



# Indian School Al Wadi Al Kabir

## Mid-term Examination (2026-2027)

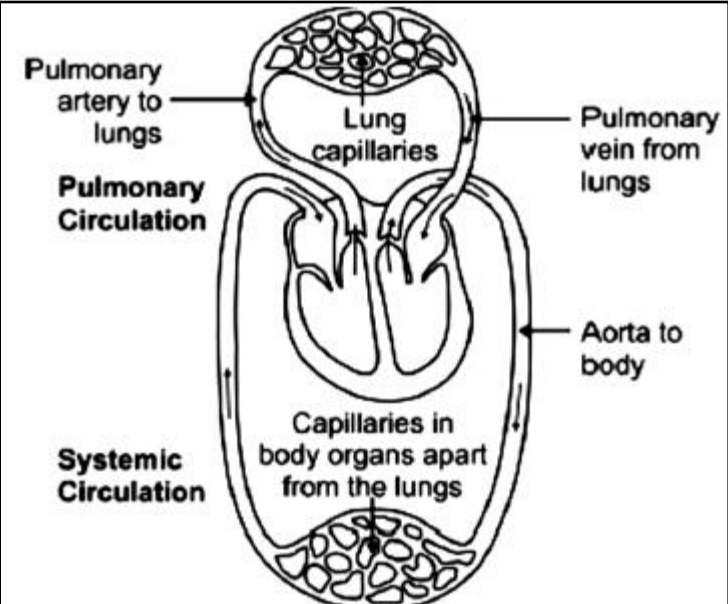
### Marking scheme

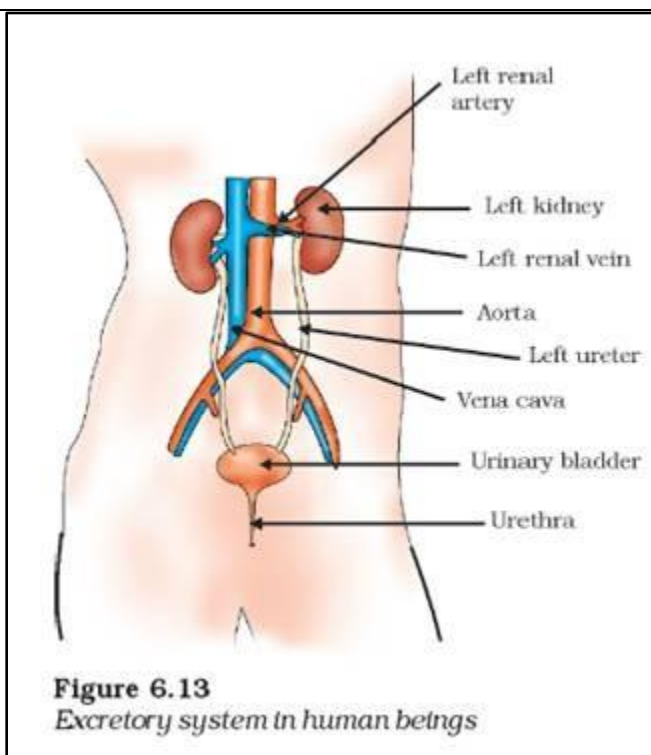
Class: X  
Date: 15/09/2026

Subject: SCIENCE (086)  
Set- I

Max. marks: 80  
Time: 3 hours

| Section – A |                                                                                                                                                                                                                                                                                              | MARKS |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 1           | B. All cells of multicellular organisms are not in direct contact with the environment.                                                                                                                                                                                                      | 1     |
| 2           | D. Red blood cells                                                                                                                                                                                                                                                                           | 1     |
| 3           | B. transport of food.                                                                                                                                                                                                                                                                        | 1     |
| 4           | B. Cytokinin                                                                                                                                                                                                                                                                                 | 1     |
| 5           | C. Spinal cord                                                                                                                                                                                                                                                                               | 1     |
| 6           | A. They reproduce asexually                                                                                                                                                                                                                                                                  | 1     |
| 7           | B. The organism reproduces by multiple fission because repeated nuclear divisions are followed by the formation of many daughter cells.                                                                                                                                                      | 1     |
| 8           | C. A is true, but R is false.                                                                                                                                                                                                                                                                | 1     |
| 9           | A. Both Assertion and Reason are true, and Reason is the correct explanation of Assertion.                                                                                                                                                                                                   | 1     |
| 10          | The small intestine is long and highly coiled, providing a large surface area for absorption. Its inner lining contains <b>numerous finger-like projections called villi</b> , which increase the surface area and <b>have a rich blood supply</b> for transporting absorbed nutrients.      | 2     |
