



COMMON PRE-BOARD EXAMINATION
SCIENCE Code No. 086



MARKING SCHEME

CLASS-X-(2025-26)

SET: 3

Time allowed: 3 Hrs.

Maximum Marks: 80

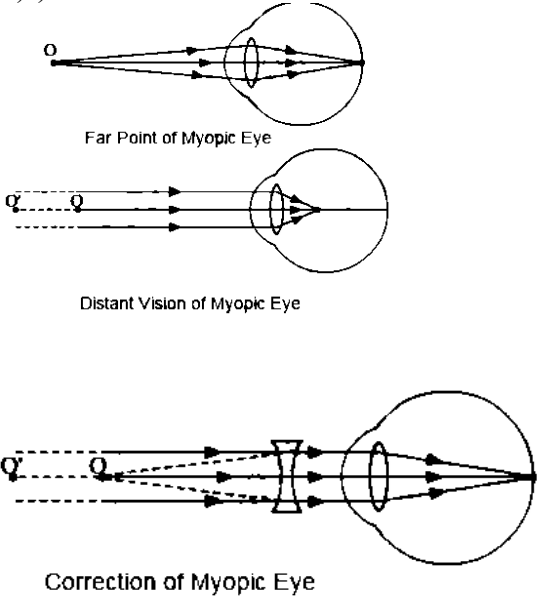
Section A		
1.	B. i and iii.	1
2.	B. KOH	1
3.	C. Hind brain — Cerebellum.	1
4.	D. 100% tall with round seeds.	1
5.	C. Plants → Man.	1
6.	D. It is a growth-related movement.	1
7.	B. ii & iii	1
8.	C. A is true R is false.	1
9.	D. A is false but R is true.	1
10.	A. Award 0.5 mark each for four correct labels = 2 marks) OR B. Sugars produced in the leaves accumulate above the girdle because phloem (downward translocation) is interrupted; leaves and upper parts may initially remain healthy or show swelling/sugar accumulation. Roots are starved of carbohydrates → root death → water and mineral uptake fail → entire tree eventually dies. Also bark/ phloem below girdle dies and stem cannot transport food downward.	2 1 1
11.	No, it will not remain healthy. Two reasons (1 mark each): 1. Stomatal blockage: Vaseline blocks stomata, preventing gas exchange (CO ₂ cannot enter) → photosynthesis declines. 2. Transpiration & cooling reduced: Reduced transpiration leads to impaired mineral uptake and overheating; water–nutrient balance disrupted → eventual wilting/death.	1 1
12.	<ul style="list-style-type: none">• Ponds and lakes are natural ecosystems with self-cleaning processes.• They have plants and microorganisms that decompose waste naturally.• An aquarium is an artificial and closed system.• Waste like uneaten food and fish excreta accumulate in it hence, it must be cleaned regularly to keep the water fresh and fish healthy.	½ ½ ½ ½

