

**Marking Scheme**  
**Strictly Confidential**  
**(For Internal and Restricted use only)**  
**Secondary School Examination, 2026 (X<sup>th</sup>)**  
**SUBJECT NAME SCIENCE (Q.P. CODE /Set No 31/1/1)**

**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 Newspaper/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). This is in view of the reduced syllabus and number of questions in question paper.
13	<p>Ensure that you do not make the following common types of errors committed by the Examiner in the past :-</p> <ul style="list-style-type: none"> <li>● Leaving answer or part thereof unassessed in an answer book.</li> <li>● Giving more marks for an answer than assigned to it.</li> <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> <li>● Wrong question wise totaling on the title page.</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> </ul> <p>Half or a part of answer marked correct and the rest as wrong, but no marks awarded.</p>
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 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.

**MARKING SCHEME**  
**SCIENCE (Subject Code-086)**  
**(PAPER CODE: 31/1/1) (10-01-86K)**

Q.No.	EXPECTED OUTCOMES/VALUE POINTS		Marks	Total Marks	
SECTION – A (Biology)					
1.	(B) / Stomata		1	1	
2.	(D) / Binary Fission		1	1	
3.	(D) / they reproduce asexually		1	1	
4.	(B) / Cerebellum		1	1	
5.	(B) / Trypsin digests proteins and lipase digests emulsified fats.		1	1	
6.	(A) / (ii) and (iii)		1	1	
7.	(C) / Polythene bag, rubber band, ball pen		1	1	
8.	(A) / Both, Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).		1	1	
9.	(C) / Assertion (A) is true, but Reason (R) is false.		1	1	
10.	<ul style="list-style-type: none"><li>The main function of the diaphragm is to flatten during inhalation, which expands the chest cavity and draws the air into the lungs / helps in breathing.</li><li>It is located at the base of chest cavity.</li></ul>		1  1	2	
11.	(a)		1    1		
	Chewing of food				Salivation on sight of food
	i) It is a voluntary action.				i) It is a reflex/involuntary action.
	ii) It is controlled by forebrain.				ii)It is controlled by medulla in the hind brain.
	(any other suitable difference)				OR
	Pollination		Fertilization		
	i) It is the transfer of pollen grains from anther to the suitable stigma.		i) It is the fusion of male gamete with the female gamete.		1
	ii) It occurs in plants.		ii) It occurs in both plants and animals.		1
	(any other suitable difference)				



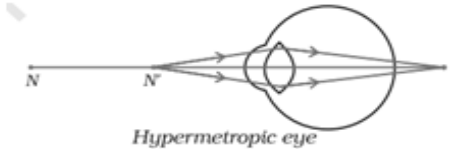
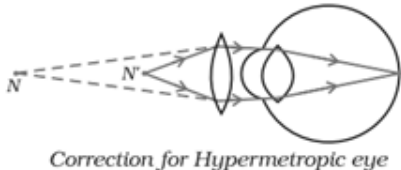
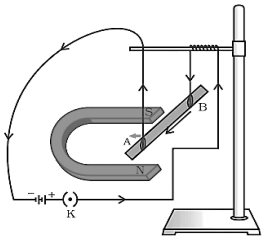
	(c)								
	<table><tr><th>Consumers</th><th>Decomposers</th></tr><tr><td>(i) Organisms that feed on producers and other consumers.</td><td>(i) Organisms that breakdown dead organic matter into simpler inorganic substances.</td></tr><tr><td>(ii) Transfer energy through the food chain.</td><td>(ii) Recycle nutrients back into the environment.</td></tr></table>	Consumers	Decomposers	(i) Organisms that feed on producers and other consumers.	(i) Organisms that breakdown dead organic matter into simpler inorganic substances.	(ii) Transfer energy through the food chain.	(ii) Recycle nutrients back into the environment.	1	3
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	(any one, any other suitable difference)								
15.	<p>(a) In F<sub>1</sub> progeny, pea plants have ‘Tt’ where ‘T’ is dominant over ‘t’ so all the plants of F<sub>1</sub> progeny were tall. / Tall height is dominant trait over short height.</p> <p>(b) Self-pollination</p> <p>(c) (i)</p> <table><tr><th>Dominant trait</th><th>Recessive trait</th></tr><tr><td>i) Expresses itself over recessive trait.</td><td>i) Unable to express itself in presence of a dominant trait.</td></tr><tr><td>ii) Expresses in both conditions-TT and Tt.</td><td>ii) Expresses itself only when it is ‘tt’ or in pure condition.</td></tr></table> <p>(any one, any other suitable difference)</p> <p><b>OR</b></p> <p>(c) (ii) Mendel’s observations:</p> <ul style="list-style-type: none"><li>• All plants of F<sub>1</sub> progeny were tall.</li><li>• No medium/ no short height plants observed in F<sub>1</sub> progeny.</li><li>• F<sub>1</sub> progeny resembled one parent only.</li></ul> <p>(any two observations)</p>	Dominant trait	Recessive trait	i) Expresses itself over recessive trait.	i) Unable to express itself in presence of a dominant trait.	ii) Expresses in both conditions-TT and Tt.	ii) Expresses itself only when it is ‘tt’ or in pure condition.	1   	
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	(ii) New plants grow from the buds located in the notches of the leaf. (iii) The pollen tube will not be formed. / No fertilisation will take place. (iv) Fertilization /Pregnancy will be prevented. (v) Each fragment or piece grows into a new individual organism.	1 1 1 1	5
<b>SECTION – B</b> <b>(Chemistry)</b>			
17.	(C) / Both, (i) and (ii) are double displacement reactions and precipitation reactions.	1	1
18.	(B) / Vanilla essence	1	1
19.	(D) / NO <sub>2</sub> and O <sub>2</sub>	1	1
20.	(B) / -CHO	1	1
21.	(A) / Pb	1	1
22.	(A) / tomato, curd, ant-sting	1	1
23.	(B) / Calcium	1	1
24.	(A) / Both, Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).	1	1
25.	(a) Metal oxides which can react with both acids as well as bases to produce salt and water. (b) ZnO – Amphoteric oxide Na <sub>2</sub> O – Basic oxide CO <sub>2</sub> – Acidic oxide	1  1	2
26.	(a) <ul style="list-style-type: none"> <li>Substance oxidised - C</li> <li>Substance reduced - ZnO</li> </ul> (b) $\text{Pb}(\text{NO}_3)_2 + 2 \text{KI} \rightarrow \text{PbI}_2 + 2 \text{KNO}_3$ (c) <ul style="list-style-type: none"> <li><math>2\text{H}_2\text{O} \xrightarrow{\text{electricity}} 2\text{H}_2 + \text{O}_2</math></li> <li><math>2\text{AgCl} \xrightarrow{\text{sunlight}} 2\text{Ag} + \text{Cl}_2</math></li> </ul> <p style="text-align: right;">(any other example in each case)</p>	$\frac{1}{2}$ $\frac{1}{2}$ 1  $\frac{1}{2}$ $\frac{1}{2}$	3
27.	(a) <ul style="list-style-type: none"> <li>When electricity is passed through brine, it decomposes to form sodium hydroxide (alkali) and chlorine, hence this process is called chlor-alkali process.</li> </ul> $2\text{NaCl}(\text{aq}) + 2\text{H}_2\text{O}(\text{l}) \xrightarrow{\text{Electricity}} 2\text{NaOH}(\text{aq}) + \text{H}_2(\text{g}) + \text{Cl}_2(\text{g})$ <ul style="list-style-type: none"> <li>At anode: Cl<sub>2</sub></li> <li>At cathode: H<sub>2</sub></li> </ul> <p style="text-align: center;"><b>OR</b></p>	1  1 $\frac{1}{2}$ $\frac{1}{2}$	

