



# Indian School Al Wadi Al Kabir

## Second Rehearsal Examination (2025-2026)

Class: X

Subject: Science (086)

Max. Marks: 80

Date: 19/01/2026

Set - II

Time: 3 hours

### General Instructions:

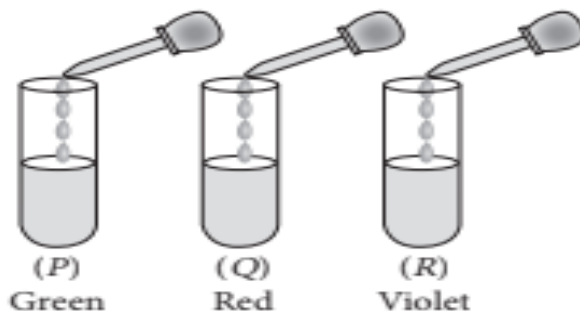
- (i) This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry, and Section C is Physics.
- (ii) Students will divide the answer book into 03 sections for writing answers.
- (iii) Answers to questions are to be written only within the space identified for the concerned section.
- (iv) Answers of a section should not be written or mixed in any other section.
- (v) In case answers are mixed, these will not be evaluated, and no marks will be awarded.
- (vi) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

Section – A		MARKS
1	Which of the following statements about the autotrophs is incorrect? A. They synthesise carbohydrates from carbon dioxide and water in the presence of sunlight and chlorophyll. B. They store carbohydrates in the form of starch. C. They convert carbon dioxide and water into carbohydrates in the absence of sunlight. D. They constitute the first trophic level in food chains.	1
2	Which of the following statements is (are) true about respiration? (I) During inhalation, the ribs move inward, and the diaphragm is raised. (II) In the alveoli, exchange of gases takes place, i.e., oxygen from alveolar air diffuses into blood and carbon dioxide from blood into alveolar air. (III) Haemoglobin has a greater affinity for carbon dioxide than oxygen. (IV) Alveoli increase surface area for the exchange of gases.  A. (I) and (IV) B. (I) and (II) C. (III) and (IV) D. (II) and (IV)	1
3	Dramatic changes in body features associated with puberty are mainly because of the secretion of: A. Oestrogen from the testes and testosterone from the ovary. B. Oestrogen from the adrenal gland and testosterone from the pituitary gland. C. Testosterone from the testes and oestrogen from the ovary.	1

	D. Testosterone from the thyroid gland and oestrogen from the pituitary gland.																
4	<p>Walking in a straight line and riding a bicycle are activities which are possible due to a part of the brain. Choose the correct location and name of this part from the given table.</p> <table border="1"> <thead> <tr> <th></th> <th>Part of the brain</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>A.</td> <td>Fore brain</td> <td>Cerebrum</td> </tr> <tr> <td>B.</td> <td>Mid brain</td> <td>Hypothalamus</td> </tr> <tr> <td>C.</td> <td>Hind brain</td> <td>Cerebellum</td> </tr> <tr> <td>D.</td> <td>Hind brain</td> <td>Medulla</td> </tr> </tbody> </table>		Part of the brain	Name	A.	Fore brain	Cerebrum	B.	Mid brain	Hypothalamus	C.	Hind brain	Cerebellum	D.	Hind brain	Medulla	1
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A.	Fore brain	Cerebrum															
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5	<p>In humans, if a woman's genotype for eye colour is Bb and a man's is bb (where B is brown and b is blue), what is the probability that their child will have blue eyes?</p> <p>A. 25%</p> <p>B. 50%</p> <p>C. 75%</p> <p>D. 100%</p>	1															
6	<p>What must be preserved in an ecosystem if the system needs to be maintained?</p> <p>A. Producers and carnivores</p> <p>B. Producers and decomposers</p> <p>C. Carnivores and decomposers</p> <p>D. Herbivores and carnivores</p>	1															
7	<p>A food chain consists of Grass →Deer →Lion. If the energy available at the Lion's level is 50 J, how much energy was originally captured by the Grass from the Sun?</p> <p>A. 500 J</p> <p>B. 5,000 J</p> <p>C. 50,000 J</p> <p>D. 500,000 J</p>	1															
<p>The following two questions consist of two statements – <b>Assertion (A)</b> and <b>Reason (R)</b>. Answer these questions by selecting the appropriate option given below:</p> <p><b>A. Both A and R are true, and R is the correct explanation of A.</b></p> <p><b>B. Both A and R are true, and R is not the correct explanation of A.</b></p> <p><b>C. A is true, but R is false.</b></p> <p><b>D. A is false, but R is true.</b></p>																	
8	<p><b>Assertion (A):</b> A geneticist crossed two pea plants and got 50% tall and 50% dwarf in the progeny.</p> <p><b>Reason(R):</b> One plant was a heterozygous tall, and the other was a dwarf.</p>	1															
9	<p><b>Assertion (A):</b> Ozone is formed in the lower atmosphere through a reaction</p>	1															