| 11          | <b><u>Students to attempt either option A or B.</u></b><br>A.<br>(i) Cerebellum<br>(ii) Medulla (medulla oblongata)<br><br><b>OR</b><br>B. The shoot bends towards light because <b>auxin promotes greater cell growth on the shaded side</b> , causing the shoot to bend towards the light. | 2     |
| 12          | (i) Fragmentation<br>(ii) Spirogyra                                                                                                                                                                                                                                                          | 2     |
| 13          | (i)                                                                                                                                                                                                                                                                                          | 3     |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |   |
|    | <p>(ii) to keep oxygenated and deoxygenated blood from mixing. Such separation allows a highly efficient supply of oxygen to the body. This is useful in animals that have high energy needs, such as birds and mammals, which constantly use energy to maintain their body temperature.</p>                                                                                                                                                                                                                                              |   |
| 14 | <p>(i) Adrenaline</p> <p>(ii) It prepares the body for “fight or flight” by increasing heart rate, breathing rate and blood flow to muscles.</p>                                                                                                                                                                                                                                                                                                                                                                                          | 3 |
| 15 | <p><b><u>Attempt either subpart A or B.</u></b></p> <p>A. Abscissic acid (ABA)</p> <p style="text-align: center;"><b>OR</b></p> <p>B. It is positive geotropism</p> <p>C. Ethylene</p> <p>D. Tendrils grow around a support through <b>thigmotropism</b>—a directional growth response to touch. When a tendril touches an object, plant hormones called <b>auxins</b> move away from the contact point to the opposite side. This makes cells on the outer side grow faster, causing the tendril to curl tightly around the support.</p> | 4 |
| 16 | <p><b><u>Attempt either option A or B.</u></b></p> <p>A.</p> <p>(i)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5 |



(3 marks - ½ mark for

correct diagram, ½ mark each for any five correct labels)

(ii) Plants use completely different strategies for excretion than those of animals.

- Oxygen itself can be thought of as a waste product generated during photosynthesis oxygen as well as CO<sub>2</sub> are removed through the stomata.

They can get rid of excess water by transpiration.

- For other wastes, plants use the fact that many of their tissues consist of dead cells, and that they can even lose some parts such as leaves.
  - Many plant waste products are stored in cellular vacuoles. Waste products may be stored in leaves that fall off.
  - Other waste products are stored as resins and gums, especially in old xylem.
  - Plants also excrete some waste substances into the soil around them.
- (any two) ( 2 marks 1 + 1 )

**OR**

**B. Observation:**

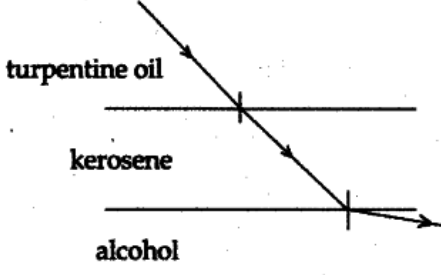
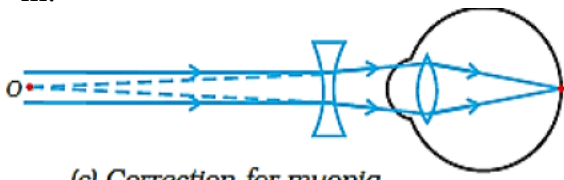
When we blow air through the mouth, it turns lime water milky instantaneously. While when we blow air through a syringe or pichkari, it takes a lot of time and effort to turn the lime water milky.

