

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Secondary School Certificate Examination, 2025
SUBJECT : SCIENCE (086) (Q.P. CODE 31/4/1)

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 Newspaper/Website, etc. may invite action under various rules of the Board and IPC.”
3	Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one’s own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In class-X, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.
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10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
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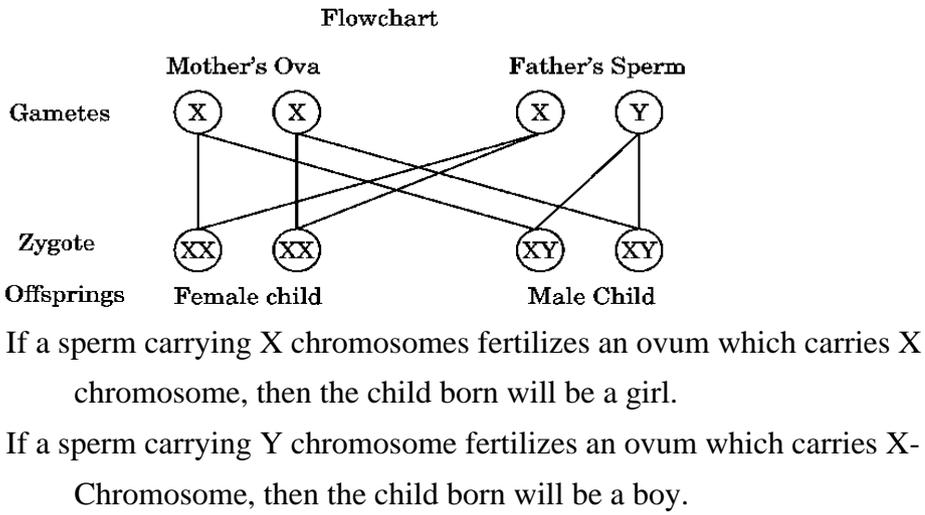
SECONDARY SCHOOL EXAMINATION, 2025**MARKING SCHEME****CLASS: X SCIENCE (Subject Code–086)****[Paper Code: 31/4/1]****Maximum Marks: 80**

Q. No.	EXPECTED ANSWERS / VALUE POINTS	Marks	Total Marks
SECTION A			
1	(d)/Melting of glaciers	1	1
2	(a)/Calcium chloride	1	1
3	(b)/ductility	1	1
4	(d)/Propyne	1	1
5	(b)/Nitrogen	1	1
6	(b)/B and D	1	1
7	(c)/seeds	1	1
8	(a)/anther	1	1
9	(c)/100%; 75%	1	1
10	(c)/40cm	1	1
11	(c)/glass slab	1	1
12	(d)/9	1	1
13	(a)/4400 Ω	1	1
14	(c)/60	1	1
15	(c)/plants -> man	1	1
16	(c)/DDT	1	1
17	(d) / Assertion (A) is false but Reason (R) is true.	1	1
18	(d) / Assertion (A) is false but Reason (R) is true.	1	1
19	(a) / Both Assertion and Reason are true and Reason (R) is the correct explanation of Assertion (A).	1	1
20	(d) / Assertion (A) is false but Reason (R) is true.	1	1

SECTION B

21	<p>Oxidation is the gain of oxygen by a substance or the loss of hydrogen from a substance/ loss of electrons.</p> <p>Hydrogen / H₂</p>	1 1	2
22	<p>(A)</p> <div style="text-align: center;"> </div> <p>Cation - magnesium ion / (Mg²⁺)</p> <p>Anion - chloride ion / (Cl⁻)</p> <p style="text-align: center;">OR</p> <p>(B)</p> <p>(i) If Zinc is in the form of sulphide ore.</p> <p>Roasting</p> $2\text{ZnS} + 3\text{O}_2 \xrightarrow{\text{Heat}} 2\text{ZnO} + 2\text{SO}_2$ <p>- Reduction</p> $\text{ZnO} + \text{C} \xrightarrow{\text{Heat}} \text{Zn} + \text{CO}$ <p style="text-align: center;">OR</p> <p>(ii) If Zinc is in the form of carbonate ore.</p> <p>Calcination</p> $\text{ZnCO}_3 \xrightarrow{\text{Heat}} \text{ZnO} + \text{CO}_2$ <p>- Reduction</p> $\text{ZnO} + \text{C} \xrightarrow{\text{Heat}} \text{Zn} + \text{CO}$ <p style="text-align: right;">(either i or ii)</p>	1 ½ ½ ½ ½ ½ ½	2
23	<p>Four ways:</p> <ol style="list-style-type: none"> 1. O₂ as a waste product through stomata. 2. Excess water by transpiration. 3. Shedding of leaves. 4. Stored as resins and gums in old xylem. 5. Into the soil 6. Stored in cellular vacuoles <p style="text-align: right;">(Any four)</p>	½x4	2

24

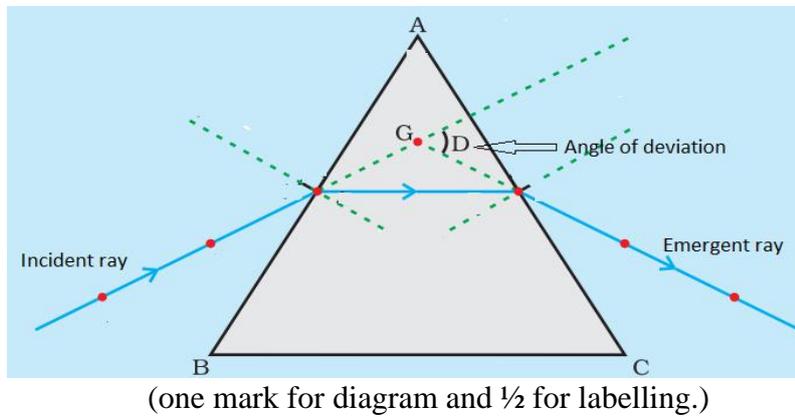


2

2

25

(A)



- Angle of deviation

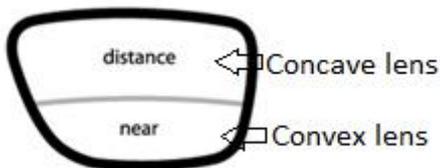
OR

(B)

I.