	<p>involving oxygen molecules and UV radiation.</p> <p><b>Reason (R):</b> A single oxygen molecule (<math>O_2</math>) is split into two free oxygen atoms (<math>O</math>) by UV radiation, and one of these atoms then combines with another <math>O_2</math> molecule to form ozone (<math>O_3</math>).</p>	
10	<p>The concentration of glucose and amino acids is significantly higher in the initial filtrate than in the final urine of a healthy person.</p> <p>A. Identify the process responsible for this difference and explain how it is achieved.</p> <p>B. Compare the functioning of the nephron with that of the alveoli in the lungs.</p>	2
11	<p><u>Students to attempt either option A or B.</u></p> <p>A. In the human heart, the pulmonary artery carries deoxygenated blood, yet it is called an artery. Justify this statement with possible reasons.</p> <p style="text-align: center;">OR</p> <p>B. Trace the path of oxygenated blood and deoxygenated blood in the human body.</p>	2
12	<p>A. List two human-made ecosystems.</p> <p>B. We do not clean the pond in the same manner as we do in an aquarium. Give a reason to justify this statement.</p>	2
13	<p>The "touch-me-not" (<i>Mimosa pudica</i>) plant shows a rapid, folding movement of its leaves when touched.</p> <p>A. Explain how the stimulus of touch is transmitted throughout the leaves of the <i>Mimosa pudica</i>.</p> <p>B. How does this response differ from the bending of a plant stem towards light?</p>	3
14	<p>In an experiment with pea plants, a cross was made between a pure-bred plant with round, green seeds and a pure-bred plant with wrinkled, yellow seeds.</p> <p>A. What were the phenotypes and genotypes of the <math>F_1</math> progeny?</p> <p>B. If 800 seeds were collected from the self-pollination of the <math>F_1</math> progeny, determine the expected number of plants with wrinkled, green seeds.</p> <p>C. Name the two new varieties that were obtained in the <math>F_2</math> generation. State the reason.</p>	3
15	<p>The small intestine plays a crucial role in human nutrition, functioning as the primary site for both digestion and absorption. Its efficiency is supported by secretions from the liver and pancreas. For the digestive enzymes to work optimally, the acidic food from the stomach must be neutralised. Additionally, the structure of the small intestine, featuring numerous villi, is essential.</p> <p><u>Attempt either subpart A or B.</u></p> <p>A. A person suffering from a liver disorder is found to have difficulty digesting fats. Explain the specific role the liver's secretion plays in fat digestion.</p> <p style="text-align: center;">OR</p> <p>B. A patient's pancreatic enzyme production is impaired. Explain how this would affect the digestion in the small intestine.</p>	4

