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Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Secondary School Examination, 2025
SUBJECT : SCIENCE (FOR VISUALLY IMPAIRED CANDIDATES ONLY) (Q.P. CODE 31B)

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<u>**General Instructions: -**</u>

1	You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2	**"Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, Evaluation done and several other aspects. Its' leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in Newspaper/Website, etc. may invite action under various rules of the Board and IPC."**
3	Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one's own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. **However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In class-X, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.**
4	The Marking scheme carries only suggested value points for the answers. These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
5	The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. If there is any variation, the same should be zero after deliberation and discussion. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
6	Evaluators will mark(√) wherever answer is correct. For wrong answer CROSS 'X' be marked. Evaluators will not put right (✓)while evaluating which gives an impression that answer is correct and no marks are awarded. **This is most common mistake which evaluators are committing.**
7	If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totaled up and written in the left-hand margin and encircled. This may be followed strictly.
8	If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
9	If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note **"Extra Question"**.

10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of marks 80 (example 0 to 80/70/60/50/40/30 marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.
12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines).This is in view of the reduced syllabus and number of questions in question paper.
13	Ensure that you do not make the following common types of errors committed by the Examiner in the past:- ● Leaving answer or part thereof unassessed in an answer book. ● Giving more marks for an answer than assigned to it. ● Wrong totalling of marks awarded on an answer. ● Wrong transfer of marks from the inside pages of the answer book to the title page. ● Wrong question wise totalling on the title page. ● Wrong totalling of marks of the two columns on the title page. ● Wrong grand total. ● Marks in words and figures not tallying/not same. ● Wrong transfer of marks from the answer book to online award list. ● Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answer.) ● Half or a part of answer marked correct and the rest as wrong, but no marks awarded.
14	While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0)Marks.
15	Any unassessed portion, non-carrying over of marks to the title page, or totalling error detected by the candidate shall damage the prestige of all the personnel engaged in the evaluation work as also of the Board. Hence, in order to uphold the prestige of all concerned, it is again reiterated that the instructions be followed meticulously and judiciously.
16	The Examiners should acquaint themselves with the guidelines given in the "**Guidelines for Spot Evaluation**" before starting the actual evaluation.
17	Every Examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totaled and written in figures and words.
18	The candidates are entitled to obtain photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.

SECONDARY SCHOOL EXAMINATION, 2025
MARKING SCHEME
CLASS: X [SCIENCE (Subject Code–086)]
[Paper Code: 31(B)]

Maximum Marks: 80

Q. No.	EXPECTED ANSWERS / VALUE POINTS	Marks	Total Marks
	SECTION A		
1	(B)/ blue to pale green	1	1
2	(C)/ D/3 and L/6	1	1
3	(B)/ Iron	1	1
4	(D)/ (b) and (d)	1	1
5	(A)/ Sodium ethoxide and hydrogen	1	1
6	(D)/ $\diagdown C = O$	1	1
7	(B)/ Sieve tubes	1	1
8	(B)/ amino acids, salts, glucose and water	1	1
9	(A)/ Cerebrum	1	1
10	(C)/ fruits and seeds	1	1
11	(D)/ roots, stem and leaves	1	1
12	(C)/ Real and magnified	1	1
13	(A)/ North	1	1
14	(B)/ thin and its curvature is minimum	1	1
15	(B)/ 8000 J	1	1
16	(D)/ exerts a force only when current flows through a conductor at right angles to the field.	1	1
17	(A)/ Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).	1	1
18	(A)/ Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).	1	1
19	(C)/ Assertion (A) is true, but Reason (R) is false.	1	1
20	(D)/ Assertion (A) is false, but Reason (R) is true.	1	1
	SECTION B		
21	(a) • A white precipitate is formed	½	
	• $Na_2SO_4(aq) + BaCl_2(aq) \longrightarrow BaSO_4(s) + 2NaCl(aq)$	1	
	• Double displacement reaction/ precipitation reaction	½	
	OR		
	(b) • Pale green to reddish brown / Light green to brown	½	
	• $2FeSO_4(s) \xrightarrow{\text{heat}} Fe_2O_3(s) + SO_2(g) + SO_3(g)$	1	
	• Decomposition reaction	½	2
22	• Evolution of gas/ bubbles of gas formed		
	Change (rise) in temperature	½ x2	
	• $Zn(s) + H_2SO_4(aq) \longrightarrow Zn SO_4(aq) + H_2(g)$	1	2

