

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Secondary School Supplementary Examination, 2025
SUBJECT NAME: SCIENCE SUBJECT CODE 086 PAPER CODE 31/S/3

General Instructions: -

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 News Paper/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).
13	<p>Ensure that you do not make the following common types of errors committed by the Examiner in the past:- Giving more marks for an answer than assigned to it.</p> <ul style="list-style-type: none"> ● Wrong totaling of marks awarded on an answer. ● Wrong transfer of marks from the inside pages of the answer book to the title page. <p>Wrong question wise totaling on the title page.</p> <ul style="list-style-type: none"> ● Leaving answer or part thereof unassessed in an answer book. ● ● Wrong totaling 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 un assessed portion, non-carrying over of marks to the title page, or totaling 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 SUPPLEMENTARY EXAMINATION, July
2025**

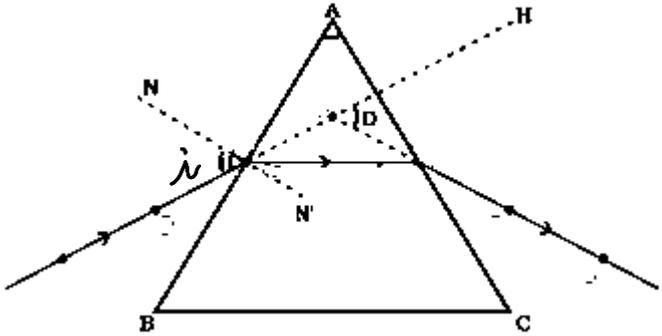
MARKING SCHEME

CLASS : X SCIENCE (Subject Code–086)

[Paper Code: 31/S/3]

Maximum Marks: 80

Q. No.	EXPECTED ANSWER / VALUE POINTS	Marks	Total Marks
SECTION A			
1	D/ (i) and (iv)	1	1
2	(B)/ 3	1	1
3	(C)/ Most vigorous reaction with magnesium and no reaction with copper.	1	1
4	(B) / Burning of carbon (coal)	1	1
5	(B)/ Amphoteric	1	1
6	(B)/ Wilting of leaves	1	1
7	(C)/ (i) and (iv)	1	1
8	(B) / Pons	1	1
9	(B) /50% violet, 50% white	1	1
10	(B)/ Pollen grains	1	1
11	(D)/ Snake	1	1
12	(D)/ Uniform throughout its length	1	1
13	(A)/ Plane mirror	1	1
14	(A)/ Temperature	1	1
15	(A) / A solar furnace	1	1
16	(B) / Chemical energy	1	1
17	(D)/ Assertion (A) is false, but Reason (R) is true.	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	(C)/ Assertion (A) is true, but Reason (R) is false.	1	1
20	(B)/ Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).	1	1
SECTION B			

21.	 <ul style="list-style-type: none"> • Ray diagram • Labelling $\angle i$ and $\angle D$ 	1 $\frac{1}{2} + \frac{1}{2}$	2
22.	<p>(a) $2Al(s) + 3CuCl_2(aq) \rightarrow 2AlCl_3(aq) + 3Cu(s)$</p> <p>(b) $Zn(s) + 2NaOH(aq) \rightarrow Na_2ZnO_2(aq) + H_2(g)$</p>	1 1	2
23.	<p>(a)(i) Homogenous mixture of two or more metals / homogenous mixture of a metal & a non-metal</p> <p>(ii)</p> <ul style="list-style-type: none"> • Composition of solder: lead & tin / Pb & Sn • low melting point. <p style="text-align: center;">OR</p> <p>(b) (i)</p> <p>cathode – thin wire/strip of pure silver anode – impure silver</p> <p>(ii)</p> <ul style="list-style-type: none"> • Insoluble impurities settled down at the bottom of the anode • Anode mud are the impurities produced during electrolytic refining of metal at the bottom of anode. 	1 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	2
24.	<p>Fish have two chambered heart, and the blood pumped to the gills, is oxygenated, and passes directly to the rest of the body. Blood goes only once through the heart to complete one cycle.</p>	2	2
25.	<p>$u = -18 \text{ cm}$, $f = -12 \text{ cm}$, $v = ?$</p> $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$ $\frac{1}{v} = \frac{1}{-12} - \frac{1}{-18}$ $\frac{1}{v} = \frac{-3 + 2}{36}$	$\frac{1}{2}$ $\frac{1}{2}$	