Bi-focal lens.

Bi-focal lens having upper portion consists of a concave lens and lower portion consists convex lens. /



to facilitate the distant and near vision respectively.

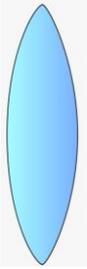
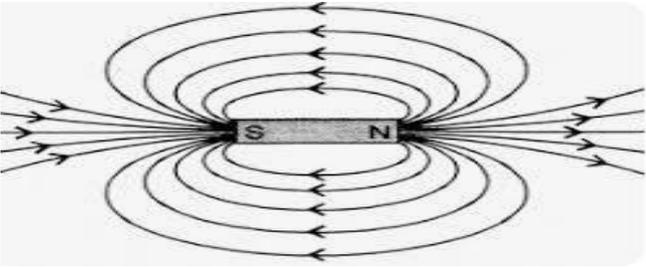
1 1/2

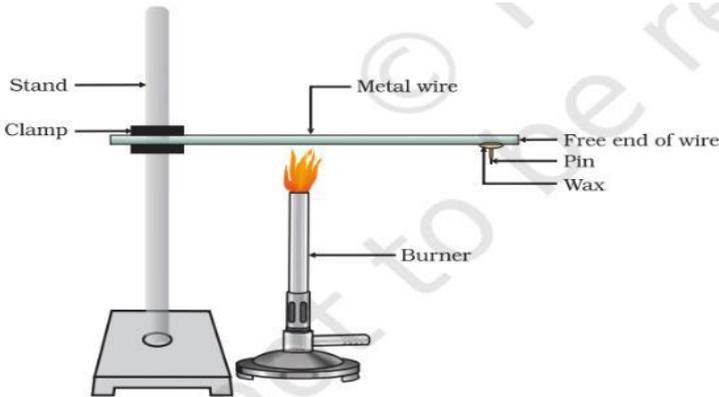
1/2

1/2

1

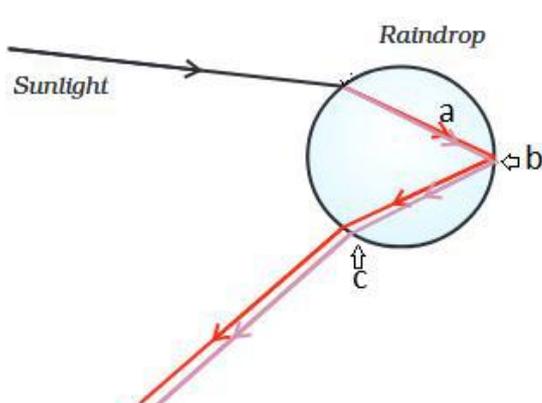
1/2

	<p style="text-align: center;">OR</p> <p>II. convex lens. Convex lens is thickened at the middle as compared to edges /</p>  <p>to facilitate the near vision.</p> <p style="text-align: center;"><i>(either of I or II)</i></p>	<p style="text-align: center;">1/2</p> <p style="text-align: center;">1</p> <p style="text-align: center;">1/2</p>	<p style="text-align: center;">2</p>
26	<p>The lines representing magnetic field around a magnet. /</p>  <p>Properties: No two field lines cross each other. Field lines emerge from north pole and merge at south pole. Field lines are closed curves. The direction of the field lines inside the magnet is from its south pole to north pole.</p> <p style="text-align: center;">(any two properties)</p>	<p style="text-align: center;">1</p> <p style="text-align: center;">1/2+1/2</p>	<p style="text-align: center;">2</p>
SECTION C			
27	<p>(A)</p> <ul style="list-style-type: none"> • The number of atoms of each element remains same before and after a chemical reaction / to satisfy the law of conservation of mass. • Law of conservation of mass. • Mass can neither be created nor destroyed in a chemical reaction. • $3\text{Zn} + 2\text{H}_3\text{PO}_4 \longrightarrow \text{Zn}_3(\text{PO}_4)_2 + 3\text{H}_2$ <p style="text-align: center;">OR</p>	<p style="text-align: center;">1/2</p> <p style="text-align: center;">1/2</p> <p style="text-align: center;">1</p> <p style="text-align: center;">1</p>	

	<p>(B)</p> <p>Any reaction in which a precipitate (insoluble substance) is formed is called a precipitation reaction.</p> <p>Example: when sodium sulphate solution is added to the barium chloride solution a white precipitate of barium sulphate is formed.</p> $\text{Na}_2\text{SO}_4(\text{aq}) + \text{BaCl}_2(\text{aq}) \longrightarrow \text{BaSO}_4(\text{s}) + 2\text{NaCl}(\text{aq})$ <p style="text-align: center;">ppt</p> <p style="text-align: center;">(any other example)</p>	1 1 1	3
28	<p>Activity:</p> <p>Take an aluminum or copper wire and clamp it on a stand as shown in the diagram.</p> <p>Fix a pin to the free end of the wire using wax.</p> <p>Heat the wire with spirit lamp or burner near the place where it is clamped.</p> <p>We will observe that the pin falls when the wax melts but wire does not melt.</p> <p>It indicates that metals are good conductors of heat and have high melting points.</p>  <p style="text-align: center;">(diagram is not mandatory) (any other activity)</p>	3	3
29	<p>(i) Salivary amylase - converts Starch to sugar</p> <p>(ii) Bile salts – changing the acidic food alkaline/ emulsifies fats.</p> <p>(iii) Trypsin – Helps in digestion of proteins / Lipase – Breaking down emulsified fats</p>	½ +½ ½ +½ ½ +½	3
30	<p>Limitations of electrical impulse:</p> <ul style="list-style-type: none"> • They reach only those cells that are connected by nervous tissue, and not every cell in the animal body. • Once an electrical impulse is generated in a cell and transmitted, the cell will take some time to reset its mechanism before it can generate and transmit a new impulse. / Takes sometime to reset its mechanism. <p style="text-align: center;">(any other limitation)</p>	1 1	