	<p>(b)</p> <p>(i) <math>\text{NaCl} + \text{H}_2\text{O} + \text{NH}_3 + \text{CO}_2 \rightarrow \text{NaHCO}_3 + \text{NH}_4\text{Cl}</math></p> <p>(ii) <math>\text{Ca(OH)}_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2 + \text{H}_2\text{O}</math></p> <p style="text-align: center;">/</p> <p><math>2\text{Ca(OH)}_2 + 2\text{Cl}_2 \rightarrow \text{Ca(ClO)}_2 + \text{CaCl}_2 + 2\text{H}_2\text{O}</math></p> <p>(iii) <math>\text{CaSO}_4 \cdot 2\text{H}_2\text{O} \xrightarrow{373\text{K}} \text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O} + 1\frac{1}{2} \text{H}_2\text{O}</math></p> <p style="text-align: center;">(deduct <math>\frac{1}{2}</math> mark for no / incorrect balancing)</p>	<p>1</p> <p>1</p> <p>1</p>	3
28.	<p>(a) Because it is easier to obtain metal from its oxide. /</p> <p>Because it is easier to reduce metal oxide to metal</p> <p>(b)</p> <p><math>\text{Fe}_2\text{O}_3(\text{s}) + 2\text{Al}(\text{s}) \rightarrow 2\text{Fe}(\text{l}) + \text{Al}_2\text{O}_3(\text{s}) + \text{Heat}</math></p> <p><math>3\text{MnO}_2(\text{s}) + 4\text{Al}(\text{s}) \rightarrow 3\text{Mn}(\text{l}) + 2\text{Al}_2\text{O}_3(\text{s}) + \text{Heat}</math></p> <p style="text-align: center;">(balancing is optional) (any one equation)</p> <p>(c) (i) <math>2\text{Cu}_2\text{S} + 3\text{O}_2(\text{g}) \xrightarrow{\text{Heat}} 2\text{Cu}_2\text{O}(\text{s}) + 2\text{SO}_2(\text{g})</math></p> <p><math>2\text{Cu}_2\text{O} + \text{Cu}_2\text{S} \xrightarrow{\text{Heat}} 6\text{Cu}(\text{s}) + \text{SO}_2(\text{g})</math></p> <p style="text-align: center;"><b>OR</b></p> <p>(c)(ii) (I) Because highly reactive metals have more affinity for oxygen than carbon.</p> <p>(II) Because of its low melting point.</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	4
29.	<p>(a) (i)</p> <p>(I) They do not give rise to charged particles/ ions.</p> <p>(II) Soap reacts with calcium and magnesium salts present in hard water and forms insoluble substances called Scum.</p> <p>(III) C-C bonds are strong and stable whereas Si-Si bonds are relatively weak.</p> <p>(ii) (I) <math>\text{CH}_3\text{CH}_2\text{OH} \xrightarrow{\text{acidified K}_2\text{Cr}_2\text{O}_7 + \text{heat}} \text{CH}_3\text{COOH}</math></p> <p>(II) <math>\text{CH}_2=\text{CH}_2 + \text{H}_2 \xrightarrow{\text{Ni}} \text{CH}_3-\text{CH}_3</math></p> <p style="text-align: center;"><b>OR</b></p> <p>(b) (i) X - <math>\text{CH}_3\text{COOH}</math>/ethanoic acid /acetic acid</p> <p>Y - <math>\text{CH}_3\text{COOC}_2\text{H}_5</math>/<math>\text{CH}_3\text{COOCH}_2\text{CH}_3</math>/ ester/ ethyl ethanoate</p> <p>Z - <math>\text{CH}_3\text{COONa}</math>/sodium ethanoate/sodium acetate</p> <p>(ii) Catalyst/ dehydrating agent</p>	<p>1</p> <p>1</p> <p>1</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>	

	(iii) <ul style="list-style-type: none"> <li> <math display="block">\text{CH}_3 - \text{COOH} + \text{CH}_3 - \text{CH}_2\text{OH} \xrightarrow{\text{Acid}} \text{CH}_3 - \underset{\text{O}}{\underset{\parallel}{\text{C}}} - \text{O} - \text{CH}_2 - \text{CH}_3 + \text{H}_2\text{O}</math> </li> <li>Esterification reaction</li> <li><math>\text{CH}_3\text{COOC}_2\text{H}_5 + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{C}_2\text{H}_5\text{OH}</math></li> <li>Saponification reaction/ De-esterification reaction</li> </ul>	1 ½ 1 ½	5
<b>SECTION – C</b> <b>(Physics)</b>			
30.	(C) / - 30 cm and + 30 cm from lens	1	1
31.	(A) / Ciliary muscles of your eye contract and the eye lens become thick	1	1
32.	(C) / Assertion (A) is true, but Reason (R) is false.	1	1
33.	(a) Convex lens / Converging lens (b) $m = -2$ , $v = 30$ cm $m = \frac{v}{u}$ $u = \frac{v}{m}$ $u = \frac{30}{-2}$ $u = -15\text{cm}$ / The object was placed at 15 cm in front of the lens.	1 ½ ½	2
34.	(a) $r = 0.01$ cm = $1 \times 10^{-4}$ m $l = 1$ cm = $0.01$ m $R = \rho \frac{l}{A}$ $\rho = \frac{RA}{l} = \frac{R \times \pi r^2}{l}$ $\rho = \frac{7 \times 22 \times 10^{-8}}{7 \times 0.01}$ $\rho = 22 \times 10^{-8} \times 10^2$ $\rho = 22 \times 10^{-6} \Omega\text{m} = 2.2 \times 10^{-5} \Omega\text{m}$ <p style="text-align: center;"><b>OR</b></p> (b) Resistance of electric heater $R = \frac{V}{I}$ $R = \frac{220}{11}$ $R = 20 \Omega$ $P = \frac{V^2}{R}$ $P = \frac{200 \times 200}{20}$ $P = 2000\text{W} / 2 \text{ kW}$	½ 1 ½ ½ ½	2



35.	<ul style="list-style-type: none"> <li>Hypermetropia/ Far sightedness</li> <li></li> </ul>  <p>Hypermetropic eye</p>  <p>Correction for Hypermetropic eye</p> <p>(deduct ½ mark for not showing the direction of ray of light)</p>	1  1  1	3
36.	<p>(a) <b><u>Procedure</u></b></p> <p>Take a small aluminium rod AB and using two connecting wires suspend it horizontally from a stand.</p> <p>Place a strong horse-shoe magnet in such a way that the rod lies between the two poles perpendicularly.</p> <p>Connect the aluminium rod in series with a battery and a key. Now pass a current through the aluminium rod from one end to another.</p> <p>/</p> <p><b>(Procedure can also be explained with a <u>Diagram</u>)</b></p>  <p><b><u>Observation</u></b></p> <p>It is observed that the <b>rod is displaced</b> on passing current through it.</p> <p>(b) Magnetic field will be vertically downwards.</p>	1       1 1	3



	<p>(c) (i)</p> $f_1 = 30 \text{ cm} = 0.3 \text{ m}, \quad f_2 = -15 \text{ cm} = -0.15 \text{ m}$ $P = \frac{1}{f}$ $P_1 = \frac{+1}{0.3} \text{ D}; \quad P_2 = \frac{-1}{0.15} \text{ D}$ <p>Equivalent power, <math>P = P_1 + P_2</math></p> $P = -3.33 \text{ D}$ <p>Equivalent focal length, <math>f = \frac{1}{P}</math></p> $f = \frac{-1}{3.33} = -0.3 \text{ m} = -30 \text{ cm}$ <p style="text-align: center;"><b>OR</b></p> <p>(c) (ii)</p> <ul style="list-style-type: none"> <li>• Combination Lens will behave like convex lens</li> <li>• <math>f_1 = -2 \text{ m}, \quad f_2 = 1.5 \text{ m}</math></li> </ul> $P = \frac{1}{f}$ $P_1 = \frac{-1}{2} \text{ D}, \quad P_2 = \frac{+1}{1.5} \text{ D}$ $P = P_1 + P_2$ $P = \frac{1}{6}$ $f = +6 \text{ m}$ <p>The focal length of combination is positive.</p> <p style="text-align: center;">/</p> <p style="text-align: center;"><b>Alternate answer</b></p> <ul style="list-style-type: none"> <li>• Combination Lens will behave like convex lens.</li> <li>• Convex lens - Less 'f', More 'P' Concave lens - More 'f', Less 'P' Combined Power = <math>P_1 + P_2</math>, which will be positive.</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><b>1</b></p> <p><b>1</b></p>	
<b>39.</b>	<p>(a)</p> <p>(i) As Resistance, <math>R = \rho \frac{l}{A}</math>, it changes with change in length and area of cross section of conductor. But resistivity of conductor is the characteristic property of material and hence it does not change.</p> <p>(ii) The resistivity of an alloy is generally higher than that of its constituent metals. / Alloys do not oxidise (burn) readily at high temperatures.</p> <p>(iii) 1 Ampere is constituted by the flow of 1 Coulomb of charge per second. / <math>1 \text{ A} = 1 \text{ C/s}</math></p> <p style="text-align: center;"><b>OR</b></p>	<p><b>1</b></p> <p><b>1</b></p> <p><b>2</b></p> <p><b>1</b></p>	<b>4</b>

