightarrow{acid} CH_3COOC_2H_5$ 'A' 'B' Role of acid – As a catalyst	½ ½	

	(iii) By adding dil. NaOH to B (ester) /saponification / by adding water with acid or base/ on addition of NaOH, sodium salt of acid is produced which is further hydrolysed to form 'A'	1	
	(iv) By adding solution of alkaline potassium permanganate or acidified potassium dichromate in warm ethanol./ 	1	
	(v) Carbon dioxide/ CO_2	1	5
	SECTION E		
37	**(i)** A rainbow (or any other) **(ii)** Dispersion of white light takes place. (iii) (A) • The presence of water droplets in the atmosphere. • The sun must be at the back of the observer. OR (iii) (B)  (½ mark for diagram and ½ for labelling a, b, c)	1 1 1+1 ½ x4	4
38	**(i)** Hydrochloric acid/ HCl and Sodium hydroxide / NaOH (ii) -Neutral - as it is a salt of strong acid and strong base. (iii) (A) • Aqueous solution of sodium chloride(brine) decomposes (electrolysed) and produces: • NaOH solution near cathode	½ +½ ½ ½ ½	

	• Cl_2 at anode • H_2 at cathode OR (iii)(B) Washing soda is obtained from sodium chloride by following reactions: $NaCl + H_2O + CO_2 + NH_3 \longrightarrow NH_4Cl + NaHCO_3$ $2NaHCO_3 \xrightarrow{Heat} Na_2CO_3 + H_2O + CO_2$ Recrystallisation of sodium carbonate gives washing soda. $Na_2CO_3 + 10H_2O \longrightarrow Na_2CO_3.10H_2O$	½ x3 ½ x 4	4
39	**(i)** Reflex action. The sudden action in response to stimuli in the environment. (ii) (a) Motor neuron – carries message from spinal cord to the effector organ/muscle (b)Relay neuron – Connects sensory neuron to motor neuron. (iii) Central Nervous system. Components: Brain; spinal cord Peripheral Nervous system. Components: cranial nerves ; spinal nerves. OR (iii)(B) (a) Fore-brain/Cerebrum (b) Cerebellum / Hind-brain (c) Medulla/ Hind-brain (d) Fore-brain	½ ½ ½ ½ ½ x4 ½ x4	4