	<p>C. Explain the fate of glucose after it is absorbed.</p> <p>D. Where are the sphincter muscles located in the alimentary canal? Also state its function.</p>	
16	<p><u>Attempt either option A or B.</u></p> <p>A.</p> <p>(i) During DNA copying, variation is introduced, which is the basis of evolution. Variations are beneficial to species. Justify.</p> <p>(ii) Name the filamentous structure that a student could identify when he collected water from the pond that appeared dark green. How do these organisms multiply? Explain.</p> <p>(iii) Colonies of yeast fail to multiply in water, but they multiply in sugar solution. Why?</p> <p style="text-align: center;">OR</p> <p>B.</p> <p>(i) What is meant by contraception? List two reasons why it is important.</p> <p>(ii) Explain the surgical method of contraception.</p> <p>(iii) What are Sexually Transmitted Diseases (STDs)? Name two bacterial STD's.</p>	5
<b>Section – B</b>		
17	<p>Test tubes A, B and C contain zinc sulphate, silver nitrate and iron (II) sulphate solutions, respectively, as shown in the figure. Copper pieces are added to each test tube. Blue colour will appear in case of</p> <div style="text-align: center;"> </div> <p>A. Test tube A  B. Test tube B  C. Test tube C  D. All the test tubes</p>	1
18	<p>On adding a few drops of universal indicator to three unknown colourless solutions (P), (Q) and (R) taken separately in three test tubes shown in the following diagrams. A student observed the changes in colour as green in (P), red in (Q) and violet in (R).</p>	1

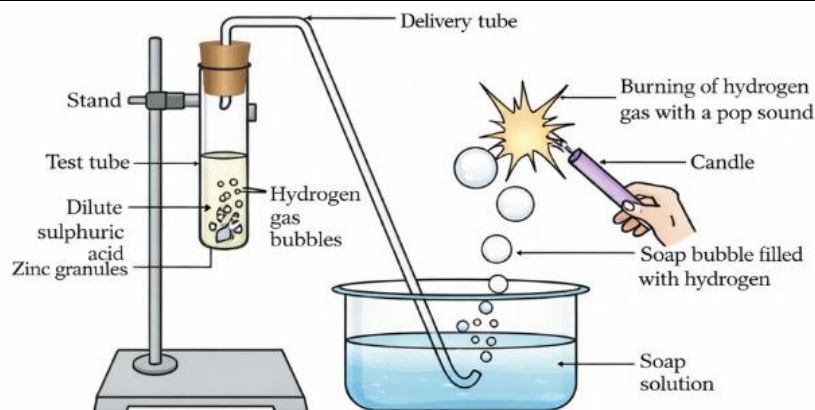


The decreasing order of pH of the solution taken is

- A.  $P > Q > R$
- B.  $R > P > Q$
- C.  $Q > P > R$
- D.  $P > R > Q$

19	Select from the following a decomposition reaction in which the source of energy for decomposition is light: A. $2\text{FeSO}_4 \rightarrow \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$ B. $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$ C. $2\text{AgBr} \rightarrow 2\text{Ag} + \text{Br}_2$ D. $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$	1
20	Sodium hydrogen carbonate, when added to hydrochloric acid, evolves a gas. Which of the following statements are true about the gas evolved? (i) It turns lime water milky. (ii) It extinguishes a burning splinter. (iii) It catches fire easily. (iv) It is reddish brown in colour. A. (i) and (ii) B. (i) and (iii) C. (ii) and (iii) D. (ii) and (iv)	1
21	An aqueous solution of a salt turns blue litmus to red. The salt could be the one obtained by the reaction of: A. $\text{HNO}_3$ and $\text{NaOH}$ B. $\text{H}_2\text{SO}_4$ and $\text{KOH}$ C. $\text{CH}_3\text{COOH}$ and $\text{NaOH}$ D. $\text{HCl}$ and $\text{NH}_4\text{OH}$	1
22	A metal, M, displaces iron from an aqueous solution of ferrous sulphate but fails to do so in the case of an aqueous solution of aluminium sulphate. The metal M is: A. Magnesium B. Copper C. Lead D. Zinc	1

