Indian School Al Wadi Al Kabir

Rehearsal examination (2025-2026)

Marking scheme

Class: X | Subject: SCIENCE (086) | Max. marks: 80

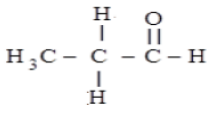
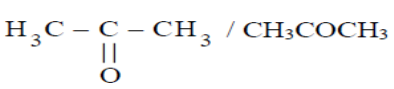
Date: 19/1/2026 | Set- III | Time: 3hours

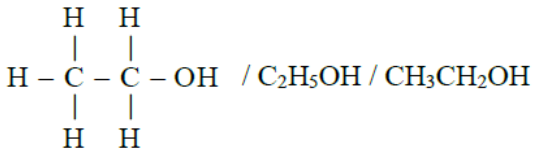
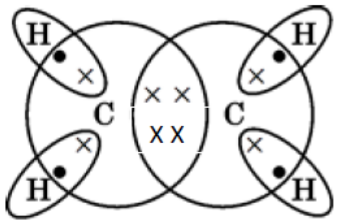
	Section – A	MARKS
1	C. They convert carbon dioxide and water into carbohydrates in the absence of sunlight	1
2	D. (II) and (IV)	1
3	C. Testosterone from testes and oestrogen from ovary.	1
4	A. Spinal cord and motor neuron	1
5	D. Two children have different eye colours	1
6	B. Producers and decomposers	1
7	C. Hawk	1
8	A. Both A and R is true and R is the correct explanation of A.	1
9	D. A is false but R is true	1
10	1. Enzymes: The enzymes are Trypsin (for proteins) and Lipase (for emulsified fats). 2. pH Adjustment: These enzymes require an alkaline medium. This is achieved by bile juice (from the liver), which neutralises the acidic food coming from the stomach.	2
11	A. The pulmonary artery is named an artery because it carries blood away from the heart, which is the defining characteristic of arteries. It is an exception to the rule that arteries carry oxygenated blood, as its function is to transport deoxygenated blood from the heart to the lungs for oxygenation. OR B. 1. Oxygenated blood from the lungs returns to the left atrium of the heart via the pulmonary veins, which then pumps it to the left ventricle. The left ventricle on contraction, transports blood to the aorta and onwards to the body's tissues through arteries. 2. Deoxygenated blood from the body tissues returns to the right atrium of the heart via the vena cava, which then pumps it to the right ventricle. When the right ventricle contracts, blood is pumped to the lungs through the pulmonary artery.	2
12	A. Gardens, Crop fields B. A pond is a natural, self-sustaining ecosystem with decomposers that naturally break down waste. An aquarium is an artificial, incomplete ecosystem that lacks these decomposers, causing waste to accumulate and requiring manual cleaning.	2

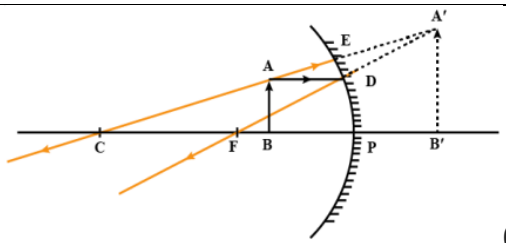
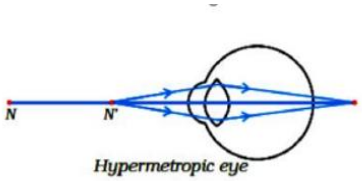
<table>
<tr><td>13</td><td>A. The touch stimulus in the Mimosa pudica plant is transmitted from cell to cell via an electrochemical signal, causing specialised cells at the base of the leaflets to lose water. This rapid change in turgor pressure leads to the folding of the leaves.