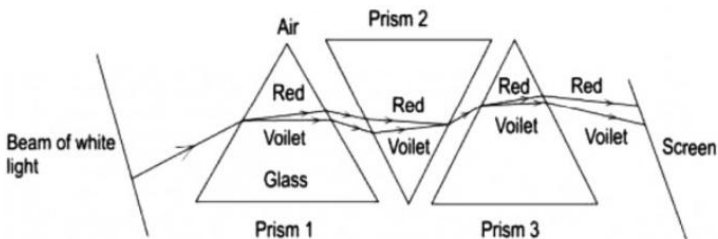
**Explanation:**

Our body cells produce carbon dioxide through oxidation of food. This gas is exhaled outside through the lungs. Lime water reacts with CO<sub>2</sub> to form an insoluble precipitate. This turns lime water milky.

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|    | When syringe or pichkari is used, atmospheric air is pushed through the lime water. Atmospheric air contains very less amount of CO <sub>2</sub> . As a result, lime water does not turn milky or takes a lot of effort.<br>Inference:<br>This experiment demonstrates that our lung exhales carbon dioxide.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |
|    | <b>Section – B</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |   |
| 17 | B.Silver chloride decomposes to form silver                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1 |
| 18 | C.The metal strip is more reactive and has displaced the other metal.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1 |
| 19 | C. A brown coloured gas is evolved                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1 |
| 20 | D. Soil with pH 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1 |
| 21 | $2\text{NaOH} + \text{Zn} \rightarrow \text{Na}_2\text{ZnO}_2 + \text{H}_2$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1 |
| 22 | C. Copper(II) oxide which is blue-green in colour                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1 |
| 23 | A.Sodium hydroxide                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1 |
| 24 | B. Both A and R are true, and R is not the correct explanation of A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1 |
| 25 | X is bleaching powder. Chemical formula-CaOCl <sub>2</sub><br>$\text{Ca(OH)}_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2 + \text{H}_2\text{O}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2 |
| 26 | <b><u>Attempt either option A or B.</u></b><br>A. (a) $2\text{Cu} + \text{O}_2 \rightarrow 2\text{CuO}$<br>(b) By passing hydrogen over heated copper oxide<br>: $\text{CuO (s)} + \text{H}_2 \text{(g)} \xrightarrow{\Delta} \text{Cu (s)} + \text{H}_2\text{O}$<br>Oxidation: $\text{H}_2 \rightarrow \text{H}_2\text{O}$<br>Reduction: $\text{CuO} \rightarrow \text{Cu}$<br><br><b>OR</b><br><b>Ans:</b> $\text{Fe(s)} + \text{CuSO}_4 \text{(aq)} \rightarrow \text{FeSO}_4 \text{(aq)} + \text{Cu(s)}$<br><b>Displacement reaction:</b> A reaction in which a more reactive metal displaces a less reactive metal from its salt solution.<br>Other metals that can be used in place of iron to show the same type of reaction with copper sulphate solution: Zinc, Aluminium, Calcium, Magnesium | 3 |
| 27 | (a) Olfactory indicators: substances whose smell changes in acidic and basic media. Onion, vanilla, clove oil<br>(b) H <sub>2</sub> SO <sub>4</sub> , HNO <sub>3</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3 |
| 28 | A. In water, hydrogen and oxygen are in the ratio <b>2 : 1</b> by volume. Therefore, the volume of hydrogen collected is approximately twice that of oxygen.<br>B. At the cathode: Hydrogen (H <sub>2</sub> )<br>At the anode: Oxygen (O <sub>2</sub> )<br>C.It is an electrolytic decomposition reaction.<br>$2\text{H}_2\text{O(l)} \rightarrow 2\text{H}_2\text{(g)} + \text{O}_2\text{(g)}$<br><b>OR</b><br>C.Decomposition reaction: A reaction in which a single compound breaks down into two or more simpler substances is called a decomposition reaction<br><br>$\text{CaCO}_3\text{(s)} \xrightarrow{\Delta} \text{CaO(s)} + \text{CO}_2\text{(g)}$                                                                                                                                         | 4 |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |   |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 29 | <p><b><u>Attempt either option A or B.</u></b></p> <p>A.</p> <p>(a) P is acidic, Q is neutral, and R is basic.<br/> (b) P has the highest <math>H^+</math> concentration.<br/> (c) R has the highest <math>OH^-</math> concentration.<br/> (d) On dilution, the concentration of <math>H^+</math> ions decreases, so its pH increases towards 7.<br/> (e) Universal indicator gives different colours at different hydrogen-ion concentrations and therefore gives an approximate measure of pH.</p> <p style="text-align: center;"><b>OR</b></p> <p>B. (i) (a) <math>HCl + Zn \rightarrow ZnCl_2 + H_2</math><br/> (b) <math>HCl + NaOH \rightarrow NaCl + H_2O</math><br/> (c) <math>HCl + Na_2CO_3 \rightarrow NaCl + H_2O + CO_2</math><br/> (ii) A is baking soda and B is washing soda<br/> <math>NaHCO_3(s) \rightarrow Na_2CO_3(s) + CO_2(g) + H_2O(g)</math>.</p>                                                                                                                        | 5 |
