

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

**General Instructions: -**

<b>1</b>	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.
<b>2</b>	<b>“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.”</b>
<b>3</b>	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. <b>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.</b>
<b>4</b>	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.
<b>5</b>	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.
<b>6</b>	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. <b>This is most common mistake which evaluators are committing.</b>
<b>7</b>	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.
<b>8</b>	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.
<b>9</b>	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 <b>“Extra Question”</b> .
<b>10</b>	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"> <li>● Wrong totaling of marks awarded on an answer.</li> <li>● Wrong transfer of marks from the inside pages of the answer book to the title page.</li> </ul> <p>Wrong question wise totaling on the title page.</p> <ul style="list-style-type: none"> <li>● Leaving answer or part thereof unassessed in an answer book.</li> <li>●</li> <li>● Wrong totaling of marks of the two columns on the title page.</li> <li>● Wrong grand total.</li> <li>● Marks in words and figures not tallying/not same.</li> <li>● Wrong transfer of marks from the answer book to online award list.</li> <li>● 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.)</li> <li>● Half or a part of answer marked correct and the rest as wrong, but no marks awarded.</li> </ul>
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 “ <b>Guidelines for spot Evaluation</b> ” 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/(B)/S]**

**Maximum Marks: 80**

<b>Q. No.</b>	<b>EXPECTED ANSWER / VALUE POINTS</b>	<b>Marks</b>	<b>Total Marks</b>
<b>SECTION A</b>			
1	(D)/exothermic and the pH of the solution formed is more than 7.	1	1
2	(C)/ Decomposition of vegetable matter into compost	1	1
3	(D)/ tartaric acid	1	1
4	(B)/ Al <sub>2</sub> O <sub>3</sub>	1	1
5	(A)/ (i) and (iv)	1	1
6	(B)/ C <sub>5</sub> H <sub>10</sub>	1	1
7	(C)/ FeSO <sub>4</sub>	1	1
8	(B)/ (ii) and (iii)	1	1
9	(B)/ (i) glucose, (ii) fatty acids and glycerol and (iii) amino acids	1	1
10	(C)/ Pituitary	1	1
11	(B)/ Cotyledon	1	1
12	(C)/ Tt and tt	1	1
13	(B)/ Plane mirror	1	1
14	(B)/ (ii) and (iii)	1	1
15	(A)/ 2l and 4r	1	1
16	(C)/ grass, frog, tiger, snake	1	1
17	(A)/ Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).	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	(A)/ Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).	1	1
<b>SECTION B</b>			
<b>21</b>	<ul style="list-style-type: none"> <li>● Combination reaction</li> <li>● Two reactants combine to form a single product</li> <li>● <math>2\text{Mg(s)} + \text{O}_2\text{(g)} \rightarrow 2\text{MgO(s)}</math></li> </ul>	½  ½  1	2

22	<ul style="list-style-type: none"> <li>• Translocation</li> <li>• Transport of food takes place in phloem through the sieve tubes with the help of companion cells both in upward and downward direction.</li> </ul>	1 1	2
23	<p>(a) • At the shoot tip</p> <ul style="list-style-type: none"> <li>• When light falls on one side of a plant, auxin diffuses towards the shady side of the shoot which stimulates the cells to grow longer on that side of the shoot and the plant appears to bend towards light.</li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>(b) • Thyroxine</p> <ul style="list-style-type: none"> <li>• Thyroid gland</li> <li>• Iodine is essential for thyroid gland to make thyroxine hormone / Deficiency of iodine may cause Goitre.</li> </ul>	1 1 ½ ½ 1	2
24	<ul style="list-style-type: none"> <li>• Virtual</li> <li>• Erect</li> <li>• Diminished</li> <li>• Behind the mirror.</li> </ul>	½ x 4	2
25	<ul style="list-style-type: none"> <li>• Ohm's Law- The potential difference (V), across the ends of a given metallic wire in an electric circuit is directly proportional to the current (I) flowing through it, provided its temperature remains the same.</li> <li>• As current (I) increases the potential difference (V) across the conductor increases linearly and when I = 0, V = 0.</li> </ul>	1 1	2
26	<ul style="list-style-type: none"> <li>• The magnetic field lines are in the form concentric circles centred on the wire.</li> <li>• Right Hand Thumb Rule.</li> </ul>	1 1	2
<b>SECTION C</b>			
27	<p>(a) <math>\text{CaO(s)} + \text{H}_2\text{O (l)} \rightarrow \text{Ca(OH)}_2 \text{ (aq)} + \text{heat}</math></p> <ul style="list-style-type: none"> <li>• Increase in temperature.</li> </ul> <p>(b) <math>\text{Fe(s)} + \text{CuSO}_4\text{(aq)} \rightarrow \text{FeSO}_4\text{(aq)} + \text{Cu(s)}</math></p> <ul style="list-style-type: none"> <li>• Colour changes from Blue to Green</li> </ul> <p>(c) <math>\text{Na}_2\text{SO}_4\text{(aq)} + \text{BaCl}_2\text{(aq)} \rightarrow \text{BaSO}_4\text{(s)} + 2\text{NaCl(aq)}</math></p> <ul style="list-style-type: none"> <li>• White Precipitate of Barium Sulphate is formed</li> </ul> <p style="text-align: center;"><b>(or any other suitable example in each case)</b></p>	½ ½ ½ ½ ½	3