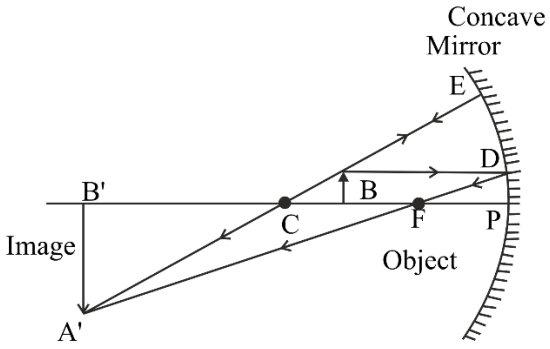
<table><tr><td>Feature</td><td>Touch Response (Mimosa pudica)</td><td>Stem Bending (Phototropism)</td></tr><tr><td>Type of stimulus</td><td>Touch</td><td>Light</td></tr><tr><td>Type of Movement</td><td>Growth-Independent. It is caused by a rapid, temporary change in water pressure (turgor) in specific cells.</td><td>Growth-Dependent. It is a slow, permanent change in growth direction caused by differential cell elongation.</td></tr><tr><td>Direction of Response</td><td>Non-directional. The response is a reaction to the stimulus occurring, not its direction.</td><td>Directional. The growth occurs specifically towards or away from the direction of the stimulus.</td></tr></table></td><td>3</td></tr>
<tr><td>14</td><td>A. Round yellow, RrYy
B. Expected number = $800 \times \frac{1}{16} = 50$ seeds
C. The two new varieties obtained in the F_2 generation are Round yellow and Wrinkled green.
The reason for their appearance is the Law of Independent Assortment, which states that alleles for different traits segregate independently during gamete formation. This allows for new combinations of traits that were not present in the parental.</td><td>3</td></tr>
<tr><td>15</td><td>A. The liver secretes bile, which contains bile salts that emulsify fats in the small intestine. It also makes the food alkaline.
OR
B.
1 Fats are not fully digested and absorbed without lipase.
2. Similarly, the protein-digesting enzyme, trypsin, is also produced by the pancreas, so its deficiency would prevent the complete breakdown of proteins into absorbable amino acids.
C. After being absorbed, glucose enters the bloodstream and is transported to cells throughout the body for respiration. Any excess glucose is stored as glycogen in the liver and muscles for later use.
D. Sphincter muscles are present at the exit of the stomach and the end of the rectum. Their function is to regulate the release of food from the stomach and the exit of waste material from the body, respectively.</td><td>4</td></tr>
<tr><td>16</td><td>A.
(i) Variations are beneficial to species because they provide genetic diversity, which is crucial for adaptation to a changing environment. For example, if a population of bacteria lives in a temperate water body and the temperature increases, some heat-</td><td>5</td></tr>
</table>

	resistant variants might survive, thus preventing the entire species from being wiped out. This ensures the survival and evolution of the species over time. (ii) The filamentous structure is Spirogyra, a type of alga. It multiplies asexually through fragmentation, where the filament breaks into pieces, and each piece grows into a new one. (iii) Yeast requires sugar as a food source for energy to multiply, which is absent in plain water. OR (i) Contraception refers to the use of various methods or techniques to prevent pregnancy It is important for preventing unwanted pregnancy, also helps in preventing the spread of sexually transmitted infections (STDs), particularly with barrier methods like condoms. (ii) Vasectomy: A surgical sterilisation procedure for males in which the vas deferens are cut or blocked to prevent sperm from mixing with semen during ejaculation, making the person sterile. Tubectomy: A surgical sterilisation procedure for females where the fallopian tubes are cut, tied, or sealed to prevent the egg from reaching the uterus and the sperm from reaching the egg, thereby preventing fertilisation. (iii) Sexually Transmitted Diseases (STDs) are infections that are transmitted through sexual contact from an infected person to a healthy person. Two bacterial STDs are gonorrhea and syphilis.	
	Section – B	
17	B. Test tube B	1
18	B. R>P>Q	1
19	C. White, $BaSO_4$	1
20	A. i and ii	1
21	D. HCl and NH_4OH	1
22	D. Zinc	1
23	D.(iii)and(iv)	1
24	D. A is false, but R is true.	1
25	(i) Aluminium metal forms a thin layer of aluminium oxide all over its surface under the action of moist air. This layer prevents the metal underneath from further corrosion. (1 mark) (ii) Ionic compounds have high melting and boiling points. It is because of the strong force of attraction between oppositely charged ions therefore high energy is required to break the metallic bonds between ions. (1 mark)	2
26	**Attempt either option A or B.** A (i) Aluminium (ii) Thermite process (iii) $Fe_2O_3+2Al \rightarrow Al_2O_3+2Fe+$ Heat **OR** B. (i) On heating, mercuric oxide decomposes to give mercury and oxygen. $2HgO_{(s)} \xrightarrow{Heat} 2Hg_{(l)} + O_{2(g)}$	3