	<p>(b)</p> <p>(i) <math>V = 4V, I = 2A</math></p> <p>Resistance of circuit <math>R = \frac{V}{I}</math></p> $R = \frac{4}{2}$ $R = 2\Omega$ <p>Let 'n' be the number of bulbs</p> $\frac{1}{R} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \dots - n$ $\frac{1}{R} = \frac{n}{8}$ $\frac{1}{2} = \frac{n}{8}$ $n = 4$ <p>Therefore, 4 bulbs of resistance <math>8\Omega</math> should be connected in parallel.</p> <p>(ii)</p> <ul style="list-style-type: none"> <li>• Ammeter</li> <li>• In series</li> </ul> <p>(iii) Heat generated through a current carrying conductor is directly proportional to square of current, resistance of conductor and time for which current flows in conductor.</p> <p style="text-align: center;">/</p> $H = I^2 R t$	<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>1</b></p> <p><b>1</b></p> <p><b>1</b></p>	<p><b>5</b></p>
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<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). This is in view of the reduced syllabus and number of questions in question paper.
13	<p>Ensure that you do not make the following common types of errors committed by the Examiner in the past :-</p> <ul style="list-style-type: none"> <li>● Leaving answer or part thereof unassessed in an answer book.</li> <li>● Giving more marks for an answer than assigned to it.</li> <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> <li>● Wrong question wise totaling on the title page.</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> </ul> <p>Half or a part of answer marked correct and the rest as wrong, but no marks awarded.</p>
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 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.

**MARKING SCHEME**  
**SCIENCE (Subject Code-086)**  
**(PAPER CODE: 31/1/2) (10-01-86K)**

Q.No.	EXPECTED OUTCOMES/VALUE POINTS		Marks	Total Marks
SECTION – A (Biology)				
1.	(C)/ (i), (ii) and (iv)		1	1
2.	(B) / Stomata		1	1
3.	(C) /Vegetative propagation		1	1
4.	(C) / Polythene bag, rubber band, ball pen		1	1
5.	(B) / Cerebellum		1	1
6.	(D) / they reproduce asexually		1	1
7.	(B) / Trypsin digests proteins and lipase digests emulsified fats		1	1
8.	(C) / Assertion (A) is true, but Reason (R) is false.		1	1
9.	(B) / Both, A and R are true, but Reason (R) is not the correct explanation of Assertion (A).		1	1
10.	(a)		1   	

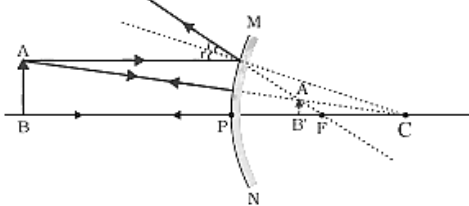
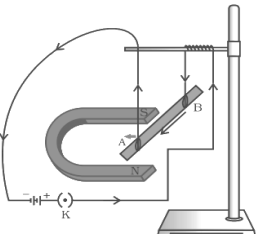
	<div>(b)</div> <table><tr><th>Consumers</th><th>Decomposers</th></tr><tr><td>(i) Organisms that feed on producers and other consumers.</td><td>(i) Organisms that breakdown dead organic matter into simpler inorganic substances.</td></tr><tr><td>(ii) Transfers energy through the food chain.</td><td>(ii) Recycle nutrients back into the environment.</td></tr></table> <div>(any one, any other suitable difference)</div>	Consumers	Decomposers	(i) Organisms that feed on producers and other consumers.	(i) Organisms that breakdown dead organic matter into simpler inorganic substances.	(ii) Transfers energy through the food chain.	(ii) Recycle nutrients back into the environment.	1	2
Consumers	Decomposers								
(i) Organisms that feed on producers and other consumers.	(i) Organisms that breakdown dead organic matter into simpler inorganic substances.								
(ii) Transfers energy through the food chain.	(ii) Recycle nutrients back into the environment.								
13.	<div>(a) No, it is purely a matter of chance, as male produces 50% X-type and 50% Y-type of sperms and any sperm can fertilize the ova.</div> <div>(b)<ul style="list-style-type: none"><li>50% chance.</li><li>Parents :<div>XX                      x                      XY</div><div>Mother                      Father</div></li></ul><div>Gametes : <div><div>X</div><div>X</div><div>X</div><div>Y</div></div><div>F<sub>1</sub><div><div>XX</div><div>XY</div><div>XX</div><div>XY</div></div><div>girl   boy   girl   boy</div><div>2 girls : 2 boys</div><div>50% chance of daughter.</div></div></div></div>	<div><math>\frac{1}{2} + \frac{1}{2}</math></div> <div><math>\frac{1}{2}</math></div> <div><math>1\frac{1}{2}</math></div>	3						
14.	<div>(a)<div><div>(i) Grass</div><div>(ii) Deer, Rabbit</div><div>(iii) Snake, Lion</div><div>(iv) Lion</div></div></div> <div>(b) Primary consumers feed on green plants which have large amount of energy. Only 10% of its energy is available/passed for the next secondary consumer /trophic level.</div> <div>(c) The base is broad as the number/energy/mass of producers is usually, the highest in comparison to other trophic levels of pyramid.</div>	<div>1</div> <div>1</div> <div>1</div>	3						
15.	<div>(a) In F<sub>1</sub> progeny, pea plants have ‘Tt’ where ‘T’ is dominant over ‘t’ so all the plants of F<sub>1</sub> progeny were tall. / Tall height is dominant trait over short height.</div> <div>(b) Self-pollination</div> <div>(c)<div><div>(i)</div><table><tr><th>Dominant trait</th><th>Recessive trait</th></tr><tr><td>i) Expresses itself over recessive trait.</td><td>i) Unable to express itself in presence of a dominant trait.</td></tr><tr><td>ii) Expresses in both conditions- TT and Tt.</td><td>ii) Expresses itself only when it is ‘tt’ or in pure condition.</td></tr></table><div>(any one, any other suitable difference)</div></div></div>	Dominant trait	Recessive trait	i) Expresses itself over recessive trait.	i) Unable to express itself in presence of a dominant trait.	ii) Expresses in both conditions- TT and Tt.	ii) Expresses itself only when it is ‘tt’ or in pure condition.	<div>1</div> <div>1</div> <div>2</div>	
Dominant trait	Recessive trait								
i) Expresses itself over recessive trait.	i) Unable to express itself in presence of a dominant trait.								
ii) Expresses in both conditions- TT and Tt.	ii) Expresses itself only when it is ‘tt’ or in pure condition.								