23	• Exchange of gases occurs through stomata	1	
	• Exchange of gases also occurs through the surface of stems, roots and leaves.	1	2
24	(a) (i) Breaks down starch into sugar (ii) Creates an acidic medium which facilitates the action of enzyme pepsin/ kill germs (microbes) present in the food. (iii) Helps in digesting proteins (iv) Increase the surface area for absorption of digested food **OR** (b) • Oxygenated blood from the lungs comes to the left atrium through pulmonary vein. • Deoxygenated blood from upper and lower parts of the body comes back to the right atrium through vena cava.	½ x4 1 1	2
25	(a) Properties of the images formed by plane mirror: • Virtual • Erect • Same size as the object • behind the mirror at the same distance • laterally inverted **(Any Four)** **OR** (b) • Virtual • Erect • Diminished • Formed behind the mirror	½ x4 ½ x4	2
26	(a) • Any substance (waste) that can be easily broken down by biological processes (by action of micro-organisms) • Agricultural waste and sewage **OR** (b) • Because bacteria and fungi degrade and decompose dead remains of plants and animals into simpler inorganic substances. • (i) Recycle the nutrients into the soil.	1 ½ x2 1	

		(ii) Check spread of diseases/prevent foul smell/check environmental pollution/ clean the environment	½ x2	2

SECTION C

27	(a) (i) (1) At cathode – Hydrogen /H_2, (2) at anode – Oxygen /O_2	½ x2	
	(ii) The volume of hydrogen gas is two times that of oxygen because water ($H2O$) contains two moles of hydrogen and one mole of oxygen / two atoms of hydrogen and one atom of oxygen / $2 H_2O (l) \rightarrow 2 H_2 (g) + O_2 (g)$	1	
	(iii) Electrolysis will not take place /in the absence of acid, water will not conduct electricity	1	
	OR		
	(i) $2 Na(s) + 2H_2O(l) \longrightarrow 2 NaOH(aq) + H_2(g)$	1	
	(ii) $2 Pb(NO_3)_2(s) \longrightarrow 2 PbO(s) + 4NO_2(g) + O_2(g)$	1	
	(iii) $N_2(g) + 3H_2(g) \longrightarrow 2 NH_3(g)$	1	
	(Deduct ½ mark if balancing is incorrect in each case)		3

28	• Hydrogen gas at the cathode (negative electrode)		
	• Chlorine gas at the anode (positive electrode)		
	• Sodium hydroxide is obtained near the cathode in the solution	½ x3	
	Uses:		
	• Hydrogen is used as fuel		
	• Chlorine is used in the manufacture of hydrochloric acid/bleaching powder	½ x 3	
	• Sodium hydroxide is used in the manufacture of soaps/ detergents / washing soda, paper-making, etc.		3
	(or any other use)		

29	(a) • Synapse is the functional gap/junction between two neurons.	1	
	• The information is acquired at the dendritic tip of a nerve cell, which sets off a chemical reaction that creates an electrical impulse. This impulse travels from the dendrite to the cell body, and then along the axon to its end.	1	
	• At the end of the axon, the electrical impulse sets off the release of some chemicals, which cross the gap, or synapse,	1	

		and start a similar electrical impulse in a dendrite of the next neuron.		