	<p>‘A’</p> <p>Role of acid – As a catalyst</p> <p>(iii) By adding dil. NaOH to B (ester) /saponification / by adding water with acid or base/ on addition of NaOH, sodium salt of acid is produced which is further hydrolysed to form ‘A’.</p> <p>(iv) By adding solution of alkaline potassium permanganate or acidified potassium dichromate in warm ethanol./</p> $\text{CH}_3 - \text{CH}_2\text{OH} \xrightarrow[\text{Or acidified K}_2\text{Cr}_2\text{O}_7 + \text{Heat}]{\text{Alkaline KMnO}_4 + \text{Heat}} \text{CH}_3\text{COOH} \text{ (A)}$ <p>(v) Carbon dioxide/CO₂</p>	<p>½</p> <p>1</p> <p>1</p> <p>1</p>	<p>5</p>
35	<p>(A) (i)</p> <p>Regeneration: The ability to give rise to new individual organism from their body parts / If the individual is somehow cut or broken up into many pieces, then each piece grows into a new organism.</p> <ul style="list-style-type: none"> • Organism show regeneration: <i>Planaria /Hydra</i> • Organism does not show regeneration: <i>Spirogyra</i> (any other example) • Because it does not have specialised cells which proliferate to make new cell types and tissues. <p>(ii)</p> <ul style="list-style-type: none"> • Spirogyra. • It reproduces through Fragmentation. • It simply breaks up into smaller pieces upon maturation. The pieces grow into new individuals. <p style="text-align: center;">OR</p> <p>(B)(i)</p> <p>(a) vas deferens</p> <p>(b) testes</p> <p>(c) prostate gland/ seminal vesicles</p> <p>(d) scrotum</p> <p>(ii) Consists of genetic material, has a tail for movement, small in size. (any two)</p>	<p>1</p> <p>½</p> <p>½</p> <p>1</p> <p>½</p> <p>½</p> <p>1</p> <p>½x4</p> <p>½x2</p>	

	(iii) Stretch the thumb, fore finger and middle finger of your left hand such that they are mutually perpendicular. If the first finger points in the direction of magnetic field and the second finger in the direction of the current, then the thumb will point in the direction of the force acting on the conductor.	1	5
SECTION E			
37	<p>(i) Hydrochloric acid / HCl and Sodium hydroxide / NaOH</p> <p>(ii) -Neutral - as it is a salt of strong acid and strong base</p> <p>(iii) (A) • Aqueous solution of sodium chloride (brine) decomposes (electrolysed) and produces:</p> <ul style="list-style-type: none"> • NaOH solution near cathode • Cl₂ at anode • H₂ at cathode <p style="text-align: center;">OR</p> <p>(iii) (B) Washing soda is obtained from sodium chloride by following reactions: $\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 + \text{NH}_3 \longrightarrow \text{NH}_4\text{Cl} + \text{NaHCO}_3$ $2\text{NaHCO}_3 \xrightarrow{\text{Heat}} \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$ Recrystallisation of sodium carbonate gives washing soda. $\text{Na}_2\text{CO}_3 + 10\text{H}_2\text{O} \longrightarrow \text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$</p>	<p>1/2 + 1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2 x 3</p> <p>1/2 x 4</p>	4
38	<p>(i) Reflex action. The sudden action in response to stimuli in the environment.</p> <p>(ii) (a) Motor neuron – carries message from spinal cord to the effector organ/muscle (b) Relay neuron – Connects sensory neuron to motor neuron.</p> <p>(iii) Central Nervous system. Components: Brain; spinal cord Peripheral Nervous system. Components: cranial nerves; spinal nerves.</p> <p style="text-align: center;">OR</p>	<p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2</p> <p>1/2 x 4</p>	

	<p>(iii)(B)</p> <p>(a) Fore-brain/Cerebrum</p> <p>(b) Cerebellum / Hind-brain</p> <p>(c) Medulla/ Hind-brain</p> <p>(d) Fore-brain</p>	<p>$\frac{1}{2} \times 4$</p>	<p>4</p>
<p>39</p>	<p>(i) A rainbow (or any other)</p> <p>(ii) Dispersion of white light takes place.</p> <p>(iii) (A)</p> <ul style="list-style-type: none"> •The presence of water droplets in the atmosphere. •The sun must be at the back of the observer. <p style="text-align: center;">OR</p> <p>(iii) (B)</p>  <p style="text-align: center;">($\frac{1}{2}$ mark for diagram and $\frac{1}{2}$ for labelling a, b, c)</p>	<p>1</p> <p>1</p> <p>1+1</p> <p>$\frac{1}{2} \times 4$</p>	<p>4</p>

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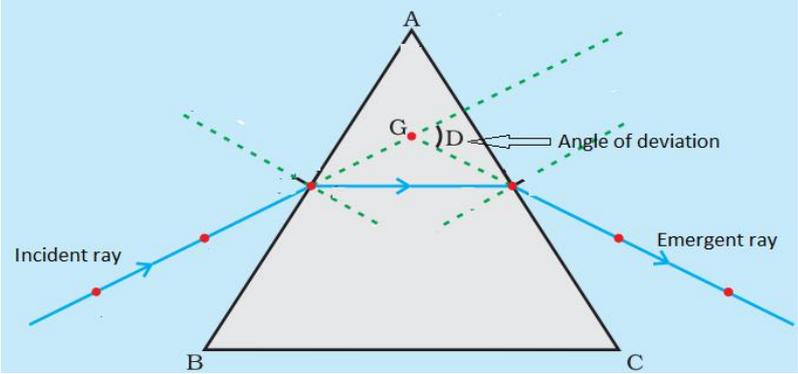
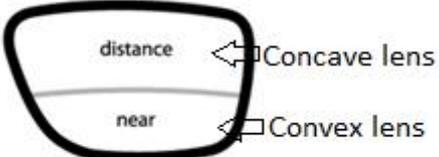
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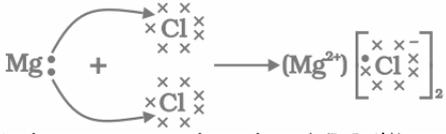
[Paper Code:31/4/2]