	(ii) On heating a mixture of cuprous oxide and cuprous sulphide, copper and sulphur dioxide are produced. $2Cu_2O_{(s)} + Cu_2S_{(s)} \xrightarrow{Heat} 6Cu_{(s)} + SO_{2(g)}$ (iii) When aluminium is heated with manganese dioxide, manganese and aluminium oxide are formed. $3MnO_{2(s)} + 4Al_{(s)} \xrightarrow{Heat} 3Mn_{(l)} + 2Al_2O_{3(s)}$	
27	A.The precipitate dissolves, forming soluble calcium bicarbonate ($Ca(HCO_3)_2$), because calcium carbonate reacts with excess CO_2 and water. $CaCO_3(s) + CO_2(g) + H_2O(l) \rightarrow Ca(HCO_3)_2(aq)$ (2 MARKS- two points) B. Carbon dioxide turns limewater milky (forms $CaCO_3$), whereas oxygen does not change the limewater. (1 mark)	3
28	A. Sodium chloride is a salt of a strong acid, HCl and a strong base, NaOH, so it is neutral. Sodium carbonate is a salt of a weak acid, H_2CO_3 and a strong base NaOH, so it is basic. (1+1) B. $CaOCl_2$. (1/2 mark) , disinfecting drinking water (1/2 mark) **OR** C. Does not allow / or take more time to convert milk to curd. (1 mark) D. (b) $CaSO_4.1/2\ H_2O$ (1 mark)	4
29	**<u>Attempt either option A or B.</u>** A. (i) A series of carbon compounds in which the same functional group substitutes for hydrogen in a carbon chain / Series of compounds having same functional group and similar chemical properties. — 1 (ii) Because melting point and boiling point increase with molecular mass. — 1 (iii) Because chemical properties of organic compounds are solely determined by their functional group which remains same in a homologous series. — 1 (iv) (i) Aldehyde: Propanal — ½  / CH_3CH_2CHO — ½ (ii) Ketone: Propanone — ½  / CH_3COCH_3 — ½ **OR** B.	5

	(i)Ethanol Structure:  / C_2H_5OH / CH_3CH_2OH (ii) Ethene is formed $C_2H_5OH \xrightarrow{Conc.H_2SO_4\ 443K\ (Heat)} H_2C = CH_2 + H_2O$ *Ethanol* Ethene Water **[Note: Deduct ½ mark if the conditions required are not mentioned in the equation]** • Concentrated Sulphuric acid acts as a dehydrating agent. (iii) Ethene 	½ 1 ½ 1 ½ ½ 1	
	Section – C		
30	B. 2 The refractive index of a medium with respect to air is defined as: n = (Speed of light in air) / (Speed of light in the medium) Substituting the values: n = c / (c/2) n = c × (2/c) n = 2		1
31	B. pupils take time to adjust.		1
32	A. Both A and R are true, and R is the correct explanation of A.		1
33	a. The object has to be placed at a distance between 0 and 20 cm. This is because the image is virtual, erect, and magnified when the object is placed between F and P. (1mark) b.		2

	 (1 mark)	
34	**Attempt either option A or B.** A. (i) The new resistivity remains unchanged**. (1 mark)** (ii) Resistivity (ρ) is a material property that depends only on: • The nature of the material • Temperature **(1 mark)** OR B. (i) When a potential difference of 5 volts is applied across the conductor and a current of 1 ampere flows through it, then that conductor has a resistance of 5 Ω. **(1 mark)** (ii) The resistance of a conductor is given by: $R = \rho l/A$ Substituting the values: $R = (5.5 \times 10^{-8} \times 2) / (1 \times 10^{-4})$ $R = (11 \times 10^{-8}) / (1 \times 10^{-4})$ $R = 11 \times 10^{-8+4}$ $R = 11 \times 10^{-4}$ $R = 1.1 \times 10^{-3}\ \Omega$ **(1 mark)**	2
35	(i) Hypermetropia (ii) This defect arises because either (a) The focal length of the eye lens is too large or (b) The eyeball becomes too short. (iii)  *Hypermetropic eye*	3