23	<p>What happens when calcium is treated with water?</p> <p>(i) It does not react with water.  (ii) It reacts violently with water.  (iii) It reacts less violently with water.  (iv) Bubbles of hydrogen gas formed stick to the surface of calcium</p> <p>A. (i) and (iv)  B. (ii) and (iii)  C. (i) and (ii)  D. (iii) and (iv)</p>	1
<p>The following question consists of two statements – <b>Assertion (A)</b> and <b>Reason (R)</b>. Answer these questions by selecting the appropriate option given below:</p> <p><b>A. Both A and R are true, and R is the correct explanation of A.</b>  <b>B. Both A and R are true, and R is not the correct explanation of A.</b>  <b>C. A is true, but R is false.</b>  <b>D. A is false, but R is true.</b></p>		
24	<p><b>Assertion (A):</b> Most of the carbon compounds are good conductors of electricity.  <b>Reason (R):</b> They do not dissociate to form ions and remain as molecules.</p>	1
25	<p>State the reason for the following:</p> <p>(i) Aluminium is a reactive metal, yet it is used to make utensils for cooking.  (ii) Ionic compounds have high melting and boiling points.</p>	2
26	<p><b><u>Attempt either option A or B.</u></b></p> <p>A. A metal X is used extensively in making aeroplane bodies, as it is light in weight; it is also used in the extraction of metals by displacement reaction. The metal obtained during one such displacement is a molten metal, as the reaction involved is highly exothermic. The reaction mentioned above is used in joining railway tracks.</p> <p>(i) Identify the metal X.  (ii) What is the reaction mentioned above called?  (iii) Write the balanced chemical reaction for the above reaction.</p> <p style="text-align: center;"><b>OR</b></p> <p>B. Write balanced chemical equations to explain what happens when</p> <p>(i) Mercuric oxide is heated.  (ii) A mixture of cuprous oxide and cuprous sulphide is heated.  (iii) Aluminium is reacted with manganese dioxide.</p>	3
27	<p>In the following schematic diagram for the preparation of hydrogen gas, as shown in the figure, what would happen if the following changes were made?</p>	3



- A. In place of zinc granules, the same amount of zinc dust is taken in the test tube.
- B. In place of zinc, copper turnings are taken.
- C. Concentrated sulphuric acid is taken in place of dilute sulphuric acid.

28

Common salt is an essential chemical compound in our daily lives. Its chemical name is sodium chloride, and it is used as a raw material in the manufacture of caustic soda, washing soda, baking soda, etc. It is also used in the preservation of pickles, butter, meat, etc.

- A. Give suitable reasons: An aqueous solution of sodium chloride is neutral, but an aqueous solution of sodium carbonate is basic.

**Attempt either option B or C.**

- B. Write the chemical formula of bleaching powder. For what purpose is it used in drinking water?

**OR**

- C. Give reason: During the summer season, a milkman usually adds a very small amount of baking soda to fresh milk.

- D. The chemical formula of Plaster of Paris is:

- (a)  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$   
 (b)  $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$   
 (c)  $\text{CaSO}_4 \cdot 5\text{H}_2\text{O}$   
 (d)  $\text{CaSO}_4 \cdot 7\text{H}_2\text{O}$

4

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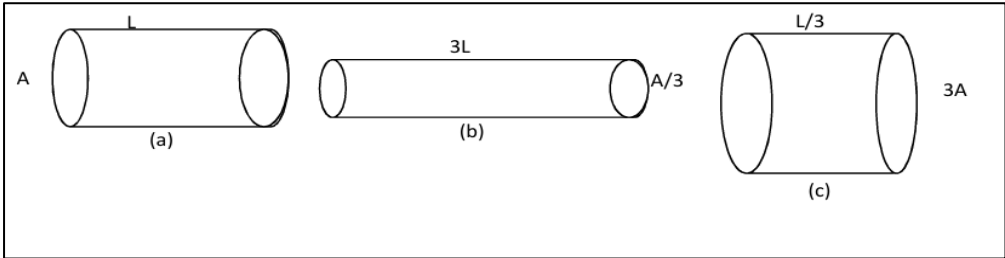
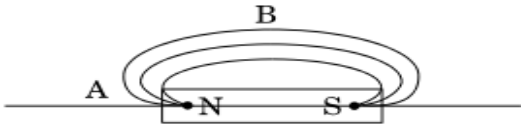
**Attempt either option A or B.**