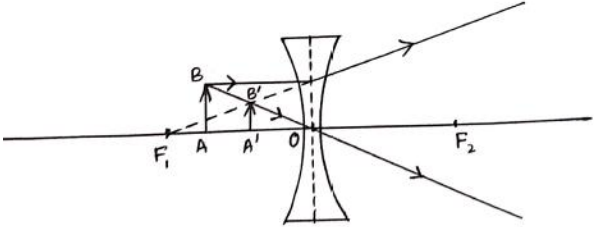
	<p style="text-align: center;"><b>OR</b></p> <p>(c) (ii) Mendel's observations:</p> <ul style="list-style-type: none"> <li>All plants of F<sub>1</sub> progeny were tall.</li> <li>No medium/ no short height plants observed in F<sub>1</sub> progeny.</li> <li>F<sub>1</sub> progeny resembled one parent only.</li> </ul> <p style="text-align: right;">(any two observations)</p>	1+1	4
16.	<p>(a)</p> <p>(i) When spores land on a substance and get adequate moisture and temperature, it will develop into new <i>Rhizopus</i>.</p> <p>(ii) New plants grow from the buds located in the notches of the leaf.</p> <p>(iii) The pollen tube will not be formed. / No fertilisation will take place.</p> <p>(iv) Fertilization /Pregnancy will be prevented.</p> <p>(v) Each fragment or piece grows into a new individual organism.</p> <p style="text-align: center;"><b>OR</b></p> <p>(b)</p> <p>(i) Most of these bacteria would die, but the few variants resistant to heat would survive and grow further.</p> <p>(ii) Fertilization occurs to form a zygote.</p> <p>(iii) Cross pollination may occur leading to fruit formation. / No fertilization. / No fruit formation.</p> <p>(iv) If the egg is not fertilised, the thick and spongy lining of the uterus breaks and comes out through vagina as blood and mucus, known as menstruation. / Menstruation will take place.</p> <p>(v) The seed will develop into a seedling. / Germination will take place.</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	5
<b>SECTION – B</b> <b>(Chemistry)</b>			
17.	(B) / Calcium	1	1
18.	(A) / tomato, curd, ant-sting	1	1
19.	(A) / Pb	1	1
20.	(B) / -COOH	1	1
21.	(D) / NO <sub>2</sub> and O <sub>2</sub>	1	1
22.	(B) / Vanilla essence	1	1
23.	(C) / Both, (i) and (ii) are double displacement reactions and precipitation reactions.	1	1
24.	(A) / Both, Assertion(A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).	1	1
25.	<ul style="list-style-type: none"> <li>Tooth decay starts when pH of mouth is lower than 5.5.</li> <li>It can be prevented by cleaning the mouth after eating. / By using toothpastes as they are basic in nature.</li> </ul> <p style="text-align: right;">(any other preventive method)</p>	<p>1</p> <p>1</p>	2

26.	<p>(a)</p> <ul style="list-style-type: none"> <li>When electricity is passed through brine, it decomposes to form sodium hydroxide (alkali) and chlorine, hence this process is called chlor-alkali process.</li> </ul> $2\text{NaCl(aq)} + 2\text{H}_2\text{O(l)} \xrightarrow{\text{Electricity}} 2\text{NaOH(aq)} + \text{H}_2\text{(g)} + \text{Cl}_2\text{(g)}$ <ul style="list-style-type: none"> <li>At anode: <math>\text{Cl}_2</math></li> <li>At cathode: <math>\text{H}_2</math></li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>(b)</p> <p>(i) <math>\text{NaCl} + \text{H}_2\text{O} + \text{NH}_3 + \text{CO}_2 \rightarrow \text{NaHCO}_3 + \text{NH}_4\text{Cl}</math></p> <p>(ii) <math>\text{Ca(OH)}_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2 + \text{H}_2\text{O}</math></p> <p style="text-align: center;">/</p> $2\text{Ca(OH)}_2 + 2\text{Cl}_2 \rightarrow \text{Ca(ClO)}_2 + \text{CaCl}_2 + 2\text{H}_2\text{O}$ <p>(iii) <math>\text{CaSO}_4 \cdot 2\text{H}_2\text{O} \xrightarrow{373\text{K}} \text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O} + 1\frac{1}{2} \text{H}_2\text{O}</math> (deduct <math>\frac{1}{2}</math> mark for no / incorrect balancing)</p>	<p>1</p> <p>1</p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p>1</p> <p>1</p> <p>3</p>	3
27.	<p>(a) <math>\text{CaO(s)} + \text{H}_2\text{O(l)} \rightarrow \text{Ca(OH)}_2 + \text{Heat}</math></p> <p>(b) <math>\text{CH}_4\text{(g)} + 2\text{O}_2\text{(g)} \rightarrow \text{CO}_2\text{(g)} + 2\text{H}_2\text{O(g)}</math></p> <p>(c) <math>2\text{FeSO}_4\text{(s)} \xrightarrow{\text{Heat}} \text{Fe}_2\text{O}_3\text{(s)} + \text{SO}_2\text{(g)} + \text{SO}_3\text{(g)}</math> (deduct <math>\frac{1}{2}</math> mark for no / incorrect balancing)</p>	<p>1</p> <p>1</p> <p>1</p>	3
28.	<p>(a) Because it is easier to obtain metal from its oxide. / Because it is easier to reduce metal oxide to metal</p> <p>(b)</p> $\text{Fe}_2\text{O}_3\text{(s)} + 2\text{Al(s)} \rightarrow 2\text{Fe(l)} + \text{Al}_2\text{O}_3\text{(s)}$ $3\text{MnO}_2\text{(s)} + 4\text{Al(s)} \rightarrow 2\text{Mn(l)} + 2\text{Al}_2\text{O}_3\text{(s)}$ <p style="text-align: center;">(balancing is optional) (any one equation)</p> <p>(c) (i) <math>2\text{Cu}_2\text{S} + 3\text{O}_2\text{(g)} \xrightarrow{\text{Heat}} 2\text{Cu}_2\text{O(s)} + 2\text{SO}_2\text{(g)}</math></p> $2\text{Cu}_2\text{O} + \text{Cu}_2\text{S} \xrightarrow{\text{Heat}} 6\text{Cu(s)} + \text{SO}_2\text{(g)}$ <p style="text-align: center;"><b>OR</b></p> <p>(c)(ii) (I) Because highly reactive metals have more affinity for oxygen than carbon.</p> <p>(II) Because of its low melting point.</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	4
29.	<p>(a) (i)</p> <p>(I) They do not have charged particles /ions.</p> <p>(II) Soaps react with calcium and magnesium salts present in</p>	<p>1</p> <p>1</p>	