	$\frac{1}{v} = \frac{-1}{36}$ <p>$v = -36$ cm (image is formed at a distance 36 cm in front of the mirror)</p>	1	2
26.	<p>(a) Tendrils are sensitive to touch. When they come in contact with any support, the part of tendril in contact with the object does not grow as rapidly as the part of tendril away from the object. This causes the tendril to circle around the object and thus cling to it.</p> <p style="text-align: center;">OR</p> <p>(b)</p> <ul style="list-style-type: none"> Electrical impulses reach only those cells that are connected by nervous tissue / not each and every cell in animal body is connected by nervous tissue. Once an electrical impulse is generated in a cell and transmitted, the cell takes some time to reset its mechanism to generate a new impulse. 	2 1 1	2
SECTION C			
27.	<div style="text-align: center;"> <p>Ore</p> <p>↓</p> <p>Concentration of ore</p> <p>↓</p> <p>↓ ↓</p> <p>Carbonate ore Sulphide ore</p> <p>↓ ↓</p> <p>Calcination Roasting</p> <p>↓ ↓</p> <p>Oxide of metal</p> <p>↓</p> <p>Reduction of metal</p> <p>↓</p> <p>Purification of metal</p> </div> <p><i>*Award marks if a student explains through a flow chart using an example (like Fe₂O₃)</i></p>	3	3
28.	<p>(a)</p> <ul style="list-style-type: none"> Baking soda / Sodium hydrogen carbonate NaHCO₃ <p>• NaCl + H₂O + CO₂ + NH₃ → NH₄Cl + NaHCO₃</p> <p>(b) Being alkaline or basic in nature, it neutralises excess acid in the stomach & provides relief.</p>	½ ½ 1 1	

			3												
29.	<p>(a)</p> <ul style="list-style-type: none"> The translocation of food and other substances takes place in the sieve tubes with the help of adjacent companion cells. Material like sucrose is transferred into phloem tissue using energy from ATP. This increases osmotic pressure of the tissue causing water to move into it that moves material in the phloem to tissue which have less pressure. <p style="text-align: center;">OR</p> <p>(b)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Xylem</th> <th>Phloem</th> </tr> </thead> <tbody> <tr> <td>Direction of transportation</td> <td>Unidirectional/ upwards only</td> <td>Bidirectional/ both upwards and downwards</td> </tr> <tr> <td>Major driving force</td> <td>Transpiration pull or (Root pressure)</td> <td>Osmotic pressure</td> </tr> <tr> <td>Nature of the substances transported</td> <td>Water and dissolved minerals</td> <td>Products of photosynthesis/ amino acid, sucrose</td> </tr> </tbody> </table>		Xylem	Phloem	Direction of transportation	Unidirectional/ upwards only	Bidirectional/ both upwards and downwards	Major driving force	Transpiration pull or (Root pressure)	Osmotic pressure	Nature of the substances transported	Water and dissolved minerals	Products of photosynthesis/ amino acid, sucrose	1×3	1×3
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30	<ul style="list-style-type: none"> Kidney has large number of filtration units called nephrons. Blood enters kidney and is filtered through a cluster of capillaries(glomerulus) and the filtrate is collected by a cup shaped structure (Bowman’s capsule) Some substances as glucose, amino acids, salt and a major amount of water are selectively re-absorbed as the urine flows along the tube of nephron. 	1×3	3												
31.	<p>(a) $H = I^2Rt$</p> <p>(b) $I = \frac{Q}{t} = \frac{72000\text{ C}}{2 \times 3600\text{ s}} = 10\text{A}$</p> <p>$H = VI t = 220\text{ V} \times 10\text{ A} \times 2 \times 3600\text{ s}$</p> <p>$H = 1584 \times 10^4\text{ J}$</p>	1 1 1	3												
32.	<p>(a) Progressive accumulation of harmful chemicals (pesticides / DDT / nonbiodegradable chemicals) at each trophic level as we go higher in the food chain.</p> <p>(b)</p> <ul style="list-style-type: none"> Human /Fourth trophic level As human beings occupy the top level in the food chain, the maximum concentration of nonbiodegradable (harmful) chemicals get accumulated in human bodies. 	1 1 1	3												