36	$R_a = \rho \frac{l}{A}$ $R_b = \rho \left(\frac{3L}{A/3}\right) = 9\frac{\rho L}{A} = 9\ R_a$ $R_c = \rho \frac{L/3}{3A} = \frac{1}{9}\frac{\rho L}{A} = \frac{1}{9}R_a$ Hence $R_b > R_a > R_c$ $\rho_a = \rho_b = \rho_c$ because all the three conductors are of same material. **(finding resistances- 0.5 mark each +comparison-0.5 mark, resistivity+justification -1 mark)**	3
37	(i) Increasing the current increases the strength (magnitude) of the magnetic field, making the field lines more densely packed. **(0.5 mark)** (ii) Correct pattern of field lines – Figure B **(0.5 mark)** **Magnetic field lines can never intersect** because at any point, the magnetic field has only one direction. If lines crossed, it would mean two different directions at the same point, which is impossible**. (1 mark)** (iii) Maximum- Fig A **(0.5 mark)** Minimum- Fig C **(0.5 mark)**	3
38	A. $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$ $\frac{1}{25} = \frac{1}{v} + \frac{1}{-1000}$ $\frac{1}{v} = \frac{1}{25} + \frac{1}{1000}$ $\frac{1}{v} = \frac{40+1}{1000}$ $v = \frac{1000}{41} = +24.39cm$ **(1 mark)** B.  (**1 mark)** **<u>Attempt either subpart C or D.</u>** C. m = -v/u =-2 -v/(-24)= -2 v/24 = -2	4

	v = -48 cm $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$ $\frac{1}{f} = \frac{1}{-48} + \frac{1}{-24}$ $\frac{1}{f} = \frac{1}{-48} + \frac{2}{-48}$ $\frac{1}{f} = \frac{-3}{48} = \frac{-1}{16}$ f =-16cm **(2 marks)** **OR** D. m = -v/u 4 = -v/u v = -4u Using the mirror formula: $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$ $\frac{1}{-12} = \frac{1}{-4u} + \frac{1}{u}$ $\frac{1}{-12} = \frac{-1+4}{4u}$ $\frac{1}{-12} = \frac{3}{4u}$ 4u= -36 u= -9cm **(2 marks)**	
39	**<u>Attempt either option A or B.</u>** A. (i) To get maximum effective resistance, connect all 'n' resistors in series. To get minimum effective resistance, connect all 'n' resistors in parallel. **(0.5 mark+0.5 mark)** (ii) Here R1 and R2 is series with the parallel combination of R3 and R4. Hence, equivalent resistance between M and N is : $$R = R_1 + R_2 + \frac{R_3 R_4}{(R_3 + R_4)}$$ R= 5+2+ $\frac{3\times6}{3+6}$ =5+2+2=9 Ω **(2 marks)** (iii) I=16mA=1.6×10^{-2} Q= I × t Q = $1.6 \times 10^{-2} \times 1$ Q = 1.6×10^{-2} C Now, using Q = n × e: n = Q/e n = $(1.6 \times 10^{-2})/(1.6 \times 10^{-19})$ n = $10^{-2} / 10^{-19}$ n = 10^{-2+19} n = 10^{17} **n = 10^{17} electrons** **(Equations 1mark+ final answers 1 mark)** **OR** B. **(i)** The electric current flowing through a conductor is directly proportional to	5

the potential difference (voltage) applied across its ends, provided the physical conditions (such as temperature, pressure, etc.) remain constant. **(1 mark)**

(ii) Calculate V/I ratio at V = 0.5 V

V/I = 0.5/0.2

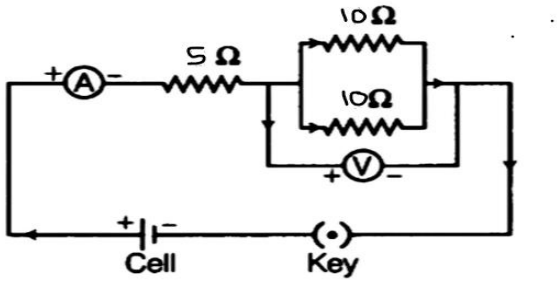
V/I = 2.5 Ω

Calculate V/I ratio at V = 1 V

V/I = 1/0.4

V/I = 2.5 Ω **(Equation 0.5 mark+ final answer 1 mark)**

(iii)



(**1.5 marks)**

(iv) Both the expressions ($P=I^2R$ and $P= V^2/R$) are correct and are used to calculate electric power. The expression $P=I^2R$ is used to calculate electric power when the current flowing through the circuit is constant. This is the case when the electric devices are connected in series. The expression $P=V^2/R$ is used to calculate electric power when the pd (V) across the circuit is constant. This is the case when the electric devices are connected in parallel. **(1 mark)**