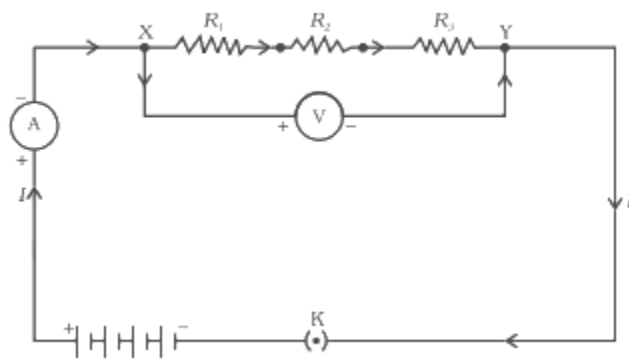
	<p>hard water and form insoluble substances called Scum.</p> <p>(III) C-C bonds are strong and stable whereas Si-Si bonds are relatively weak.</p> <p>(ii) (I) <math>\text{CH}_3\text{CH}_2\text{OH} \xrightarrow{\text{acidified K}_2\text{Cr}_2\text{O}_7 + \text{heat}} \text{CH}_3\text{COOH}</math></p> <p>(II) <math>\text{CH}_2=\text{CH}_2 + \text{H}_2 \xrightarrow{\text{Ni}} \text{CH}_3-\text{CH}_3</math></p> <p><b>OR</b></p> <p>(b) (i) X - <math>\text{CH}_3\text{COOH}</math>/ethanoic acid /acetic acid</p> <p>Y - <math>\text{CH}_3\text{COOC}_2\text{H}_5</math>/<math>\text{CH}_3\text{COOCH}_2\text{CH}_3</math>/ ester/ ethyl ethanoate</p> <p>Z - <math>\text{CH}_3\text{COONa}</math>/sodium ethanoate/sodium acetate</p> <p>(ii) Catalyst/ dehydrating agent</p> <p>(iii)</p> <ul style="list-style-type: none"> <li>•</li> </ul> <p><math>\text{CH}_3-\text{COOH} + \text{CH}_3-\text{CH}_2\text{OH} \xrightleftharpoons{\text{Acid}} \text{CH}_3-\overset{\text{O}}{\underset{\text{O}}{\text{C}}}-\text{O}-\text{CH}_2-\text{CH}_3 + \text{H}_2\text{O}</math></p> <ul style="list-style-type: none"> <li>• Esterification reaction</li> <li>• <math>\text{CH}_3\text{COOC}_2\text{H}_5 + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{C}_2\text{H}_5\text{OH}</math></li> <li>• Saponification reaction/ De-esterification reaction</li> </ul>	<p><b>1</b></p> <p><b>1</b></p> <p><b>1</b></p> <p><b>1/2</b></p> <p><b>1/2</b></p> <p><b>1/2</b></p> <p><b>1/2</b></p> <p><b>1</b></p> <p><b>1</b></p> <p><b>1/2</b></p>	<p><b>5</b></p>
<p align="center"><b>SECTION – C</b> <b>(Physics)</b></p>			
<b>30.</b>	(A) / Ciliary muscles of your eye contract and the eye lens become thick	<b>1</b>	<b>1</b>
<b>31.</b>	(C) / - 30 cm and + 30 cm from lens	<b>1</b>	<b>1</b>
<b>32.</b>	(C) / Assertion (A) is true, but Reason (R) is false.	<b>1</b>	<b>1</b>
<b>33.</b>	<p>a) <math>r = 0.01 \text{ cm} = 1 \times 10^{-4} \text{ m}</math></p> <p><math>l = 1 \text{ cm} = 0.01 \text{ m}</math></p> <p><math>R = \rho \frac{l}{A}</math></p> <p><math>\rho = \frac{RA}{l} = \frac{R \times \pi r^2}{l}</math></p> <p><math>\rho = \frac{7 \times 22 \times 10^{-8}}{7 \times 0.01}</math></p> <p><math>\rho = 22 \times 10^{-8} \times 10^2</math></p> <p><math>\rho = 22 \times 10^{-6} \Omega\text{m} = 2.2 \times 10^{-5} \Omega\text{m}</math></p> <p><b>OR</b></p>	<p><b>1/2</b></p> <p><b>1</b></p> <p><b>1/2</b></p>	

	<p>(b) Resistance of electric heater <math>R = \frac{V}{I}</math></p> $R = \frac{220}{11}$ $R = 20 \, \Omega$ $P = \frac{V^2}{R}$ $P = \frac{200 \times 200}{20}$ $P = 2000W / 2 \, kW$	$\frac{1}{2}$  $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	2
34.	<ul style="list-style-type: none"> <li>Convex mirror / Diverging mirror</li> <li>  </li> </ul> <p>(<math>\frac{1}{2}</math> mark to be deducted for not showing the direction of light)</p>	1  1	2
35.	<p>(a) <b><u>Procedure</u></b></p> <p>Take a small aluminium rod AB and using two connecting wires suspend it horizontally from a stand.</p> <p>Place a strong horse-shoe magnet in such a way that the rod lies between the two poles perpendicularly.</p> <p>Connect the aluminium rod in series with a battery and a key. Now pass a current through the aluminium rod from one end to another.</p> <p>/</p> <p>(Procedure can also be explained with a <b><u>Diagram</u></b>)</p>  <p><b><u>Observation</u></b></p> <p>It is observed that <b>the rod is displaced</b> on passing current through it.</p> <p>(b) Magnetic field will be vertically downwards.</p>	1        1	3



	<p>(b)</p>  <p>(c) (i)</p> $f_1 = 30 \text{ cm} = 0.3 \text{ m}, \quad f_2 = -15 \text{ cm} = -0.15 \text{ m}$ $P = \frac{1}{f}$ $P_1 = \frac{+1}{0.3} \text{ D}; \quad P_2 = \frac{-1}{0.15} \text{ D}$ <p>Equivalent power, <math>P = P_1 + P_2</math></p> $P = -3.33 \text{ D}$ <p>Equivalent focal length, <math>f = \frac{1}{P}</math></p> $f = \frac{-1}{3.33} = -0.3 \text{ m} = -30 \text{ cm}$ <p style="text-align: center;"><b>OR</b></p> <p>(c) (ii)</p> <ul style="list-style-type: none"> <li>• Combination Lens will behave like convex lens</li> <li>• <math>f_1 = -2 \text{ m}, f_2 = 1.5 \text{ m}</math></li> </ul> $P = \frac{1}{f}$ $P_1 = \frac{-1}{2} \text{ D}, \quad P_2 = \frac{+1}{1.5} \text{ D}$ $P = P_1 + P_2$ $P = \frac{1}{6}$ $f = +6 \text{ m}$ <p>The focal length of combination is positive.</p> <p style="text-align: center;">/</p> <p style="text-align: center;"><b>Alternate answer</b></p> <ul style="list-style-type: none"> <li>• Combination Lens will behave as a convex lens.</li> <li>• Convex lens – Less ‘f’, More ‘P<sub>1</sub>’ Concave lens- More ‘f’, Less ‘P<sub>2</sub>’ Combined Power = <math>P_1 + P_2</math>, which will be positive.</li> </ul>	<p style="text-align: center;"><b>1</b></p> <p style="text-align: center;"><math>\frac{1}{2}</math></p> <p style="text-align: center;"><math>\frac{1}{2}</math></p> <p style="text-align: center;"><math>\frac{1}{2}</math></p> <p style="text-align: center;"><b>1</b></p>	
<p><b>39.</b></p>	<p>(a)</p> <p>(i) (I) <math>R_s = 2 + 2 = 4\Omega</math></p> $\frac{1}{R'} = \frac{1}{4} + \frac{1}{4} = \frac{2}{4}$ $R' = 2\Omega$ $R'' = R' + 3\Omega$ $R'' = 2\Omega + 3\Omega$ $R'' = 5\Omega$	<p style="text-align: center;"><math>\frac{1}{2}</math></p> <p style="text-align: center;"><math>\frac{1}{2}</math></p>	<p style="text-align: center;"><b>4</b></p>

	<p>(II) <math>I = \frac{V}{R}</math></p> <p><math>I = \frac{10}{5}</math></p> <p><math>I = 2A</math></p> <p>(III) <math>V = IR</math></p> <p><math>V = 2 \times 3</math></p> <p><math>V = 6V</math></p> <p>(ii) As the two bulbs are connected in parallel, the voltage across each of them will be the same.</p> <p>Let <math>I_1</math> be the current drawn by 100 W bulb:</p> <p><math>I_1 = \frac{P}{V} = \frac{100}{220} = \frac{5}{11} A</math></p> <p>Let <math>I_2</math> be the current drawn by 60 W bulb:</p> <p><math>I_2 = \frac{P}{V} = \frac{60}{220} = \frac{3}{11} A</math></p> <p><math>\therefore</math> Current drawn from line <math>I = I_1 + I_2</math></p> <p><math>I = \frac{5}{11} + \frac{3}{11} = \frac{8}{11} A = 0.727 A \approx 0.73 A</math></p> <p>Hence, 0.73 A current flows through the line.</p> <p style="text-align: center;"><b>OR</b></p> <p>(b)</p> <p>(i)</p> <ul style="list-style-type: none"> <li>The Potential difference <math>V</math> across the ends of given metallic wire in an electric circuit is directly proportional to current <math>I</math> flowing through it, provided its temperature remains the same.</li> </ul> <div data-bbox="360 1087 740 1352" data-label="Figure"> </div> <ul style="list-style-type: none"> <li>Slope = <math>\frac{BC}{AC}</math></li> <li><math>= \frac{V}{I}</math></li> </ul> <p>Thus, Slope = <math>R</math></p> <p>(ii) Consider three resistors <math>R_1, R_2, R_3</math> connected in series. Let <math>V</math> be the potential difference across the resistors and current <math>I</math> flows through the circuit</p>	<p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><b>1</b></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><b>1</b></p> <p><b>1</b></p> <p><b>1</b></p>	
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Potential difference across  $R_1$ ,  $R_2$ ,  $R_3$  is