33.	<p>(a) According to this rule, stretch the thumb, forefinger 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 current, then the thumb will point in the direction of motion or the force acting on the conductor.</p> <p>(b) (i) Rod is displaced towards left. (ii) Rod is displaced towards right. (iii)</p> <ul style="list-style-type: none"> • No displacement is observed in rod. • This is because current and magnetic field are parallel, so there will be no force experienced by the conductor. 	<p>1</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p>	<p>3</p>				
SECTION D							
34.	<p>(a) (i)</p> <table border="1" data-bbox="359 750 1145 1003"> <thead> <tr> <th data-bbox="359 750 751 817"><u>Self-pollination</u></th> <th data-bbox="759 750 1145 817"><u>Cross-pollination</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="359 824 751 1003">Transfer of pollen from anther to stigma in the same flower</td> <td data-bbox="759 824 1145 1003">Transfer of pollen occurs from one flower to another flower.</td> </tr> </tbody> </table> <p>(ii)</p> <ul style="list-style-type: none"> • After the pollen lands on a suitable stigma, it germinates to produce pollen tube to reach the ovary. • The male germ - cell fuses with the female germ -cell to form the zygote. • After fertilisation, zygote divides several times to form an embryo within the ovule. • Ovule develops to form a seed. • Ovary grows and ripens to form a fruit. • Sepals, petals, stamen , stigma dry and may fall off. <p style="text-align: center;">OR</p> <p>(b)</p> <p>(i) Oviduct/fallopian tube.</p> <p>(ii)</p> <ul style="list-style-type: none"> • Embryo gets nutrition from the mother's blood with the help of special disc like tissue called placenta embedded in the uterine wall. • It contains villi on the embryo's side & on the mother's side are blood spaces which surround the villi. • This provides a large surface area for glucose and oxygen to pass from mother to embryo and remove waste substances by transferring them into mothers' blood. 	<u>Self-pollination</u>	<u>Cross-pollination</u>	Transfer of pollen from anther to stigma in the same flower	Transfer of pollen occurs from one flower to another flower.	<p>2</p> <p>$\frac{1}{2} \times 6$</p> <p>2</p> <p>1×3</p>	<p>5</p>
<u>Self-pollination</u>	<u>Cross-pollination</u>						
Transfer of pollen from anther to stigma in the same flower	Transfer of pollen occurs from one flower to another flower.						
35.	(a)						

	<p>(i)</p> <ul style="list-style-type: none"> • The ability of eye lens to adjust its focal length. 1 • Image distance remains the same. 1 • Ciliary muscles ½ • Ciliary muscles modify the curvature of eye lens / change the focal length of eye lens. ½ <p>(ii)</p> <ul style="list-style-type: none"> • Myopia / near-sightedness ½ • Causes - (i) excessive curvature of eye lens ½ (ii) elongation of eyeball. ½ • Concave lens of suitable power. ½ <p style="text-align: center;">OR</p> <p>(b) (i)</p> <ul style="list-style-type: none"> • Tyndall effect / Scattering of light 1 • When a beam of light strikes fine particles in a smoke or dust filled room, light gets scattered by these particles and reaches us, this makes the path of light visible. 1 • Very fine particles scatter mainly blue light while particles of larger size scatter light of longer wavelength. If the size of scattering particles is large enough, then the scattered light may even appear white. 1 <p>(ii) Lens of power -0.5 D will be used for the correction of his distant vision. 1</p> $P = \frac{1}{f}$ $-0.5 \text{ D} = \frac{1}{f}$ $f = \frac{1}{-0.5} = -2 \text{ m}$	<p>1</p> <p>1</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>5</p>	
36.	<p>(a) (i) Higher the hydrogen ion concentration, lower is its pH value. / Lesser the hydrogen ion concentration, more is its pH value. 2</p> <p>(ii)</p> <ul style="list-style-type: none"> • It is a highly exothermic reaction. 1 • Heat generated during dilution may cause the mixture to splash out and cause burns / glass container may break due to excessive localised heat. 1 	<p>2</p> <p>1</p> <p>1</p>	