Maximum Marks: 80

Q. No.	EXPECTED ANSWERS / VALUE POINTS	Marks	Total Marks
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2	(c) /100%; 75%	1	1
3	(c)/ seeds	1	1
4	(d)/ Melting of glaciers	1	1
5	(b)/ ductility	1	1
6	(a)/ Calcium chloride	1	1
7	(d)/ Propyne	1	1
8	(d)/ Both, male and female germ cells.	1	1
9	(b)/ Nitrogen	1	1
10	(b)/ B and D	1	1
11	(c)/ DDT	1	1
12	(c)/ plants -→ man	1	1
13	(c)/ glass slab	1	1
14	(d)/ 9	1	1
15	(c)/ 60	1	1
16	(a)/ 4400 Ω	1	1
17	(d) / Assertion (A) is false but Reason (R) is true.	1	1
18	(d) / Assertion (A) is false but Reason (R) is true.	1	1
19	(d) / Assertion (A) is false but Reason (R) is true.	1	1
20	(a) // Both Assertion and Reason are true and Reason (R) is the correct explanation of Assertion (A).	1	1

SECTION B

21	<p>Safety measures:</p> <ul style="list-style-type: none"> • A pair of tongs should be used to hold the magnesium ribbon. • Burn the magnesium ribbon keeping it away from eyes. / protective eye glasses should be worn. <p>Observations:</p> <ul style="list-style-type: none"> • Dazzling white flame is seen. • A white powder or ash is formed. 	<p>$\frac{1}{2} \times 2$</p> <p>$\frac{1}{2} \times 2$</p>	2
22	<p>(A)</p> <div style="text-align: center;">  <p>(one mark for diagram and $\frac{1}{2}$ for labelling.)</p> <ul style="list-style-type: none"> • Angle of deviation <p style="text-align: center;">OR</p> <p>(B)</p> <p>I.</p> <ul style="list-style-type: none"> • Bi-focal lens. • Bi-focal lens having upper portion consists of a concave lens and lower portion consists convex lens. / <div style="text-align: center; margin: 10px 0;">  </div> <ul style="list-style-type: none"> • to facilitate the distant and near vision respectively. <p>II.</p> <ul style="list-style-type: none"> • convex lens. </div>	<p>$1\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p>	

	<ul style="list-style-type: none"> Convex lens is thickened at the middle as compared to edges  <ul style="list-style-type: none"> to facilitate the near vision. <p style="text-align: right;"><i>(either of I or II)</i></p>	1	
		½	2
23	The inner lining of the small intestine has numerous finger-like projections called villi, which increases the surface area for absorption of digested food; The villi are richly supplied with blood vessels; which transport the absorbed food to each and every cell of the body.	2	2
24	<p>(i)</p> <ul style="list-style-type: none"> All tall Tallness is a dominant trait <p>(ii) 1 : 1</p> <p style="text-align: center;">(award marks if explained through a Mendel's cross)</p>	½ ½ 1	2
25	<p>(A)</p>  <ul style="list-style-type: none"> Cation - magnesium ion / (Mg^{2+}) Anion - chloride ion / (Cl^-) <p style="text-align: center;">OR</p> <p>(B)</p> <p>(i) If Zinc is in the form of sulphide ore.</p> <ul style="list-style-type: none"> Roasting $2ZnS + 3O_2 \xrightarrow{\text{Heat}} 2ZnO + 2SO_2$ <p>- Reduction</p> $ZnO + C \xrightarrow{\text{Heat}} Zn + CO$ <p style="text-align: center;">OR</p> <p>(ii) If Zinc is in the form of carbonate ore.</p>	1 ½ ½ ½	

	<ul style="list-style-type: none"> • A: Plastic - handle of an electric iron. • B: Nichrome – used as a heating element in an electric iron. • C: Copper - electric wires. <p style="text-align: center;">/</p> <p>A: Rubber– foot of the electric stove. B: Nichrome – used as a heating element in an electric stove. C: Copper- electric wires. (any other example with its use in an electric appliance)</p>	(½x3)	3
31	<ul style="list-style-type: none"> • Object should be placed between C and F / between 18cm to 36 cm from the mirror. • Mirror formula = $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$ • Magnification $m = -2$ $f = -18 \text{ cm}$ $m = -\frac{v}{u} = -2$ $\therefore v = 2u$ • $\frac{1}{2u} + \frac{1}{u} = \frac{1}{-18 \text{ cm}}$ $\therefore \frac{3}{2u} = \frac{1}{-18 \text{ cm}}$ $u = -27 \text{ cm}$ 	1 ½ 1	3
32	<p>(A)</p> <ul style="list-style-type: none"> • The number of atoms of each element remains same before and after a chemical reaction / to satisfy the law of conservation of mass. • Law of conservation of mass. • Mass can neither be created nor destroyed in a chemical reaction. • $3\text{Zn} + 2\text{H}_3\text{PO}_4 \longrightarrow \text{Zn}_3(\text{PO}_4)_2 + 3\text{H}_2$ <p style="text-align: center;">OR</p>	½ ½ 1 1	

- Butane gives blue flame
- Butyne gives yellow flame with smoke/sooty flame.

½

½

OR

(B) (i)

• Carbon can gain four electrons forming C^{4-} anion but it would be difficult for the nucleus with six protons to hold on ten electrons.

1

• Carbon can lose a four electrons forming C^{4+} but it would require a large amount of energy to remove four electrons leaving behind a carbon cation with six protons. Thus, carbon forms covalent compounds.

1

(ii) An atom or a group of atoms/heteroatoms which determines the chemical properties of an organic compound is called functional group.

