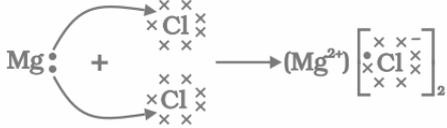


EXAMINATION, 2025
SOLUTIONS
CLASS: X SCIENCE (Subject Code–086)
[Paper Code: 31/4/1]

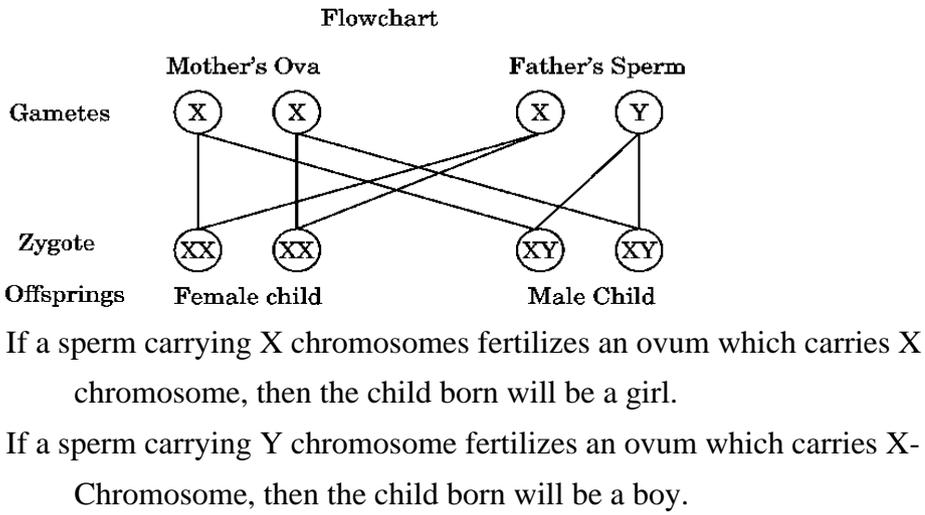
Maximum Marks: 80

| 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>  <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

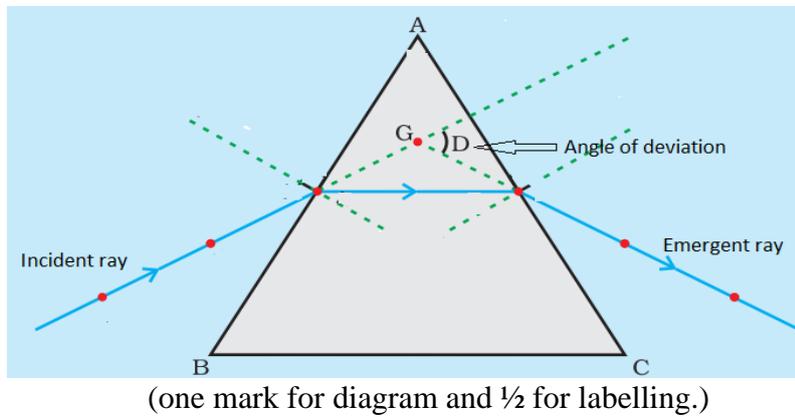


2

2

25

(A)



- Angle of deviation

1 1/2

1/2

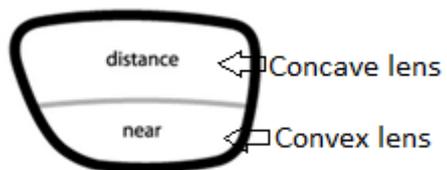
OR

(B)

I.

Bi-focal lens.