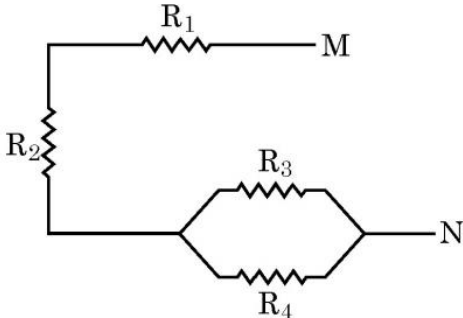
A

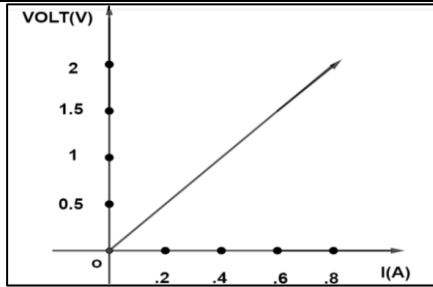
- (i) What is a homologous series of carbon compounds?  
 (ii) Why are the melting and boiling points of  $\text{C}_4\text{H}_8$  higher than those of  $\text{C}_3\text{H}_6$  or  $\text{C}_2\text{H}_4$ ?  
 (iii) Why do we not see any gradation in the chemical properties of a homologous series of compounds?  
 (iv) Write the name and structures of

5

	(a) aldehyde (b) ketone with molecular formula $C_3H_6O$ . <b>OR</b> <b>B</b> (i) Write the name and structure of an organic compound 'X' having two carbon atoms in its molecule, and its name is suffixed with '-ol'. (ii) What happens when 'X' is heated with excess concentrated sulphuric acid at 443 K? Write the chemical equation for the reaction, stating the conditions for the reaction. Also state the role played by concentrated sulphuric acid in the reaction. (iii) Name and draw the electron-dot structure of the hydrocarbon produced in the above reaction.	
<b>Section – C</b>		
30	On entering a medium from air, the speed of light becomes half of its value in air. What is the refractive index of that medium with respect to air? A. $\frac{1}{2}$ B. 2 C. $2^2$ D. $\sqrt{2}$	1
31	When we enter a dark room from outside, the objects inside the room do not appear clear to our eyes immediately. This is because A. pupils do not open at all in the dark. B. pupils take time to adjust. C. light travels more slowly in a dark room. D. pupils open very quickly in the dark.	1
The following question consists of two statements – <b>Assertion (A)</b> and <b>Reason (R)</b> . Answer these questions by selecting the appropriate option given below: <b>A. Both A and R are true, and R is the correct explanation of A.</b> <b>B. Both A and R are true, and R is not the correct explanation of A.</b> <b>C. A is true, but R is false.</b> <b>D. A is false, but R is true.</b>		
32	<b>Assertion (A):</b> A magnifying glass produces an enlarged virtual image. <b>Reason (R):</b> The object is placed between the lens and its focal point.	1
33	A student uses a lens of focal length 40 cm and another of $-20$ cm. Write the nature and power of each lens.	2
34	<b><u>Attempt either option A or B.</u></b> A. A constantan wire of length 'l' and area of cross-section 'A' is drawn to double its length. What will be the new resistivity of the wire? What are the factors on which the resistivity of a wire depends? <b>OR</b> B. (i) Explain what is meant by saying "a conductor has a resistance of $5 \Omega$ ". (ii) What is the resistance of a tungsten wire of length 2m and area of cross-section $1\text{cm}^2$ ? (Resistivity of Tungsten wire $=5.5 \times 10^{-8} \Omega\text{m}$ )	2
35	Nila needs a lens of power $-4.5D$ for the correction of her vision.	3