1

Name	Structural formula	Functional group
(a) Ethanol	$\begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{OH} \\ \quad \\ \text{H} \quad \text{H} \end{array} / \text{CH}_3\text{CH}_2\text{OH}$	- OH / alcohol
(b) Ethanoic Acid	$\begin{array}{c} \text{H} \quad \text{O} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{OH} \\ \\ \text{H} \end{array} / \text{CH}_3\text{COOH}$	$\begin{array}{c} -\text{COOH} / \\ \text{O} \\ \\ -\text{C}-\text{OH} / \\ \text{carboxylic acid} \end{array}$

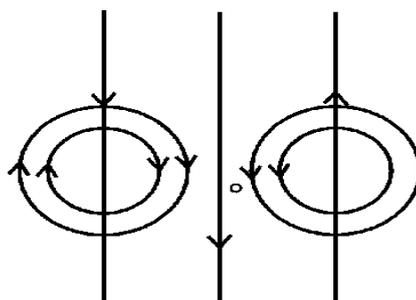
½x4

5

35

(A)

(i)



Correct Pattern

1

Correct direction

1

	<p>(ii) (a)</p> <ul style="list-style-type: none"> • red wire : Live wire • black wire : Neutral wire • green wire : Earth wire <p>(b) 220 V</p> <p>(c) This is used as a safety measure. It ensures that any leakage of the current to the metallic body of the appliance keeps its potential to that of the earth and the user may not get a severe electric shock.</p> <p style="text-align: center;">OR</p> <p>(B)(i)</p> <p>(a) The conductor AB gets displaced.</p> <p>(b)</p> <ul style="list-style-type: none"> - By reversing the direction of the current. - By reversing the direction of the magnetic field. <p>(ii) When the direction of current is at right angles to the direction of the magnetic field.</p> <p>(iii) Stretch the thumb, fore finger and middle finger of your left hand such that they are mutually perpendicular. If the first finger points in the direction of magnetic field and the second finger in the direction of the current, then the thumb will point in the direction of the force acting on the conductor.</p>	<p>$\frac{1}{2} \times 3$</p> <p>$\frac{1}{2}$</p> <p>1</p> <p>1</p> <p>1+1</p> <p>1</p> <p>1</p>	<p>5</p>
36	<p>(A) (i)</p> <ul style="list-style-type: none"> • Regeneration: The ability to give rise to new individual organism from their body parts / If the individual is somehow cut or broken up into many pieces, then each piece grows into a new organism. <ul style="list-style-type: none"> • Organism show regeneration: <i>Planaria / Hydra</i> • Organism does not show regeneration: <i>Spirogyra</i> (any other example) • Because it does not have specialised cells which proliferate to make new cells type and tissues. <p>(ii)</p> <ul style="list-style-type: none"> • Spirogyra. • It reproduces through Fragmentation. 	<p>1</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p> <p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p>	

	<ul style="list-style-type: none"> It simply breaks up into smaller pieces upon maturation. The pieces grow into new individuals. <p style="text-align: center;">OR</p> <p>(B)(i)</p> <p>(a) vas deferens (b) testes (c) prostate gland/ seminal vesicles (d) scrotum</p> <p>(ii) Consists of genetic material, has a tail for movement, small in size. (any two)</p> <p>(iii)</p> <ul style="list-style-type: none"> Vas deferens in the males and fallopian tube in females is blocked to prevent fertilization. Can cause infections if not performed properly. 	1	
SECTION E			
37	<p>(i) A rainbow (or any other)</p> <p>(ii) Dispersion of white light takes place.</p> <p>(iii) (A)</p> <ul style="list-style-type: none"> The presence of water droplets in the atmosphere. The sun must be at the back of the observer. <p style="text-align: center;">OR</p> <p>(iii) (B)</p> <div style="text-align: center;"> <p>($\frac{1}{2}$ mark for diagram and $\frac{1}{2}$ for labelling a,b,c)</p> </div>	1 1	
		1+1	
		$\frac{1}{2} \times 4$	
			4
38	<p>(i) Hydrochloric acid/ HCl and Sodium hydroxide / NaOH</p> <p>(ii) -Neutral</p>	$\frac{1}{2} + \frac{1}{2}$	
		$\frac{1}{2}$	

	<p>- as it is a salt of strong acid and strong base.</p> <p>(iii) (A)</p> <ul style="list-style-type: none"> • Aqueous solution of sodium chloride (brine) decomposes (electrolysed) and produces: <ul style="list-style-type: none"> • NaOH solution near cathode • Cl₂ at anode • H₂ at cathode <p style="text-align: center;">OR</p> <p>(iii) (B)</p> <p>Washing soda is obtained from sodium chloride by following reactions:</p> <ul style="list-style-type: none"> • $\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 + \text{NH}_3 \longrightarrow \text{NH}_4\text{Cl} + \text{NaHCO}_3$ • $2\text{NaHCO}_3 \xrightarrow{\text{Heat}} \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$ • Recrystallisation of sodium carbonate gives washing soda. • $\text{Na}_2\text{CO}_3 + 10\text{H}_2\text{O} \longrightarrow \text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ 	<p>½</p> <p>½</p> <p>½ x3</p> <p>½ x 4</p>	<p>4</p>
39	<p>(i) Reflex action.</p> <ul style="list-style-type: none"> • The sudden action in response to stimuli in the environment. <p>(ii)</p> <p>(a) Motor neuron – carries message from spinal cord to the effector organ/muscle.</p> <p>(b) Relay neuron – Connects sensory neuron to motor neuron.</p> <p>(iii)</p> <p>(A) -Central Nervous system. Components: Brain; spinal cord ,</p> <p>-Peripheral Nervous system. Components: cranial nerves ; spinal nerves.</p> <p style="text-align: center;">OR</p> <p>(iii)(B)</p> <p>(a) Fore-brain/Cerebrum</p> <p>(b) Cerebellum / Hind-brain</p> <p>(c) Medulla/ Hind-brain</p> <p>(d) Fore-brain</p>	<p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½ x4</p> <p>½ x4</p>	<p>4</p>

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Secondary School Certificate Examination, 2025
SUBJECT : SCIENCE (086) (Q.P. CODE 31/4/3)

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 Newspaper/Website, etc. may invite action under various rules of the Board and IPC.”
3	Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one’s own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In class-X, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.
4	The Marking Scheme carries only suggested value points for the answers. These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
5	The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. If there is any variation, the same should be zero after deliberation and discussion. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
6	Evaluators will mark(\surd) wherever answer is correct. For wrong answer CROSS ‘X’ be marked. Evaluators will not put right (\surd) 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 totalled up and written in the left-hand margin and encircled. This may be followed strictly.
8	If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.
9	If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note “Extra Question” .
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of marks 80 (example 0 to 80/70/60/50/40/30 marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.