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

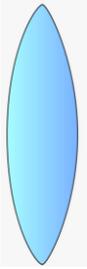
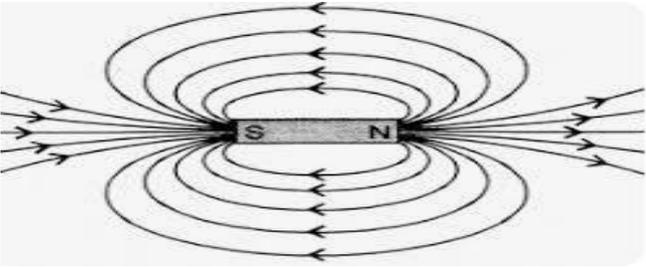


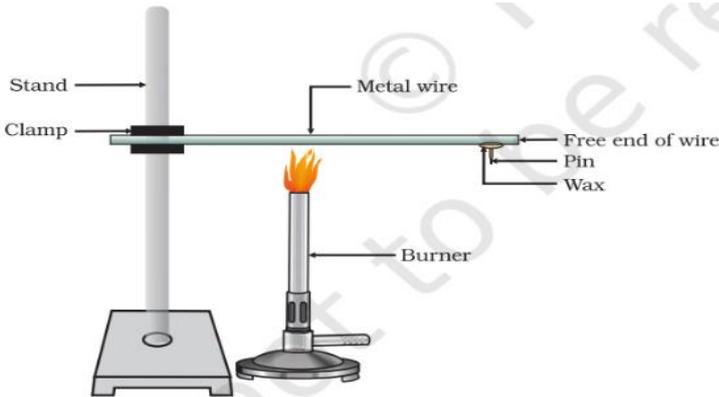
to facilitate the distant and near vision respectively.

1/2

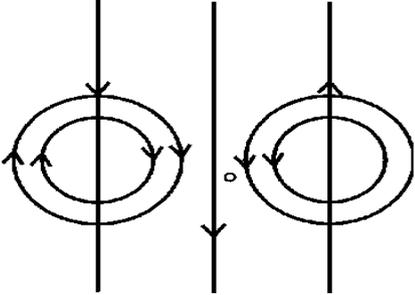
1

1/2

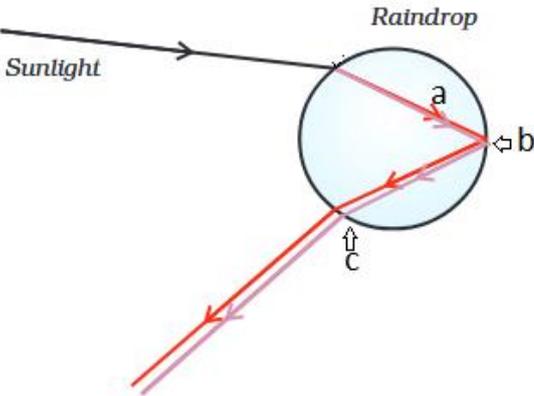
| | | | |
|------------------|---|---|---|
| | OR | | |
| | <p>II. convex lens. Convex lens is thickened at the middle as compared to edges /</p>  <p>to facilitate the near vision.</p> <p style="text-align: center;"><i>(either of I or II)</i></p> | <p>1/2</p> <p>1</p> <p>1/2</p> | 2 |
| 26 | <p>The lines 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>1</p> <p>1/2+1/2</p> | 2 |
| 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>1/2</p> <p>1/2</p> <p>1</p> <p>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> $\text{Na}_2\text{SO}_4(\text{aq}) + \text{BaCl}_2(\text{aq}) \longrightarrow \underset{\text{ppt}}{\text{BaSO}_4(\text{s})} + 2\text{NaCl}(\text{aq})$ <p>(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>(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>(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> | |

| | | | |
|-----------|---|---|----------|
| | <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. | <p>$\frac{1}{2} \times 2$</p> <p>1</p> | <p>5</p> |
| <p>36</p> | <p>(A)</p> <p>(i)</p>  <p style="text-align: right;">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> <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>1</p> <p>1</p> <p>$\frac{1}{2} \times 3$</p> <p>$\frac{1}{2}$</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1+1</p> <p>1</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> |