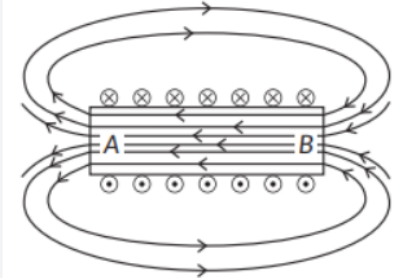
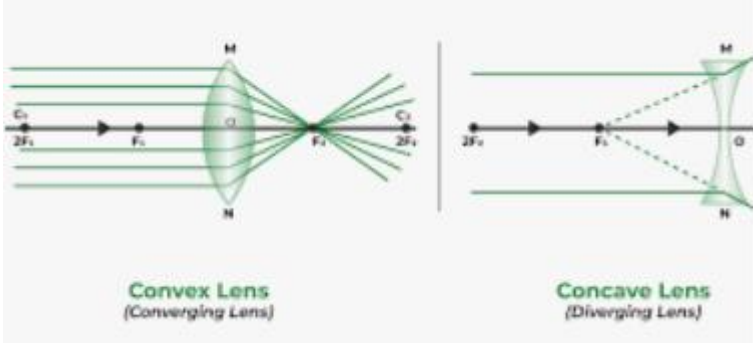
13.	<p>i) Term for this cross: Monohybrid cross for a single trait showing dominance–recessive.</p> <p>ii) F₁ indicate- All F₁ showing red indicates red is dominant and parental cross was between oppositely homozygous parents (one homozygous dominant × homozygous recessive).</p> <p>iii) Genotypes: (a) Parents: Male (red) = RR (homozygous dominant); Female (white) = rr (homozygous recessive). (b) F₁ progeny: All Rr (heterozygous, phenotypically red). (c) F₂ progeny: Genotypic ratio approx 1 RR: 2 Rr: 1 rr; phenotypic ratio 3 red: 1 white (numerically 33:11 approximates 3:1).</p>	<p>1</p> <p>1</p> <p>1</p>
14.	<p>P: Adrenal glands (adrenals). Q: Kidneys (each adrenal lies on top of a kidney). R: Adrenaline (epinephrine). Physiological changes caused by adrenaline (1 mark total, award for listing two or three brief changes): Increased heart rate and breathing rate, dilation of pupils, increased blood glucose (glycogenolysis), redistribution of blood to muscles (vasodilation in muscles, vasoconstriction in skin), increased alertness.</p>	<p>½</p> <p>½</p> <p>½</p> <p>1½</p>
15.	<p>A. Nephrons (each kidney has ~1 million nephrons). OR B. Urea (major nitrogenous waste). C. <i>Two main functions of kidneys.</i> (1 mark each = 2 marks) <ul style="list-style-type: none"> • Excretion of nitrogenous wastes and toxins (urea, creatinine, drugs). • Osmoregulation / regulation of water–electrolyte balance and blood pressure (via reabsorption, secretion, ADH/aldosterone effects). D. Any two acceptable, award 0.5 each if two given): Level of ADH (antidiuretic hormone), state of hydration/osmotic gradient in medulla, aldosterone (affects Na⁺ reabsorption and thus water), blood pressure/filtration rate. (1 mark total)</p>	<p>4</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>
16.	<p>A: Diagram: i) female reproductive system 2→ Ovary, produce ovum 3→ Uterus, implantation ii) Sexually transmitted disease <ul style="list-style-type: none"> • Two Viral STDs: AIDS (acquired immunodeficiency syndrome) – caused by HIV & Genital warts • Two Bacterial STDs: Syphilis & Gonorrhoea OR B: i) Chromosomes: Thread-like structures of DNA and proteins in nucleus carrying genes; visible during cell division. <ul style="list-style-type: none"> • Maintenance of chromosome number: In sexually reproducing organisms, meiosis reduces the diploid (2n) number to haploid (n) gametes; during fertilization two haploid gametes fuse restoring the diploid (2n) number in zygote. ii) <i>Analyze asexual reproduction in Hydra and how it differs from asexual</i></p>	<p>½</p> <p>½+½</p> <p>½+½</p> <p>½</p> <p>½+½</p> <p>½+½</p> <p>1</p> <p>2</p>

	<p><i>reproduction in Rhizopus (with illustration expected).</i></p> <ul style="list-style-type: none"> Hydra (budding): New individual forms as an outgrowth (bud) on parent by mitotic cell division; bud detaches to form independent hydra. Rhizopus (sporangiospore formation): Aerial hyphae produce sporangia containing many spores; spores are released and germinate into new mycelium (no budding). Key differences (award within above): Hydra reproduction is by budding (multicellular outgrowth); Rhizopus reproduces by spore formation from hyphae (fungal sporulation). (implicit in answers above) 	1
		1