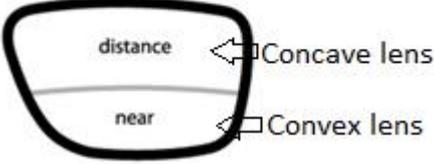
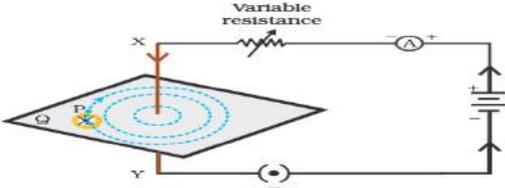
12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines). This is in view of the reduced syllabus and number of questions in question paper.
13	<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"> ● Leaving answer or part thereof unassessed in an answer book. ● Giving more marks for an answer than assigned to it. ● Wrong totaling of marks awarded on an answer. ● Wrong transfer of marks from the inside pages of the answer book to the title page. ● Wrong question wise totaling on the title page. ● 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 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 “ Guidelines for Spot Evaluation ” before starting the actual evaluation.
17	Every Examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totaled and written in figures and words.
18	The candidates are entitled to obtain photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.

SECONDARY SCHOOL EXAMINATION, 2025**MARKING SCHEME****CLASS: X SCIENCE (Subject Code–086)****[Paper Code:31/4/3]****Maximum Marks: 80**

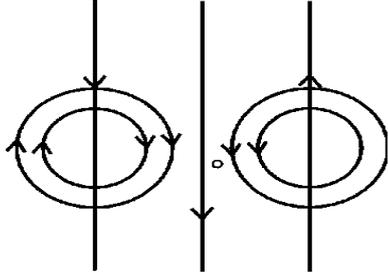
Q. No	EXPECTED ANSWERS / VALUE POINTS	Mark s	Total Mark s
SECTION A			
1	(c)/ DDT	1	1
2	(c)/ plants→ man	1	1
3	(b)/ magnesium	1	1
4	(c)/ glass slab	1	1
5	(d)/ 9	1	1
6	(d)/ Melting of glaciers	1	1
7	(a)/ Calcium chloride	1	1
8	(d)/ Propyne	1	1
9	(b)/ Nitrogen	1	1
10	(c)/ 60	1	1
11	(a)/ 4400 Ω	1	1
12	(b)/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

SECTION B

21	<ul style="list-style-type: none"> • Silver bromide (AgBr) / Silver chloride (AgCl) • Endothermic Reaction. <p>Justification: Requires energy/requires sunlight for breaking down the reactant.</p>	1 ½ ½	2
22	<p>(A)</p> <ul style="list-style-type: none"> • $\text{Ca} \longrightarrow \text{Ca}^{2+} + 2\text{e}^{-}$ • $\text{Cl} + \text{e}^{-} \longrightarrow \text{Cl}^{-}$ • <div style="text-align: center;"> <p>Calcium chloride</p> </div> <p style="text-align: center;">OR</p> <p>(B)</p> <ul style="list-style-type: none"> • Amphoteric oxide can react with both acids as well as bases to form salt and water. • Reactions: $\text{Al}_2\text{O}_3 + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2\text{O}$ $\text{Al}_2\text{O}_3 + 2\text{NaOH} \rightarrow 2\text{NaAlO}_2 + \text{H}_2\text{O}$ <p style="text-align: right;">(ignore balancing)</p>	½ ½ 1 1 ½ ½	2
23	<ul style="list-style-type: none"> • Xylem and Phloem • Xylem - transports water and minerals obtained from the soil into the different parts of the plant. • Phloem - Transports food from leaves to other parts of the plant./ translocation of soluble products. 	½ + ½ ½ ½	2
24	<p>(A)</p> <div style="text-align: center;"> <p>(one mark for diagram and ½ for labelling.)</p> </div> <ul style="list-style-type: none"> • Angle of deviation 	1½ ½	

	<p style="text-align: center;">OR</p> <p>(B) I.</p> <ul style="list-style-type: none"> • Bi-focal lens. • Bi-focal lens having upper portion consists of a concave lens and lower portion consists convex lens. /  <p>II.</p> <ul style="list-style-type: none"> • to facilitate the distant and near vision respectively. • convex lens. • Convex lens is thickened at the middle as compared to edges  <ul style="list-style-type: none"> • to facilitate the near vision. <p style="text-align: right;"><i>(either of I or II)</i></p>	<p>1/2</p> <p>1</p> <p>1/2</p> <p>1/2</p> <p>1</p> <p>1/2</p>	<p>2</p>																												
25	<p style="text-align: center;">Flowchart</p> <table border="0" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="text-align: center;">Mother's Ova</td> <td></td> <td style="text-align: center;">Father's Sperm</td> </tr> <tr> <td style="text-align: right;">Gametes</td> <td style="text-align: center;">(X) (X)</td> <td></td> <td style="text-align: center;">(X) (Y)</td> </tr> <tr> <td></td> <td style="text-align: center;"> </td> <td></td> <td style="text-align: center;"> </td> </tr> <tr> <td></td> <td style="text-align: center;"> </td> <td></td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: right;">Zygote</td> <td style="text-align: center;">(XX) (XX)</td> <td></td> <td style="text-align: center;">(XY) (XY)</td> </tr> <tr> <td></td> <td style="text-align: center;"> </td> <td></td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: right;">Offsprings</td> <td style="text-align: center;">Female child</td> <td></td> <td style="text-align: center;">Male Child</td> </tr> </table> <ul style="list-style-type: none"> • Offsprings • If a sperm carrying X chromosomes fertilizes an ovum which carries X chromosome, then the child born will be a girl. • If a sperm carrying Y chromosome fertilizes an ovum which carries X-Chromosome, then the child born will be a boy. 		Mother's Ova		Father's Sperm	Gametes	(X) (X)		(X) (Y)									Zygote	(XX) (XX)		(XY) (XY)					Offsprings	Female child		Male Child	<p>2</p>	<p>2</p>
	Mother's Ova		Father's Sperm																												
Gametes	(X) (X)		(X) (Y)																												
Zygote	(XX) (XX)		(XY) (XY)																												
Offsprings	Female child		Male Child																												
26	<ul style="list-style-type: none"> • 	<p>1</p>																													