|    | <b>Section – C</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |   |
| 30 | B. -10cm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1 |
| 31 | A. (a) and (b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1 |
| 32 | C. A is true, but R is false.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1 |
| 33 | <p>The bending of light rays as they pass through the atmosphere having varying refractive indices (varying densities of air at different altitudes), is called atmospheric refraction. (1)</p> <p><b>(i) Twinkling of Stars (1)</b></p> <ul style="list-style-type: none"> <li>• Light from stars undergoes atmospheric refraction before reaching the Earth's surface.</li> <li>• The refractive index of the atmosphere keeps fluctuating due to changes in air density caused by constantly changing temperature and pressure conditions of the atmosphere.</li> <li>• Since a star is a point source of light, the path of light coming from it changes continuously, causing the apparent position of the star to change slightly.</li> <li>• Also, the amount of light entering the eye flickers — sometimes increasing, sometimes decreasing.</li> </ul> <p>This causes the apparent brightness and position of the star to fluctuate, which we observe as <b>twinkling of stars</b>.</p> | 2 |
| 34 | A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2 |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|    |  <p style="text-align: center;">OR</p> <p>Refractive index of medium x with respect to y</p> $\mu_{xy} = \frac{n_x}{n_y} = 2/3$ <p>Refractive index of medium y with respect to z:</p> $\mu_{yz} = \frac{n_y}{n_z} = 4/3 \quad (1)$ $\frac{n_z}{n_x} = \frac{n_z}{n_y} \times \frac{n_y}{n_x}$ $= \frac{3}{4} \times \frac{3}{2} = \boxed{\frac{9}{8}} \quad (1)$                                                                                                                                                                                                                   |   |
| 35 | <p>i. The person is suffering from myopia (short-sightedness) (<math>\frac{1}{2}</math>)</p> <p>ii. <b>Causes of myopia:</b></p> <ol style="list-style-type: none"> <li><b>Excessive curvature of the eye lens</b> (the lens becomes too converging).</li> <li><b>Elongation of the eyeball</b> (distance between the eye lens and retina increases).</li> </ol> <p>Correction: Myopia is corrected using a concave lens (diverging lens) of suitable focal length. (<math>1\frac{1}{2}</math>)</p> <p>iii.</p>  <p style="text-align: center;">(c) Correction for myopia (1)</p> | 3 |
| 36 | <p>a) Convex lens / converging lens (<math>\frac{1}{2}</math>)</p> <p>b) i) real ii) inverted iii) magnified/enlarged iv) forms beyond <math>2F_2</math> (any three characteristics) (<math>1\frac{1}{2}</math>)</p> <p>c) at <math>2F_1</math> (1)</p>                                                                                                                                                                                                                                                                                                                                                                                                              | 3 |
| 37 | <p>Power of lens is the ability of a lens to converge or diverge light rays passing through it. It is the reciprocal of the focal length.</p> <p>S.I. Unit: Its S.I. unit is the dioptre, indicated by D. (1)</p> <p><math>P = 100/f</math> (cm)</p> <p>Power of first lens:</p>                                                                                                                                                                                                                                                                                                                                                                                     | 3 |