SECTION -B

17.	B. CO	1
18.	C. Brisk effervescence occurs, and the gas turns lime water milky.	1
19.	D. Washing soda	1
20.	C. $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$	1
21.	A. Blue litmus turns red	1
22.	C. The blue colour of the solution fades, and a reddish-brown solid is deposited on the strip.	1
23.	C. $p = 3, q = 4$	1
24.	A. Both A and R are true, and R is the correct explanation of A.	1
25.	(A) Due to the free electrons	1
	(B) Ca is more reactive and have affinity to oxygen than carbon.	1
26.	A. On gentle heating: Turns white On strong heating: Turns brown The color changes indicate loss of water of crystallization (green \rightarrow white) and thermal decomposition of FeSO_4 (white \rightarrow brown)	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
	B. $2\text{FeSO}_4 \xrightarrow{\text{heat}} \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$	1
27.	A. (i) Copper and zinc. (ii) Stainless steel is harder, stronger, and more resistant to rust and corrosion than pure iron. (iii) Amalgam.	$\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2} + \frac{1}{2}$ 1
	OR	
27.	B. (i) Mercury (Hg). (ii) Process – Roasting, $2\text{HgS} + 3\text{O}_2 \rightarrow 2\text{HgO} + 2\text{SO}_2$ (iii) By thermal decomposition, $2\text{HgO} \rightarrow 2\text{Hg} + \text{O}_2$	1 $\frac{1}{2} + \frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
28.	A. When its pH falls below 5.6. Acidity due - sulphur dioxide (SO_2) and nitrogen oxides (NO_x) react with water vapour to form strong acids such as sulphuric acid (H_2SO_4) and nitric acid (HNO_3). B. Acid rain lowers the pH of lakes, rivers, and streams, making the water more acidic. Many aquatic organisms cannot survive in low pH conditions. C. Marble is calcium carbonate (CaCO_3). Acids in acid rain react with calcium carbonate to form soluble compounds, water, and carbon dioxide. $\text{CaCO}_3 (\text{s}) + \text{H}_2\text{SO}_4 (\text{aq}) \rightarrow \text{CaSO}_4 (\text{aq}) + \text{H}_2\text{O} (\text{l}) + \text{CO}_2 (\text{g})$ OR D. To neutralize basic soil, he should add a substance that is acidic in nature	$\frac{1}{2}$ $\frac{1}{2}$ 1 1 1 2

35.	<p>(i) Myopia or near-sightedness.</p> <p>(ii) Image is allowed to form at the retina by using concave lens of suitable power.</p> <p>(iii)i)</p>  <p>Far Point of Myopic Eye</p> <p>Distant Vision of Myopic Eye</p> <p>Correction of Myopic Eye</p>	<p>½</p> <p>½</p> <p>1</p> <p>1</p>
36.	<p>A. (i) Joule's law of heating states that the heat (H) generated in a conductor is directly proportional to the square of the current (I^2), the resistance (R) of the conductor, and the time (t) for which the current flows. The relationship is mathematically expressed as ($H=I^2Rt$).</p> <p>(ii) Power, $P=2\text{ kW}$, voltage, $V=220\text{V}$, Time, $t=7 \times 3 = 21\text{ h}$</p> <p>E = P x t</p> <p>$= 2 \times 21 = 42\text{ per kWh}$</p> <p>Cost for 1 kWh = 4.25 Rs</p> <p>Total cost = $4.25 \times 42 = 178.50\text{ Rs}$</p> <p>OR</p> <p>B.(i) Initial length, $l = 2\text{ m}$</p> <p>Cross-section area, $A = 0.5\text{ mm}^2 = 0.5 \times 10^{-6}\text{ m}^2$</p> <p>Resistivity of copper, $\rho = 1.7 \times 10^{-8}\ \Omega\text{ m}$</p> <p>Step 1: Calculate the initial resistance R_1 and $l = 2\text{ m}$</p> $R_1 = \frac{\rho \cdot l}{A} = \frac{1.7 \times 10^{-8}\ \Omega \cdot \text{m} \times 2\text{ m}}{0.5 \times 10^{-6}\text{ m}^2}$ $R_1 = \frac{3.4 \times 10^{-8}}{0.5 \times 10^{-6}}\ \Omega = 0.068\ \Omega$ <p>Step 2: Calculate the new resistance R_2 and $l = 4\text{ m}$ (double length)</p> $R_2 = \frac{\rho \cdot (2l)}{A} = 2 \times R_1 = 2 \times 0.068\ \Omega = 0.136\ \Omega$ <p>The resistance of the wire when the length is double is $0.136\ \Omega$</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>