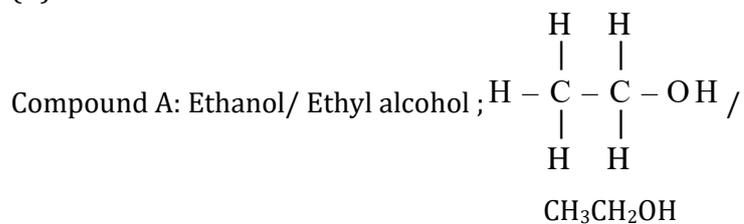
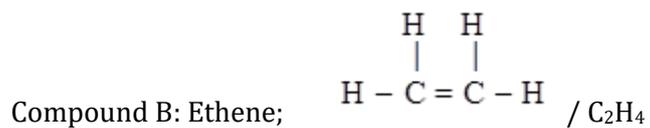
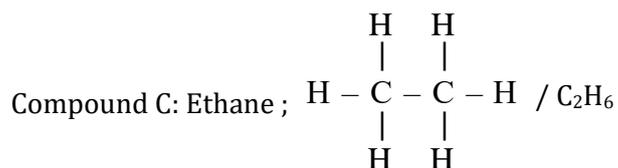
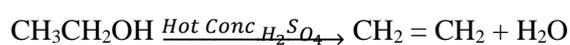
29	<ul style="list-style-type: none"> The breakdown of glucose to form <i>pyruvate</i> or <i>pyruvic acid</i>. Occurs in <i>cytoplasm</i> of the cell. <p>(i) In the presence of oxygen:</p> $\text{Glucose} \xrightarrow{\text{In cytoplasm}} \text{Pyruvate} \xrightarrow{\text{Presence of oxygen}} \text{Carbon dioxide + Water + Energy}$ <p>(ii) Due to lack of oxygen</p> $\text{Glucose} \xrightarrow{\text{In cytoplasm}} \text{Pyruvate} \xrightarrow{\text{Lack of oxygen}} \text{Lactic acid + Energy}$	<p>1/2</p> <p>1/2</p> <p>1</p> <p>1</p>	3
30	<p>(A)</p> <ul style="list-style-type: none"> The number of atoms of each element remains same before and after a chemical reaction / to satisfy the law of conservation of mass. Law of conservation of mass. Mass can neither be created nor destroyed in a chemical reaction. $3\text{Zn} + 2\text{H}_3\text{PO}_4 \longrightarrow \text{Zn}_3(\text{PO}_4)_2 + 3\text{H}_2$ <p style="text-align: center;">OR</p> <p>(B)</p> <p>Any reaction in which a precipitate (insoluble substance) is formed is called a precipitation reaction.</p> <p>Example: when sodium sulphate solution is added to the barium chloride solution a white precipitate of barium sulphate is formed.</p> $\text{Na}_2\text{SO}_4 (\text{aq}) + \text{BaCl}_2(\text{aq}) \longrightarrow \underset{\text{ppt}}{\text{BaSO}_4 (\text{s})} + 2\text{NaCl}(\text{aq})$ <p style="text-align: right;">(any other example)</p>	<p>1/2</p> <p>1/2</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	3
31	<p>Decomposers are the microorganisms which breakdown the complex organic substances into simple inorganic substances.</p> <p>Examples: bacteria and fungi</p> <p>The simple substances formed by decomposition go into the soil and are used up once more by the plants, thus maintain balance of an ecosystem.</p>	<p>1</p> <p>1/2+1/2</p> <p>1</p>	3
32	<ul style="list-style-type: none"> The work done to move a unit charge from one point to other in a conductor. / ($V=W/Q$) volt (V) 	<p>1</p> <p>1/2</p>	

	<ul style="list-style-type: none"> In a current carrying conductor, when one joule of work is done to move a charge of 1 coulomb from one point to another. 1 volt = 1 joule/1 coulomb or $1V=1 J C^{-1}$ 	1 $\frac{1}{2}$	3
33	<p>Limitations of electrical impulse:</p> <ul style="list-style-type: none"> They reach only those cells that are connected by nervous tissue, and not every cell in the animal body. Once an electrical impulse is generated in a cell and transmitted, the cell will take some time to reset its mechanism before it can generate and transmit a new impulse. / Takes sometime to reset its mechanism. (any other limitation) In chemical communication the signals (chemical compound) potentially reach all cells of the body steadily and persistently providing the desired changes. 	1 1 1	3
SECTION D			
34	<p>(A)</p> <p>(i)</p>  <p style="text-align: center;">Correct Pattern Correct direction</p> <p>(ii) (a) red wire : Live wire black wire : Neutral wire green wire : Earth wire</p> <p>(b) 220 V</p> <p>(c) This is used as a safety measure. It ensures that any leakage of the current to the metallic body of the appliance keeps its potential to that of the earth and the user may not get a severe electric shock.</p> <p style="text-align: center;">OR</p> <p>(B)</p> <p>(i) (a) The conductor AB gets displaced.</p>	1 1 $\frac{1}{2} \times 3$ $\frac{1}{2}$ 1 1	

	<p>(b)</p> <ul style="list-style-type: none"> • By reversing the direction of the current • By reversing the direction of the magnetic field <p>(ii) When the direction of current is at right angles to the direction of the magnetic field.</p> <p>(iii) Stretch the thumb, fore finger and middle finger of your left hand such that they are mutually perpendicular. If the first finger points in the direction of magnetic field and the second finger in the direction of the current, then the thumb will point in the direction of the force acting on the conductor.</p>	<p>1+1</p> <p>1</p> <p>1</p>	<p>5</p>
35	<p>(A)</p> <p>A - Stigma ; B - Anther</p> <ul style="list-style-type: none"> • pollen germinate to form pollen tube which carries male germ cells to the egg cell in the ovule of the ovary. • Fusion of germ cells/fertilization gives rise to zygote. • Zygote divides to form an embryo within the ovule. Ovule develops and converted into a seed. • Ovary grows rapidly to form a fruit. Petals, sepals, stamens, style, etc. shrivel and fall off. <p style="text-align: center;">OR</p> <p>(B)</p> <p>Changes after fertilization:</p> <ul style="list-style-type: none"> • Fertilisation results in the formation of a zygote. • Zygote starts dividing to form an embryo, which is implanted in the lining of the uterus. • Embryo continues to grow and derive nutrition through placenta. <p>Role of placenta -</p> <p>To provide oxygen and glucose to the embryo from mother's blood</p> <p>To remove waste substances generated by the developing embryo.</p> <p>If the egg is not fertilized:</p> <ul style="list-style-type: none"> • the lining of the uterus slowly breaks and comes out through the vagina as blood and mucous./ menstruation will occur. 	<p>$\frac{1}{2} + \frac{1}{2}$</p> <p>1x4</p> <p>1x3</p> <p>1</p> <p>1</p>	<p>5</p>