	<p>(iii) HCl is strong acid which produces more hydrogen ions while acetic acid is a weak acid and produces less hydrogen ions.</p> <p style="text-align: center;">OR</p> <p>(b)</p> <p>(i) Its crystals lose water of crystallisation.</p> <p>(ii) It will absorb moisture to form hard mass of gypsum.</p> <p>(iii) Baking soda neutralises acid of bee sting.</p> <p>(iv) Distilled water does not contain ions/salts.</p> <p>(v) To neutralise the excess acid in the soil.</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>5</p>
SECTION E			
37.	<p>(a) The chromosome pair which is responsible for determination of sex in humans are called sex chromosomes.</p> <p>(b) Few reptiles / Lizards- temperature is responsible for sex determination.</p> <p style="text-align: center;">/</p> <p>Snails - Sex determination depends on environmental factors. (any other example)</p> <p>(c) (i) No. A new born inherits X chromosome from mother. The sex of the child is determined by what they inherit from their father. A child who inherits X chromosome from father will be a girl (XX) and one who inherits a Y chromosome from him will be a boy (XY).</p> <p style="text-align: center;">OR</p> <p>(c) (ii) It is ensured through sexual reproduction where both male and female parents produce gametes through meiosis. Meiosis reduces the chromosome number to half. So, each gamete carries half of the parents' genetic material. During fertilisation, male gamete fuses with female gamete and restores complete genetic material in progeny. Thus, equal genetic contribution of both parent is ensured.</p>	<p>1</p> <p>½+½</p> <p>1</p> <p>1</p> <p>2</p>	<p>4</p>
38.	<p>(a) (i) Ceiling fan and bulb 'L' will draw current and work. (ii) All the devices in the circuit draw current and work.</p> <p>(b) $P = VI$ $20 \text{ W} = 220 \text{ V} \times I$ $\frac{20 \text{ W}}{220 \text{ V}} = I$ $I = \frac{1}{11} \text{ A} = 0.09 \text{ A}$</p>	<p>½</p> <p>½</p> <p>1</p>	

	<p>(c) (i)</p> <ul style="list-style-type: none"> • $P = \frac{V^2}{R}$ $R = \frac{44 \times 44}{10} = 193.6 \Omega$ • Total resistance = $5 \times 193.6 \Omega = 968 \Omega$ <p style="text-align: center;">OR</p> <p>(c) (ii)</p> <ul style="list-style-type: none"> • The bulb L will stop glowing and other bulbs in the circuit will continue to glow with same brightness. • The fuse F₁ melts and breaks the circuit for bulb L. The circuit remains complete for other bulbs connected in parallel to bulb L. 	<p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>4</p>
<p>39.</p>	<p>(a) Propyne</p> <p>(b) Saturated carbon compounds produce blue / clean flame. Unsaturated carbon compounds produce yellow / sooty flame.</p> <p>(c) (i) Unsaturated hydrocarbons undergo addition reactions Example</p> $ \begin{array}{c} \text{R} & & \text{R} \\ & \diagdown & / \\ & \text{C} = \text{C} & \\ & / & \diagdown \\ \text{R} & & \text{R} \end{array} + \text{H}_2 \xrightarrow{\text{Pd / Ni}} \begin{array}{c} \text{H} & \text{H} \\ & \\ \text{R}-\text{C} & - & \text{C}-\text{R} \\ & \\ \text{R} & \text{R} \end{array} $ <p style="text-align: right;">(or any other example)</p> <p style="text-align: center;">OR</p> <p>(c) (ii) Compounds with identical molecular formula but different structural formula or structures are called structural isomers.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\begin{array}{cccc} \text{H} & \text{H} & \text{H} & \text{H} \\ & & & \\ \text{H}-\text{C} & -\text{C} & -\text{C} & -\text{C}-\text{H} \\ & & & \\ \text{H} & \text{H} & \text{H} & \text{H} \end{array}$ </div> <div style="text-align: center;"> $\begin{array}{c} & & \text{H} & & \\ & & & & \\ \text{H} & & \text{C} & & \text{H} \\ & & / & & \\ \text{H}-\text{C} & - & \text{C} & & \text{H} \\ & & & & \\ \text{H} & & \text{H} & & \text{C} & & \text{H} \\ & & & & & & \\ & & & & \text{H} & & \end{array}$ </div> </div>	<p>1</p> <p>½</p> <p>½</p> <p>1</p> <p>1</p> <p>1</p> <p>½ + ½</p>	<p>4</p>