	<p>(i) What kind of defect in vision is she suffering from?  (ii) What is the focal length and nature of the corrective lens?  (iii) Draw ray diagrams showing the defective eye.</p>	
36	<p>The figure below shows three cylindrical copper conductors along with their face areas and lengths. Compare the resistance and the resistivity of the three conductors. Justify your answer.</p> 	3
37	<p>Magnetic field lines are shown in the given diagram. A student makes a statement that the magnetic field at 'A' is stronger than at 'B'. Justify this statement. Also, redraw the diagram and mark the direction of magnetic field lines.</p> 	3
38	<p>Modern optical instruments and safety devices make extensive use of spherical mirrors. A driving school uses convex mirrors as rear-view mirrors in its training vehicles. These mirrors have a focal length of 25 cm and help drivers see a wider area behind them. Meanwhile, a dental clinic uses concave mirrors with a focal length of 12 cm to examine patients' teeth, as these mirrors can produce magnified images when objects are placed close to them.</p> <p>In an advanced physics laboratory, students are experimenting with both types of mirrors to understand their imaging properties. They observe that the same object placed at the same distance from both mirrors produces images with completely different characteristics.</p> <p>A student places an object 40 cm away from a concave mirror of focal length 15 cm and records the observations. Another student uses a convex mirror of focal length 20 cm and places an object at various distances to study the image formation.</p> <p>Based on the above scenario, answer the following questions:</p> <p>A. A car is following at a distance of 10 m (1000 cm) behind. Calculate the position of its image in the rear-view mirror of focal length 25cm.</p> <p>B. Draw labelled ray diagrams showing the image formation by a concave mirror when an object is placed at a distance equal to 1.5 times its focal</p>	4

	<p>length. Show the position of F, C, and trace at least two rays to locate the image.</p> <p><b><u>Attempt either subpart C or D.</u></b></p> <p>C. An object is placed 24 cm in front of a concave mirror. The image formed is real and twice the size of the object. Calculate the image distance from the mirror and the focal length of the mirror.</p> <p style="text-align: center;"><b>OR</b></p> <p>D A dentist needs to see a 4 times magnified erect image of a tooth using a concave mirror of focal length 12 cm. At what distance should the tooth be placed from the mirror?</p>	
39	<p><b><u>Attempt either option A or B.</u></b></p> <p>A.</p> <p>(i) Given ‘n’ number of resistors each of resistance R. How will you combine them to get (i) maximum and (ii) minimum effective resistance? What is the ratio of maximum to minimum resistance?</p> <p>(ii) For the combination of resistors shown in the following figure, find the equivalent resistance between M &amp; N where <math>R_1=5\ \Omega</math>, <math>R_2=2\ \Omega</math>, <math>R_3=3\ \Omega</math>, <math>R_4=6\ \Omega</math></p> <div style="text-align: center;">  </div> <p>(iii) A TV set picture tube shoots out a beam of electrons. The current due to this beam is 16 mA. Then, which of the following is the total number of electrons that will strike the TV screen every second? (<math>e = 1.6 \times 10^{-19} \text{C}</math>)</p> <p style="text-align: center;"><b>OR</b></p> <p>B.</p> <p>(i) State Ohm’s law.</p> <p>(ii) The following graph was plotted between V and I value. What would be the values of ratios (V/I) when the potential difference is 0.5 V and 1 V?</p>	5



- (iii) Draw a circuit diagram consisting of a cell, a plug key, an ammeter, a resistor of  $5\ \Omega$  in series with a combination of two resistors ( $10\ \Omega$  each) in a parallel arrangement.
- (iv) The electric power consumed by a device may be calculated by using either of the two expressions:  $P=I^2R$  or  $P=V^2/R$ . The first expression indicates that it is directly proportional to  $R$ , whereas the second expression indicates inverse proportionality. How can the seemingly different dependence of  $P$  on  $R$  in these expressions be explained?