$$V_1 = IR_1, V_2 = IR_2, V_3 = IR_3$$

If  $R_S$  is equivalent resistance in series combination and  $I$  is the current through the circuit then

$$V = I R_S$$

The total potential difference,

$$V = V_1 + V_2 + V_3$$

$$I R_S = I R_1 + I R_2 + I R_3$$

$$R_S = R_1 + R_2 + R_3$$

$\frac{1}{2}$

$\frac{1}{2}$

$\frac{1}{2}$

$\frac{1}{2}$

**5**



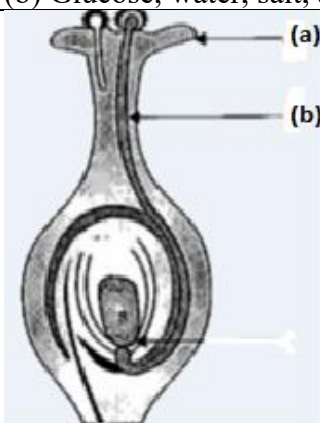
**Marking Scheme**  
**Strictly Confidential**  
**(For Internal and Restricted use only)**  
**Secondary School Examination, 2026 (X<sup>th</sup>)**  
**SUBJECT NAME SCIENCE (Q.P. CODE /Set No 31/1/3)**

**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 Newspaper/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).This is in view of the reduced syllabus and number of questions in question paper.
13	<p>Ensure that you do not make the following common types of errors committed by the Examiner in the past :-</p> <ul style="list-style-type: none"> <li>● Leaving answer or part thereof unassessed in an answer book.</li> <li>● Giving more marks for an answer than assigned to it.</li> <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> <li>● Wrong question wise totaling on the title page.</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> </ul> <p>Half or a part of answer marked correct and the rest as wrong, but no marks awarded.</p>
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 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.

**MARKING SCHEME**  
**SCIENCE (Subject Code-086)**  
**(PAPER CODE: 31/1/3) (10-01-86K)**

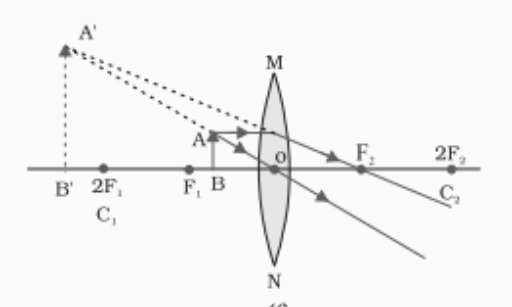
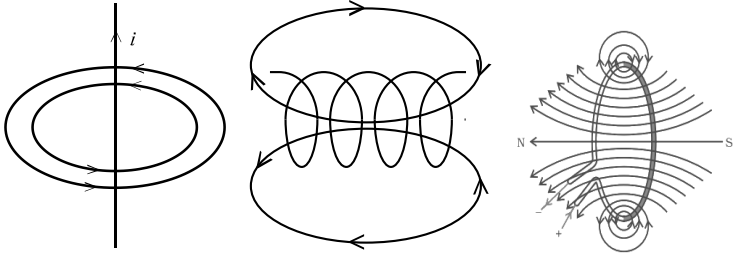
Q.No.	EXPECTED OUTCOMES/VALUE POINTS		Marks	Total Marks						
SECTION – A (Biology)										
1.	(D) / they reproduce asexually		1	1						
2.	(B) / Stomata		1	1						
3.	(B) / Trypsin digests proteins and lipase digests emulsified fats.		1	1						
4.	(A) / (i) and (iii) respectively		1	1						
5.	(C) / Polythene bag, Rubber band, Ball pen		1	1						
6.	(D) / (i), (ii) and (iii)		1	1						
7.	(D) / Flowers can store some waste products		1	1						
8.	(A) / Both, Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).		1	1						
9.	(A) / Both, Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A)		1	1						
10.	(a) <ul style="list-style-type: none"><li>Bile emulsifies fats for their digestion.</li><li>It makes medium alkaline for further digestion by pancreatic and small intestinal enzymes.</li></ul> (b) Glucose, water, salt, amino acid		$\frac{1}{2}$ $\frac{1}{2}$  1	2						
11.	<div></div> <div>(a) Stigma (b) Pollen Tube</div> <div>Diagram</div>		1 $\frac{1}{2}$ $\frac{1}{2}$	2						
12.	(a) <table><tr><td>Chewing of food</td><td>Salivation on sight of food</td></tr><tr><td>i) It is a voluntary action.</td><td>i) It is a reflex/involuntary action.</td></tr><tr><td>ii) It is controlled by forebrain.</td><td>ii) It is controlled by medulla in the hind brain.</td></tr></table> (any other suitable difference)		Chewing of food	Salivation on sight of food	i) It is a voluntary action.	i) It is a reflex/involuntary action.	ii) It is controlled by forebrain.	ii) It is controlled by medulla in the hind brain.	1  1	
Chewing of food	Salivation on sight of food									
i) It is a voluntary action.	i) It is a reflex/involuntary action.									
ii) It is controlled by forebrain.	ii) It is controlled by medulla in the hind brain.									

	<b>OR</b>			
	(b)			
	Pollination	Fertilization		
	i) It is the transfer of pollen grains from anther to the suitable stigma.	i) It is the fusion of male gamete with the female gamete.	1	
	ii) It occurs in plants.	ii)It occurs in both plants and animals.	1	
	(any other suitable difference)			2
13.	(a)			
	Nephron	Neuron		
	(i) Filtration/Structural/ Functional unit of the kidney.	(i) Structural/ Functional unit of the nervous system.	1	
	(ii) Filters nitrogenous wastes from the blood.	(ii) Transmits information from one part of the body to another.		
	(any one, any other suitable difference)			
	(b)			
	Sensory Nerve	Motor Nerve		
	(i) Carries impulse from receptors to CNS/ Brain and Spinal cord.	(i) Carries impulse from CNS/Brain and Spinal cord to the motor area/ effector organ.	1	
	(any other suitable difference)			
	(c)			
	Consumers	Decomposers		
	(i) Organisms that feed on producers and other consumers.	(i) Organisms that breakdown dead organic matter into simpler inorganic substances.	1	
	(ii) Transfers energy through the food chain.	(ii) Recycle nutrients back into the environment.		
	(any one, any other suitable difference)			3
14	(a) (i) Grass (ii) Deer, Rabbit (iii) Snake, Lion (iv) Lion		1	
	(b) Primary consumers feed on green plants which have large amount of energy. Only 10% of its energy is available/passed for the next secondary consumer /trophic level.		1	
	(c) The base is broad as the number/energy/mass of producers is usually, the highest in comparison to other trophic levels of the pyramid.		1	3