OR

(b)

	Hormone	Source	Function		
(i)	Thyroxin	Thyroid gland	Regulates metabolism of carbohydrates, fats and proteins	½ x 2	
(ii)	Insulin	Pancreas	Regulates blood sugar level	½ x 2	
(iii)	Growth hormone	Pituitary gland	Regulates overall growth and development of the body	½ x 2	3

30	• Plant hormones are chemical substances which are produced in plants, regulating one or more physiological processes / help to coordinate growth, development and responses to the environment.	1	
	• They are synthesized in plants at places away from where they act and simply diffuse to the area of action.	1	
	• A hormone called auxin synthesized at the shoot tips helps the cells to grow longer. When light is coming from one side of a plant, auxin diffuses towards the shady side of the shoot. This stimulates the cells to grow longer on the side of the shoot which is away from the light. Thus, plants bend towards the light.	1	3

31	(i) Lens formula $\dfrac{1}{v} - \dfrac{1}{u} = \dfrac{1}{f}$	½	

$u = -30$ cm, $f = +20$ cm, $h_o = 4 \cdot 0$ cm, $v = ?$; $h_i = ?$

$$\therefore \quad \frac{1}{v} = \frac{1}{f} + \frac{1}{u}$$

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

$$\frac{1}{v} = \frac{3-2}{60}$$ ½

$$\frac{1}{v} = \frac{1}{60}$$

$$v = 60 \text{ cm}$$ ½

(award marks, if solved by any other method)

(ii) Height of the image $h_i = \dfrac{v}{u} \times h_o$ ½

		$= \dfrac{+\,60\,\text{cm}}{-\,30\,\text{cm}} \times 4 \cdot 0\,\text{cm}$ $= -\,8 \cdot 0\,\text{cm}$	½	3
32	(a)	(i) • Electric fuse • Earthing/use earth wire	½ x2	
		(ii) • $I = \dfrac{P}{V}$ $= \dfrac{2000\text{W}}{220\text{V}}$	½	
		$= 9 \cdot 09\text{A}$	½	
		• The appliance will stop working due to overloading.	1	
		OR		
	(b)	(i) • Right hand thumb rule	½	
		• Imagine holding a current carrying straight conductor carrying in your right hand such that the thumb points toward the direction of current, then the fingers wrap around the conductor indicates the direction of the magnetic field lines.	1	
		(ii) • Fleming's left hand rule	½	
		• Stretch the thumb, forefinger and the middle finger of your left hand mutually perpendicular to each other. If the forefinger points in the direction of magnetic field, middle finger in the direction of current, then the thumb gives the direction of motion or force on the current carrying conductor.	1	3
33		• Gas 'G' – Ozone/ O_3	1	
		• Ozone shields the earth's surface from the harmful ultraviolet (UV) radiation from the Sun.	½	
		• Chlorofluorocarbons (CFC)/ freons	½	
		• Forged an agreement to freeze Chlorofluorocarbons (CFC) production at 1986 levels	½+½	
		• Companies to make Chlorofluorocarbons (CFC) free appliances (Refrigerators)		3
		SECTION D		

34	(a) (i)		

34

(a) (i)

• Carbon cannot form C^{4+} cations because it requires a large amount of energy to remove 4 electrons. — 1

• It cannot form C^{4-} anions because it would be difficult for the nucleus with 6 protons to hold 10 electrons. Thus, it shares electrons to form covalent compounds. — 1

(ii)

• A series of carbon compounds in which same functional groups or heteroatoms substitutes hydrogen atom in carbon compounds/ A sequence of carbon compounds with same general formula and similar chemical properties. — 1

• HCHO, CH_3CHO — 1

(or any two consecutive members of aldehydes)

(iii) (1) 9 single covalent bonds — ½

  (2) 3 double covalent bonds. — ½

OR

(b) (i) • Ethanol /Ethyl alcohol — ½

  • C_2H_5OH — ½

(ii) (1) $C_2H_5OH \xrightarrow[\text{excess conc.} H_2SO_4]{443K} C_2H_4 + H_2O$ — 1

  ethene

  (2) $C_2H_5OH + CH_3COOH \xrightarrow{Acid\,catalyst} CH_3COOC_2H_5 + H_2O$ — 1

  Ester/ ethyl ethanoate

  (3) $2C_2H_5OH + 2Na \longrightarrow 2 C_2H_5ONa + H_2$ — 1

  Sodium ethoxide

  (4) $C_2H_5OH \xrightarrow{alkaline KMnO_4 + Heat} CH_3COOH$ — 1

  Ethanoic acid/ acetic acid — 5

(Do not deduct marks for balancing)