28	<ul style="list-style-type: none"> <li>Chlor Alkali Proces is a process in which aqueous solution of sodium chloride (brine) decomposes on passing electricity and sodium hydroxide, chlorine and hydrogen are formed.</li> </ul> $2\text{NaCl}(\text{aq}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{NaOH}(\text{aq}) + \text{Cl}_2(\text{g}) + \text{H}_2(\text{g})$ <ul style="list-style-type: none"> <li>(do not deduct marks for unbalanced equation)</li> <li>(i) Chlorine gas at the anode</li> <li>(ii) Hydrogen gas at the cathode.</li> </ul>	1  1  ½ ½	3
29	<p>(a) (i) • Peristaltic movement</p> <ul style="list-style-type: none"> <li>In order to push the food forward in a regulated manner so that it can be processed properly in each part</li> </ul> <p>(ii) • Gall bladder</p> <ul style="list-style-type: none"> <li>(i) Emulsification of fats/ Breakdown of fat molecules into smaller globules</li> <li>(ii) To make the medium alkaline in small intestine</li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>(b) (i) For exchange of gases.</p> <p>(ii) Respiratory pigment has higher affinity for oxygen than carbon dioxide.</p> <p>(iii) Lack of oxygen does not breakdown glucose completely</p>	1 ½  ½ ½  ½  1 1 1	3
30	<p>(a)</p> <ul style="list-style-type: none"> <li>Parts of CNS: <ul style="list-style-type: none"> <li>(i) Brain</li> <li>(ii) Spinal Cord</li> </ul> </li> <li>Brain is protected by Cranium /Bony Box in skull/ Fluid filled balloon</li> <li>Spinal cord is protected by Vertebral Column/ Backbone</li> </ul> <p>(b)</p> <ul style="list-style-type: none"> <li>(i) 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.</li> <li>(ii) 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.</li> </ul>	½ ½  ½  ½  ½  ½	3
31	<ul style="list-style-type: none"> <li>Ability of the eye lens to adjust its focal length</li> <li>Ciliary muscles</li> <li>(i) While focusing on nearby objects the ciliary muscles contract, eye lens becomes thicker and its focal length decreases</li> <li>(ii) While focusing on distant objects the ciliary muscles relax, eye lens becomes thin and its focal length increases</li> </ul>	1 1 ½  ½	3

32	<p>(a) • An electric fuse is a safety device which is connected in series with the live wire. • It prevents damage to the electrical appliance from overloading/short-circuiting.</p> <p>(b) Here <math>P = 2 \text{ kW} = 2000 \text{ W}</math>; <math>V = 220 \text{ V}</math>; <math>I = ?</math></p> <ul style="list-style-type: none"> <li>• Current <math>I = \frac{P}{V} = \frac{2000 \text{ W}}{220 \text{ V}} = 9.1 \text{ A}</math></li> <li>• The fuse will melt and break the circuit as the current drawn by the heater (9.1A) is greater than the fuse rating (5A).</li> </ul>	<p>½</p> <p>½</p> <p>1</p> <p>1</p>	<p>3</p>
33	<ul style="list-style-type: none"> <li>• Number of organisms of the first trophic level (plants) will increase.</li> <li>• Number of organisms of the third trophic level (lion) will decrease.</li> <li>• No</li> <li>• Organisms of the third trophic level can find other alternatives of food in a food web so the number of these organisms will not change drastically.</li> </ul>	<p>1</p> <p>1</p> <p>½</p> <p>½</p>	<p>3</p>
<b>SECTION D</b>			
34	<p>(a)</p> <ul style="list-style-type: none"> <li>• Ethanol</li> <li>• <math>\text{CH}_3\text{CH}_2\text{OH}/\text{C}_2\text{H}_5\text{OH}</math></li> </ul> <p>(i)</p> $\text{CH}_3 - \text{CH}_2\text{OH} \xrightarrow[\text{H}_2\text{SO}_4]{\text{Hot Conc.}} \text{CH}_2 = \text{CH}_2 + \text{H}_2\text{O}$ <ul style="list-style-type: none"> <li>• Main Product- Ethene</li> </ul> <p>(ii)</p> $\text{CH}_3 - \text{COOH} + \text{CH}_3 - \text{CH}_2\text{OH} \xrightarrow{\text{Acid}} \text{CH}_3 - \underset{\text{O}}{\text{C}} - \text{O} - \text{CH}_2 - \text{CH}_3 + \text{H}_2\text{O}$ <ul style="list-style-type: none"> <li>• Main Product- Ester</li> </ul> <p>(iii)</p> $\text{CH}_3 - \text{CH}_2\text{OH} \xrightarrow[\text{acidified K}_2\text{Cr}_2\text{O}_7 + \text{Heat}]{\text{Oxidation}} \text{CH}_3\text{COOH}$ <ul style="list-style-type: none"> <li>• Main Product- Ethanoic acid</li> </ul> <p>(iv) <math>2\text{Na} + 2\text{CH}_3\text{CH}_2\text{OH} \rightarrow 2\text{CH}_3\text{CH}_2\text{O}^-\text{Na}^+ + \text{H}_2</math></p> <ul style="list-style-type: none"> <li>• Main Product – Sodium Ethoxide</li> </ul> <p style="text-align: center;"><b>OR</b></p>	<p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p>	