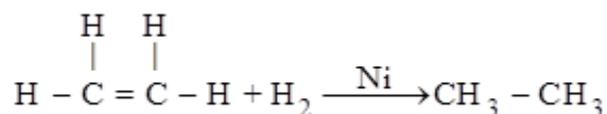
36

(A)

 $\frac{1}{2}; \frac{1}{2}$  $\frac{1}{2}; \frac{1}{2}$  $\frac{1}{2}; \frac{1}{2}$ 

'A'

'B'

 $\frac{1}{2}$ Conc. H_2SO_4 is a dehydrating agent. $\frac{1}{2}$ 

'B'

'C'

 $\frac{1}{2}$ 

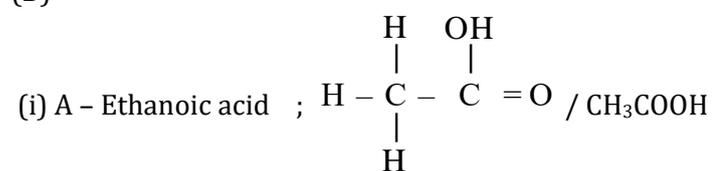
'C'

 $\frac{1}{2}$

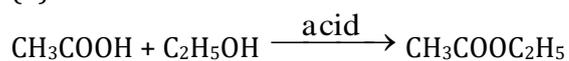
(ignore balancing)

OR

(B)

 $\frac{1}{2} + \frac{1}{2}$

(ii)



'A'

'B'

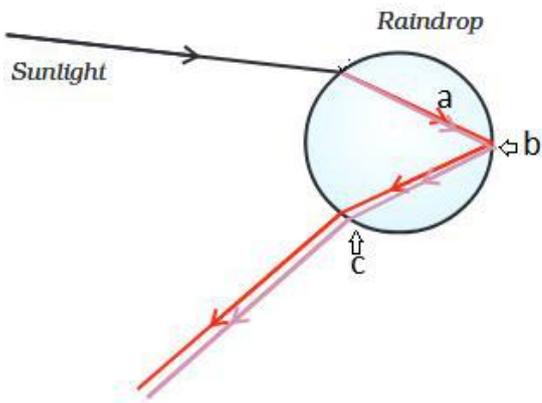
 $\frac{1}{2}$

Role of acid - As a catalyst

 $\frac{1}{2}$

	(iii) By adding dil. NaOH to B (ester) /saponification / by adding water with acid or base/ on addition of NaOH, sodium salt of acid is produced which is further hydrolysed to form 'A'	1	
	(iv) By adding solution of alkaline potassium permanganate or acidified potassium dichromate in warm ethanol./	1	
	$\text{CH}_3 - \text{CH}_2\text{OH} \xrightarrow[\text{Or acidified K}_2\text{Cr}_2\text{O}_7 + \text{Heat}]{\text{Alkaline KMnO}_4 + \text{Heat}} \text{CH}_3\text{COOH}$ <p style="text-align: center;">(A)</p>		
	(v) Carbon dioxide/ CO ₂	1	5

SECTION E

37	<p>(i) A rainbow (or any other)</p> <p>(ii) Dispersion of white light takes place.</p> <p>(iii) (A)</p> <ul style="list-style-type: none"> • The presence of water droplets in the atmosphere. • The sun must be at the back of the observer. <p style="text-align: center;">OR</p> <p>(iii) (B)</p>  <p style="text-align: center;">(½ mark for diagram and ½ for labelling a, b, c)</p>	<p>1</p> <p>1</p> <p>1+1</p> <p>½ x4</p>	4
38	<p>(i) Hydrochloric acid/ HCl and Sodium hydroxide / NaOH</p> <p>(ii)</p> <p>-Neutral</p> <p>- as it is a salt of strong acid and strong base.</p> <p>(iii) (A)</p> <ul style="list-style-type: none"> • Aqueous solution of sodium chloride(brine) decomposes (electrolysed) and produces: <ul style="list-style-type: none"> • NaOH solution near cathode 	<p>½ +½</p> <p>½</p> <p>½</p> <p>½</p>	

	<ul style="list-style-type: none"> • Cl₂ at anode • H₂ at cathode <p style="text-align: center;">OR</p> <p>(iii)(B) Washing soda is obtained from sodium chloride by following reactions:</p> $\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 + \text{NH}_3 \longrightarrow \text{NH}_4\text{Cl} + \text{NaHCO}_3$ $2\text{NaHCO}_3 \xrightarrow{\text{Heat}} \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$ <p>Recrystallisation of sodium carbonate gives washing soda.</p> $\text{Na}_2\text{CO}_3 + 10\text{H}_2\text{O} \longrightarrow \text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$	1/2 x3	
39	<p>(i) Reflex action. The sudden action in response to stimuli in the environment.</p> <p>(ii) (a) Motor neuron – carries message from spinal cord to the effector organ/muscle (b) Relay neuron – Connects sensory neuron to motor neuron.</p> <p>(iii) Central Nervous system. Components: Brain; spinal cord Peripheral Nervous system. Components: cranial nerves ; spinal nerves.</p> <p style="text-align: center;">OR</p> <p>(iii)(B) (a) Fore-brain/Cerebrum (b) Cerebellum / Hind-brain (c) Medulla/ Hind-brain (d) Fore-brain</p>	1/2 1/2 1/2 1/2 1/2 x4 1/2 x4	4