	<p>(ii)</p> <p>a) Both are dependent on the material's composition.</p> <p>b) The value of both typically increases with an increase in temperature.</p> <p>c) Both resist the flow of the current.</p>	1(Any one)
37.	<p>End A will be the north pole because, when viewing from the A end, the current appears to flow in an anti-clockwise direction.</p> <p>Inside the solenoid, the magnetic field lines will be parallel to the axis, pointing from B to A, and will emerge from A, looping back to enter at B.</p> 	<p>1</p> <p>1</p> <p>1</p>
38.	<p>A. Both Convex lens</p> <p>B. i) value = More than 1 and Sign = Negative</p> <p>ii) value = More than 1 and Sign = Positive</p> <p>C. $f = 1/P = 1/5 = 0.2 \text{ m} = 20 \text{ cm}$</p> <p>$1/f = 1/v - 1/u$</p> <p>$1/20 = 1/-80 - 1/u$</p> <p>$1/u = -16$</p> <p>$U = 16 \text{ cm}$</p> <p style="text-align: center;">OR</p> <p>D.</p>  <p style="text-align: center;"> Convex Lens (Converging Lens) Concave Lens (Diverging Lens) </p> <ul style="list-style-type: none"> • Focal length of Concave Lens: The focal length of a concave lens is the distance from the lens to the point from which parallel light rays appear to diverge from. • Focal length of Convex Lens: The focal length of a convex lens is the distance from the optical center of the lens to the point where parallel light rays converge after passing through it. 	<p>1</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>1</p> <p>½</p> <p>½</p>

39.A.	<p>(a) Total resistance of circuit = $20 \Omega + 4 \Omega = 24$</p> <p>(b) Resistance of conductor = 4Ω Voltage battery = 6 V Apply Ohms law $6 \text{ V} = I \times 24 \Omega$ $I = \frac{6\text{V}}{24\Omega} = 0.25\text{A}$ Hence, current in the circuit is 0.25A</p> <p>(c)</p> <p>(i) Potential difference across the lamp $V_{\text{lamp}} = IR$ $V_{\text{lamp}} = 0.25 \text{ A} \times 20 \Omega = 5 \text{ V}$ $\therefore V_{\text{lamp}} = 5 \text{ V}$</p> <p>(ii) Potential difference across the conductor $V_{\text{conductor}} = IR$ $V_{\text{conductor}} = 0.25\text{A} \times 4\Omega = 1\text{V}$ $V_{\text{conductor}} = 1\text{V}$</p> <p>(d) Power of lamp $I^2R = (0.25)^2 \times 20 = 1.25\text{W}$</p> <p style="text-align: center;">OR</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>
39.B. (a)	<p>Case 1: Let I be the current through the bulb and R be the resistance.</p> <p>We know that,</p> <p>$P = V \cdot I$</p> <p>$I = P / V$ $= 40 / 220$ $= 0.18 \text{ A}$</p> <p>We know that resistance is given as</p> <p>$R = V^2 / P$ $= (220)^2 / 40$ $= 1210 \text{ ohm.}$</p> <p>Therefore,</p> <ul style="list-style-type: none"> • The current drawn by the bulb = 0.18 A • The resistance of the bulb = 1210 ohm 	

	<p>Case 2:</p> <p>Let I be the current through the bulb and R be the resistance.</p> <p>We know that,</p> $P = V \cdot I$ $I = P / V$ $= 25 / 220$ $= \mathbf{0.113 \text{ A}}$ <p>We know that resistance is given as</p> $R = V^2 / P$ $= (220)^2 / 25$ $= \mathbf{1936 \text{ ohm.}}$	
39 B.(b)	<p>Thus, there is a change in the value of current and resistance in the two cases.</p> <p>The current in case 1 is more since its resistance is lesser than the resistance of case 2.</p> <p>Let the resistance of the wire be R, heat produced in the fuse at 5 A in 1 s is</p> $H = (5)^2 R \quad (\because H = I^2 R t)$ <p>So, fuse melts at $(5)^2 R$ joules of heat.</p> <p>Let, the resistance of new wire is R'</p> <p>So, heat produced in 1 second = $(10)^2 R'$</p> <p>To prevent it from melting</p> $(5)^2 R = (10)^2 R' \text{ or } R' = \frac{R}{4}, \text{ As } R \propto \frac{1}{A}$ <p>\therefore cross-sectional area of new fuse wire is four times the first fuse.</p> <p>Now, $A = \pi r^2$, so new radius is twice the previous one.</p> <p>So, at 10A, the new fuse wire of same material and length has larger radius than the earlier one.</p>	<p>$\frac{1}{2}$</p> <p>$\frac{1}{2}$</p> <p>1</p>