	<p>(b) (i)</p> <ul style="list-style-type: none"> <li>• Because oxygen is added to ethanol / <math>C_2H_5OH</math> to produce ethanoic acid/ <math>CH_3COOH</math>.</li> <li>• Alkaline <math>KMnO_4</math> /Alkaline potassium permanganate/ acidified potassium dichromate/ Acidified <math>K_2Cr_2O_7</math></li> <li>•</li> </ul> $CH_3 - CH_2OH \xrightarrow[\text{Or acidified } K_2Cr_2O_7 + \text{Heat}]{\text{Alkaline } KMnO_4 + \text{Heat}} CH_3COOH$ <ul style="list-style-type: none"> <li>• Burning of ethanol is a combustion reaction in which <math>CO_2</math> and <math>H_2O</math> are formed. Whereas in oxidation of ethanol, ethanoic acid is formed and is therefore not a combustion reaction.</li> </ul> <p>(ii)</p> <ul style="list-style-type: none"> <li>• A series of carbon compounds in which the same functional group substitutes for hydrogen in a carbon chain. /A group of carbon compounds that share similar structure and chemical properties with successive members differing by a <math>-CH_2</math> unit</li> <li>• Methanoic acid / <math>HCOOH</math> Ethanoic acid / <math>CH_3COOH</math></li> </ul>	<p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p>1</p> <p>1</p> <p>1</p> <p><math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	5
35	<p>(a) (i) (I) • They secrete a fluid for the nourishment of sperms. • This fluid also makes the transport of the sperm easy.</p> <p>(II) • It carries egg from ovary to the womb/uterus • Site of fertilization</p> <p>(III) • Produce sperms/ male gamete • Secretion of male hormone/testosterone.</p> <p>(ii) (I) The zygote starts dividing to form embryo which gets implanted in the lining of the uterus. (II)The thick and spongy lining of the uterus breaks and comes out through the vagina as blood and mucus.</p> <p style="text-align: center;"><b>OR</b></p> <p>(b) (i)</p> <p>(I) • Multiple fission – • A single cell divides into many daughter cells simultaneously.</p> <p>(II)• Binary fission • Splitting of one cell into two daughter cells in a definite orientation.</p> <p>(ii)</p> <ul style="list-style-type: none"> <li>• Chemical pills / Oral pills. Side effect: Causes hormonal imbalance in the female's body.</li> </ul>	<p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p>1</p> <p>1</p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p>	





	<p>(b) Principal Axis is an imaginary straight line passing through the pole and centre of curvature of a concave mirror.</p>	1	
	<p>(c) (i) (I) passes through the focus of the concave mirror          (II) is reflected obliquely making equal angle (<math>\theta</math>) with the principal axis</p>	1 1	
	<p><b>OR</b></p>		
	<p>(c) (ii) Here <math>f = -12</math> cm    <math>u = -18</math> cm    <math>v = ?</math></p>	$\frac{1}{2}$	
	$\frac{1}{f} = \frac{1}{v} + \frac{1}{u} \text{ or } \frac{1}{v} = \frac{1}{f} - \frac{1}{u}$	$\frac{1}{2}$	
	$\frac{1}{v} = \frac{1}{-12} - \frac{1}{-18} = \frac{-3+2}{36} = \frac{-1}{36}$		
	$v = -36$ cm	1	
	<p>Position: Image is formed at 36 cm in front of the mirror</p>		
			4