35

(a) (i) When the egg is not fertilized, the thick spongy lining of the uterus breaks and comes out through the vagina as blood and mucus. / Menstruation begins — 1

		(ii) The fertilized egg (or the zygote) gets implanted in the lining of the uterus and starts dividing.	1	
		(b) • Chemical method/ use of oral pills	½	
		Side effect : Change the hormonal balance of the body	½	
		• Mechanical method/ Use of loop or Copper T / Another	½	
		Side effect : Irritation in the uterus	½	
		• Surgical method/ Fallopian tube/oviduct is blocked	½	
		Side effect – May cause infection if not performed properly.	½	5
36		(a) • Electric Power: It is the rate at which electric energy is dissipated or consumed.	1	
		• Expression: $P = V^2/R$	1	
		(b) (i) Power $= \dfrac{Electrical\ energy\ consumed}{Time}$	½	
		$= \dfrac{22\ kWh}{10h} = 2{\cdot}2\ kW$ or $2200W$	½	
		(ii) Current $= \dfrac{Power}{Voltage}$	½	
		$= \dfrac{2200W}{220V} = 10A$	½	
		(iii) Resistance $= \dfrac{(Voltage)^2}{Power}$	½	
		$= \dfrac{(220)^2}{2200} = 22\ \Omega$	½	5
	SECTION E			
37		(a) Anode – Impure copper	½	
		Cathode – Pure copper	½	
		(b) Copper sulphate ;	½	
		$CuSO_4$	½	
		(c) (i) Copper from the impure copper at anode dissolves into the solution or electrolyte and an equivalent amount of pure copper from the solution is deposited on the cathode.	1	
		(1) At cathode	½	
		(2) Below the anode	½	
		OR		

	(ii) Copper can be obtained from its sulphide by heating in excess of air (roasting followed by reduction) $$2\,Cu_2S + 3O_2(g) \xrightarrow{\Delta} 2\,Cu_2O(s) + 2\,SO_2(g)$$ $$2\,Cu_2O + Cu_2S \xrightarrow{\Delta} 6\,Cu(s) + SO_2(g)$$	1 ½ ½		4
38	(a) All violet flowered plants were observed in the F_1 progeny (b) The ratio in F_2 progeny VV : Vw = 1 : 2 (c) (i) VV × ww ↓ Vw × Vw Self pollination VV Vw Vw ww VV 2Vw ww 800 600 200 (alternate way of explanation) 200 plants will show the recessive character because recessive characters will be expressed only when both the copies of the gene are recessive. **OR** (ii) Males have sex chromosomes XY while females have XX. If the male gamete with X chromosome fuses with the female gamete, then the offspring will be a female child and if the male gamete with Y chromosome fuses with the female gamete, then the offspring will be a male child. Hence, the sex of a child/ children will be determined by the chromosome inherited from the father. **(Award marks if explained with flow chart is drawn)**	1 1 2 2		4

39	(a) When a person cannot see distant objects distinctly but can see nearby objects clearly.
	(b) Two main reasons of myopia:
	  • Excessive curvature of the eye lens
	  • Elongation of the eye ball
	(c) (i) • The power of accommodation of the eye usually decreases with ageing, the near point gradually recedes away and find it difficult to see nearby objects comfortably and distinctly without corrective eye glasses.
		1
		
		½
		½
		
		1		

Structure of bifocal lens :
 	
  • Upper portion consists of concave lens.
  • Lower portion consists of convex lens
	½
	½	

OR

(ii)   Power P = + 0·25D

  • Hypermetropia   1

  • Focal length = $\dfrac{1}{Power}$ ½

  ∴ Focal length = $\dfrac{1}{+0\cdot25D}$ = + 4·0 m   ½

             4