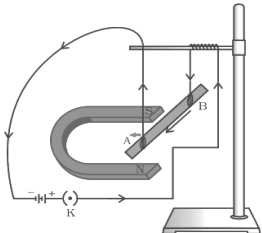
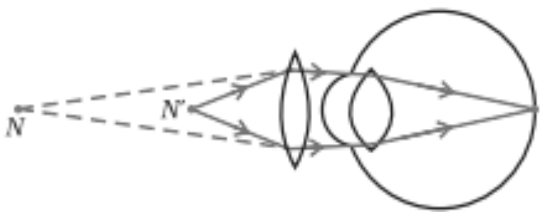
15.	<p>(a) In F<sub>1</sub> progeny, pea plants have 'Tt' where 'T' is dominant over 't' so all the plants of F<sub>1</sub> progeny were tall. / Tall height is dominant trait over short height.</p> <p>(b) Self-pollination</p> <p>(c) (i)</p> <table border="1"><thead><tr><th>Dominant trait</th><th>Recessive trait</th></tr></thead><tbody><tr><td>i) Expresses itself over recessive trait.</td><td>i) Unable to express itself in presence of a dominant trait.</td></tr><tr><td>ii) Expresses in both conditions-TT and Tt.</td><td>ii) Expresses itself only when it is 'tt' or in pure condition.</td></tr></tbody></table> <p>(any one, any other suitable difference)</p> <p><b>OR</b></p> <p>(c) (ii) Mendel's observations:</p> <ul style="list-style-type: none"><li>• All plants of F<sub>1</sub> progeny were- tall.</li><li>• No medium/ no short height plants observed in F<sub>1</sub> progeny.</li><li>• F<sub>1</sub> progeny resembled one parent only.</li></ul> <p>(any two observations)</p>	Dominant trait	Recessive trait	i) Expresses itself over recessive trait.	i) Unable to express itself in presence of a dominant trait.	ii) Expresses in both conditions-TT and Tt.	ii) Expresses itself only when it is 'tt' or in pure condition.	<p>1</p> <p>1</p> <p>2</p> <p>1+1</p>	<p>4</p>
Dominant trait	Recessive trait								
i) Expresses itself over recessive trait.	i) Unable to express itself in presence of a dominant trait.								
ii) Expresses in both conditions-TT and Tt.	ii) Expresses itself only when it is 'tt' or in pure condition.								
16.	<p>(a)</p> <p>(i) Most of these bacteria would die, but the few variants resistant to heat would survive and grow further.</p> <p>(ii) Fertilization occurs to form a zygote.</p> <p>(iii) Cross pollination may occur leading to fruit formation. / No fertilization. / No fruit formation.</p> <p>(iv) If the egg is not fertilised, the thick and spongy lining of the uterus breaks and comes out through vagina as blood and mucus, known as menstruation. / Menstruation will take place.</p> <p>(v) The seed will develop into a seedling. / Germination will take place.</p> <p><b>OR</b></p> <p>(b)</p> <p>(i) When spores land on a substance and get adequate moisture and temperature, it will develop into new <i>Rhizopus</i>.</p> <p>(ii) New plants grow from the buds located in the notches of the leaf.</p> <p>(iii) The pollen tube will not be formed. / No fertilisation will take place.</p> <p>(iv) Fertilization /Pregnancy will be prevented.</p> <p>(v) Each fragment or piece grows into a new individual organism.</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>5</p>						

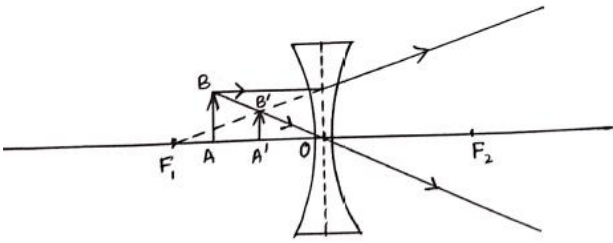
SECTION-B (Chemistry)			
17.	(D) / NO <sub>2</sub> and O <sub>2</sub>	1	1
18.	(C) / Both, (i) and (ii) are double displacement reactions and precipitation reactions.	1	1
19.	(B) / Vanilla essence	1	1
20.	(B)/ alkene	1	1
21.	(B) / Calcium	1	1
22.	(A) / Pb	1	1
23.	(A) / tomato, curd, ant-sting	1	1
24.	(A)/ Both, Assertion(A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).	1	1
25.	<ul style="list-style-type: none"> <li>Because honey bee-sting leaves an acid.</li> <li>Being alkaline, baking soda neutralizes the acid.</li> </ul>	1 1	2
26.	<p>(a) Blue colour of copper sulphate solution changes to pale green  <math>\text{Fe(s)} + \text{CuSO}_4(\text{aq}) \rightarrow \text{FeSO}_4(\text{aq}) + \text{Cu(s)}</math></p> <p>(b) Yellow precipitate is formed.  <math>\text{Pb(NO}_3)_2(\text{aq}) + 2\text{KI}(\text{aq}) \rightarrow \text{PbI}_2(\text{s}) + 2\text{KNO}_3(\text{aq})</math></p> <p>(c) White colour of silver chloride changes to grey.  <math>2\text{AgCl} \xrightarrow{\text{sunlight}} 2\text{Ag} + \text{Cl}_2</math></p> <p>(award full marks even if only balanced chemical equation is written)</p>	1  1  1	3
27.	<p>(a)</p> <ul style="list-style-type: none"> <li>When electricity is passed through brine, it decomposes to form sodium hydroxide (alkali) and chlorine, hence this process is called chlor-alkali process.</li> </ul> $2\text{NaCl}(\text{aq}) + 2\text{H}_2\text{O}(\text{l}) \xrightarrow{\text{Electricity}} 2\text{NaOH}(\text{aq}) + \text{H}_2(\text{g}) + \text{Cl}_2(\text{g})$ <ul style="list-style-type: none"> <li>At anode: Cl<sub>2</sub></li> <li>At cathode: H<sub>2</sub></li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>(b)</p> <p>(i) <math>\text{NaCl} + \text{H}_2\text{O} + \text{NH}_3 + \text{CO}_2 \rightarrow \text{NaHCO}_3 + \text{NH}_4\text{Cl}</math></p> <p>(ii) <math>\text{Ca(OH)}_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2 + \text{H}_2\text{O}</math></p> <p style="text-align: center;">/</p> $2\text{Ca(OH)}_2 + 2\text{Cl}_2 \rightarrow \text{Ca(ClO)}_2 + \text{CaCl}_2 + 2\text{H}_2\text{O}$ <p>(iii) <math>\text{CaSO}_4 \cdot 2\text{H}_2\text{O} \xrightarrow{373\text{K}} \text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O} + 1\frac{1}{2} \text{H}_2\text{O}</math>  (deduct ½ mark for no / incorrect balancing)</p>	1  1 ½ ½   1  1 1	3

28.	<p>(a) Because it is easier to obtain metal from its oxide. / Because it is easier to reduce metal oxide to metal</p> <p>(b) <math>\text{Fe}_2\text{O}_3(\text{s}) + 2\text{Al}(\text{s}) \rightarrow 2\text{Fe}(\text{l}) + \text{Al}_2\text{O}_3(\text{s}) + \text{Heat}</math>  <math>3\text{MnO}_2(\text{s}) + 4\text{Al}(\text{s}) \rightarrow 3\text{Mn}(\text{l}) + 2\text{Al}_2\text{O}_3(\text{s}) + \text{Heat}</math>            (Balancing is optional) (Any one equation)</p> <p>(c) (i) <math>2\text{Cu}_2\text{S} + 3\text{O}_2(\text{g}) \xrightarrow{\text{Heat}} 2\text{Cu}_2\text{O}(\text{s}) + 2\text{SO}_2(\text{g})</math>  <math>2\text{Cu}_2\text{O} + \text{Cu}_2\text{S} \xrightarrow{\text{Heat}} 6\text{Cu}(\text{s}) + \text{SO}_2(\text{g})</math>  <b>OR</b></p> <p>(c)(ii) (I) Because highly reactive metals have more affinity for oxygen than carbon.            (II) Because of its low melting point.</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	4
29.	<p>(a) (i)</p> <p>(I) They do not give rise to charged particles/ ions.</p> <p>(II) Soap reacts with calcium and magnesium salts present in hard water and form insoluble substance called Scum.</p> <p>(III) C-C bonds are strong and stable whereas Si-Si bonds are relatively weak.</p> <p>(ii) (I) <math>\text{C}_2\text{H}_5\text{OH} \xrightarrow{\text{acidified K}_2\text{Cr}_2\text{O}_7 + \text{heat}} \text{CH}_3\text{COOH}</math>            (II) <math>\text{CH}_2=\text{CH}_2 + \text{H}_2 \xrightarrow{\text{Ni}} \text{CH}_3-\text{CH}_3</math>  <b>OR</b></p> <p>(b) (i) X - <math>\text{CH}_3\text{COOH}</math>/ethanoic acid /acetic acid            Y - <math>\text{CH}_3\text{COOC}_2\text{H}_5</math>/<math>\text{CH}_3\text{COOCH}_2\text{CH}_3</math>/ ester/ ethyl ethanoate            Z - <math>\text{CH}_3\text{COONa}</math>/sodium ethanoate/sodium acetate</p> <p>(ii) Catalyst / dehydrating agent</p> <p>(iii)</p> <ul style="list-style-type: none"> <li> <math display="block">\text{CH}_3 - \text{COOH} + \text{CH}_3 - \text{CH}_2\text{OH} \xrightleftharpoons{\text{Acid}} \text{CH}_3 - \underset{\text{O}}{\underset{\parallel}{\text{C}}} - \text{O} - \text{CH}_2 - \text{CH}_3 + \text{H}_2\text{O}</math> </li> <li>Esterification reaction</li> <li><math>\text{CH}_3\text{COOC}_2\text{H}_5 + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{C}_2\text{H}_5\text{OH}</math></li> <li>Saponification reaction/ De-esterification reaction</li> </ul>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1</p> <p>1/2</p> <p>1</p> <p>1/2</p>	5