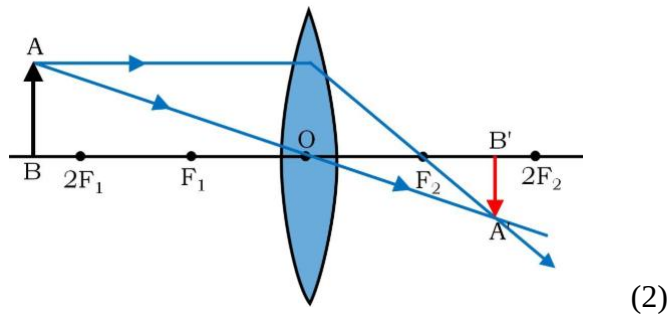
|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|    | $P=100/f$<br>$P=100/40$<br>$P=+2.5D$<br><p>A positive sign indicates that the lens is a converging lens. (1)</p> <p>Power of second lens:</p> $P=100/f$<br>$P=100/-20$<br>$P=-5.0D$<br><p>A negative sign indicates that the lens is a diverging lens. (1)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |   |
| 38 | <p>A. When white light passes through <b>Prism 1</b>, the phenomenon of <b>dispersion of white light</b> occurs.<br/> Cause-<b>different wavelengths and hence travel with different speeds in glass</b>, resulting in different angles of deviation. (1)</p> <p>B. The screen will show a <b>spectrum of seven colours (VIBGYOR)</b> after the light passes through Prism 3.<br/> <b>Violet → Indigo → Blue → Green → Yellow → Orange → Red (1)</b></p> <p>C.</p>  <p style="text-align: right;">(2)</p> <p style="text-align: center;">OR</p> <p>D. i. The seven colours emerging from Prism 1 recombine to form white light.<br/> ii. If Prism 2 is placed in the <b>same orientation</b> as Prism 1, it will disperse the already dispersed colours further instead of recombining them. Hence, the light will <b>not become white after Prism 2</b>. (1+1)</p> | 4 |
| 39 | <p>(i) <math>2f=40\text{ cm}</math><br/> <math>f=20\text{ cm}</math></p> <p><b>Reason:</b> For a convex lens, when the object and image distances are equal, the object is at <math>2F</math> and the image is also formed at <math>2F</math>. (1½)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5 |

(ii) Incorrect observation -S.No. 6

**Reason:** The focal length is 20 cm. When the object is placed at **15 cm**, it is **between the optical centre and the focus**. Therefore, the image should be **virtual, erect and magnified**, and it should be formed on the **same side of the lens as the object**.

Hence, the image distance should have a **negative sign**, but the table gives:  
 $v = +120 \text{ cm}$  ( $1\frac{1}{2}$ )

(iii)



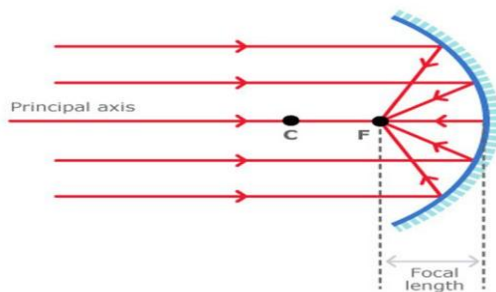
OR

B.

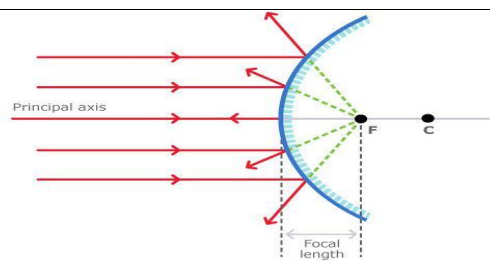
(i) a. Pole (P): The pole of a spherical mirror is the geometrical centre of its reflecting surface. It lies on the principal axis of the mirror.

b. Centre of curvature (C): The centre of curvature of a spherical mirror is the centre of the sphere of which the reflecting surface of the mirror forms a part. (2)

(ii) a. Concave mirror



b. Convex mirror



(1+1)

(iii) **Type of mirror M:**Concave mirror

**One characteristic property of image Q:** The image is virtual and erect./It is also **magnified.** (1)