SECTION-C (Physics)			
30.	(C) / - 30 cm and + 30 cm from lens	1	1
31.	(A) / Ciliary muscles of your eye contract and the eye lens become thick	1	1
32.	(C) / Assertion (A) is true, but Reason (R) is false.	1	1
33.	 <p>(size of the image is approximate) (½ mark to be deducted for not showing the direction of light)</p>	2	2
34.	<p>(a) <math>r = 0.01 \text{ cm} = 1 \times 10^{-4} \text{ m}</math>  <math>l = 1 \text{ cm} = 0.01 \text{ m}</math>  <math>R = \rho \frac{l}{A}</math>  <math>\rho = \frac{RA}{l} = \frac{R \times \pi r^2}{l}</math>  <math>\rho = \frac{7 \times 22 \times 10^{-8}}{7 \times 0.01}</math>  <math>\rho = 22 \times 10^{-8} \times 10^2</math>  <math>\rho = 22 \times 10^{-6} \Omega \text{m} = 2.2 \times 10^{-5} \Omega \text{m}</math></p> <p style="text-align: center;"><b>OR</b></p> <p>(b) Resistance of electric heater <math>R = \frac{V}{I}</math>  <math>R = \frac{220}{11}</math>  <math>R = 20 \Omega</math>  <math>P = \frac{V^2}{R}</math>  <math>P = \frac{200 \times 200}{20}</math>  <math>P = 2000 \text{ W} / 2 \text{ kW}</math></p>	<p>½</p> <p>1</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p>	2
35.	<p>(a)</p>  <p>(any two cases)</p>	1+1	

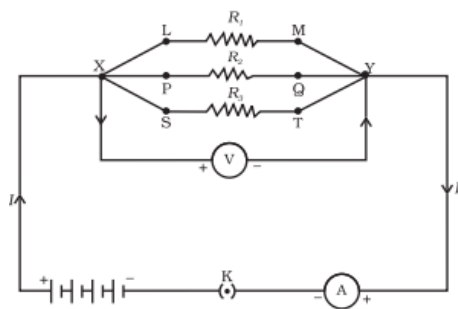


	<p style="text-align: center;">/</p> <ul style="list-style-type: none"> <li>• Magnetic field pattern for a current carrying straight conductor- concentric circles</li> <li>• Magnetic field pattern for a current carrying solenoid- magnetic field lines similar to that of a bar magnet</li> <li>• Magnetic field pattern for a current carrying circular loop- a pair of concentric circles with parallel straight lines at the centre. (any two cases)</li> </ul> <p>(b) At X. Magnetic field decreases as the distance from the conducting wire increases</p>	<p><math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<p><b>3</b></p>
36.	<p>(a) <b><u>Procedure</u></b></p> <p>Take a small aluminium rod AB and using two connecting wires suspend it horizontally from a stand.</p> <p>Place a strong horse-shoe magnet in such a way that the rod lies between the two poles perpendicularly.</p> <p>Connect the aluminium rod in series with a battery and a key. Now pass a current through the aluminium rod from one end to another.</p> <p style="text-align: center;">/</p> <p><b>(Procedure can also be explained with a <u>Diagram</u>)</b></p>  <p><b><u>Observation</u></b></p> <p>It is observed that the <b>rod is displaced</b> on passing current through it.</p> <p>(b) Magnetic field will be vertically downwards.</p>	<p><b>1</b></p> <p><b>1</b></p> <p><b>1</b></p>	<p><b>3</b></p>
37.	<p>(a) An eye defect in which a person can see distant objects clearly but cannot see nearby object clearly.</p> <p>(b) The focal length of the eye lens is too long. / The eyeball has become too small.</p> <p>(c)</p> 	<p><b>1</b></p> <p><b>1</b></p> <p><b>1</b></p>	<p><b>3</b></p>

38.	<p>(a)</p> <ul style="list-style-type: none"> <li>Position - Image will form at 40 cm / 2F / C</li> <li>Nature – Real, inverted</li> </ul> <p style="text-align: center;">/</p> <p><b>Alternate answer</b> Using Lens Formula</p> $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ <p><math>f = +20</math> cm, <math>u = -40</math> cm</p> $\frac{1}{v} - \frac{1}{-40} = \frac{1}{20}$ $\frac{1}{v} = \frac{1}{20} + \frac{1}{-40}$ <p><math>v = +40</math> cm Position - 40 cm on the other side of the lens Nature - Real, inverted</p> <p>(b)</p>  <p>(c) (i)</p> <p><math>f_1 = 30</math> cm = 0.3 m , <math>f_2 = -15</math> cm = -0.15 m</p> $P = \frac{1}{f}$ <p><math>P_1 = \frac{+1}{0.3}</math> D ; <math>P_2 = \frac{-1}{0.15}</math> D</p> <p>Equivalent power, <math>P = P_1 + P_2</math></p> <p><math>P = -3.33</math> D</p> <p>Equivalent focal length, <math>f = \frac{1}{P}</math></p> <p><math>f = \frac{-1}{3.33} = -0.3</math> m = -30 cm</p> <p style="text-align: center;"><b>OR</b></p> <p>(c) (ii)</p> <ul style="list-style-type: none"> <li>Combination Lens will behave like convex lens</li> <li><math>f_1 = -2</math> m <math>f_2 = 1.5</math> m</li> </ul> $P = \frac{1}{f}$ <p><math>P_1 = \frac{-1}{2}</math> D ; <math>P_2 = \frac{+1}{1.5}</math> D</p> <p><math>P = P_1 + P_2</math></p> $P = \frac{1}{6}$ <p><math>f = +6</math> m</p> <p>The focal length of the combination is positive.</p>	<p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><b>1</b></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><b>1</b></p> <p><b>1</b></p>	
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(ii)



As in parallel combination, Potential difference applied across each resistor is same. Current flowing through each resistor  $R_1$ ,  $R_2$  and  $R_3$  is

$$I_1 = \frac{V}{R_1}; I_2 = \frac{V}{R_2}; I_3 = \frac{V}{R_3}$$

If resistance of parallel combination is  $R_P$  then current drawn from battery is

$$I = \frac{V}{R_P}$$

Current  $I = I_1 + I_2 + I_3$

$$\frac{V}{R_P} = \frac{V}{R_1} + \frac{V}{R_2} + \frac{V}{R_3}$$

$$\frac{1}{R_P} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

**1** $\frac{1}{2}$  $\frac{1}{2}$ **5**