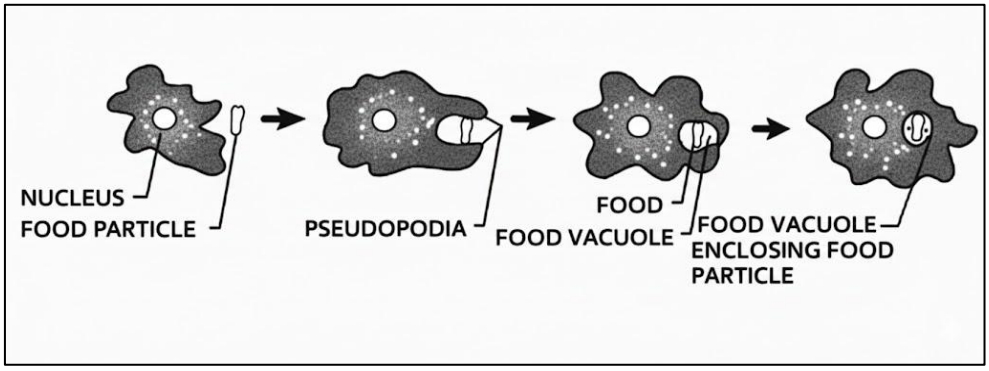
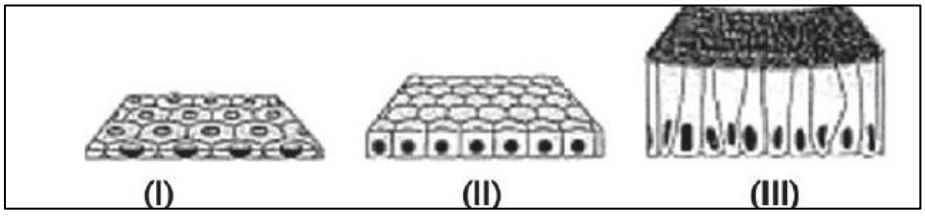
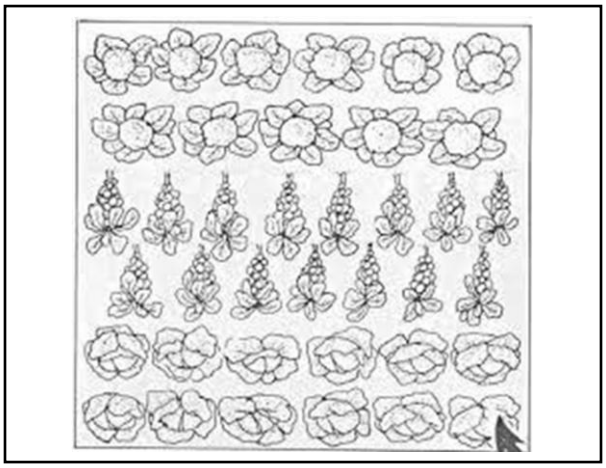
Indian School Al Wadi Al Kabir
Final Examination (2025-2026)

Class: IX | Subject: SCIENCE (086) | Max. marks: 80
Date: 24/02/2026 | Set- I | Time: 3 hours

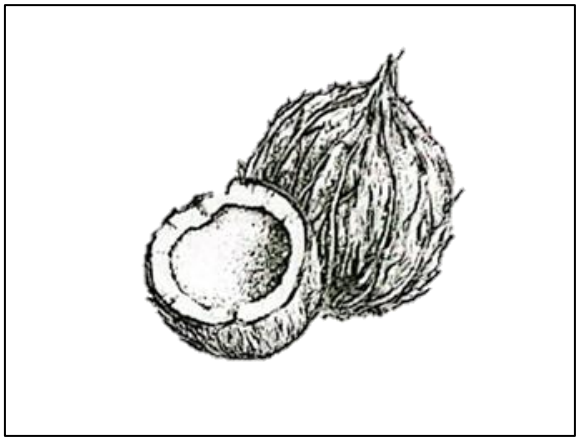
General Instructions:
(i) This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry, and Section C is Physics.
(ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

	Section – A	MARKS
1	What property of the plasma membrane helps the amoeba acquire food?  A. It is flexible. B. It is selectively permeable. C. It is made up of proteins and lipids. D. It allows diffusion of some substances across it.	1
2	The following are a few definitions of osmosis: Read carefully and select the correct definition. A. Movement of water molecules from a region of higher concentration to a region of lower concentration through a semipermeable membrane. B. Movement of solvent molecules from a higher concentration to a lower concentration. C. Movement of solvent molecules from a higher concentration to a lower concentration of solution through a permeable membrane. D. Movement of solute molecules from a lower concentration to a higher concentration of solution through a semipermeable membrane.	1

3	Crop Y is grown only in a few areas due to specific temperature requirements. To increase the productivity of crop Y, it is recommended to develop its different varieties. Which feature should be included while developing the different varieties of crop Y in order to increase its productivity? A. Developing varieties with strong biotic resistance. B. Developing varieties with less dependence on water. C. Developing varieties with extended maturity duration. D. Developing varieties adaptable to different climatic conditions.	1
4	Skin is the outermost layer of the body, which provides protection from mechanical injuries as well as helps in the secretion of sweat and oils. Which type of epithelium is the skin likely composed of to facilitate all the mentioned functions? A. Epithelium having a flat surface B. Epithelium arranged in many layers C. Epithelium with irregularly shaped cells D. Epithelium with hair-like projections for particle movement	1
5	Although several species of honey bees, such as *Apis indica* and *Apis florae,* are native to India, beekeepers prefer an Italian species for commercial honey production. Which of the following correctly identifies this species and its advantage? A. *Apis indica* – Produces medicinal honey B. *Apis dorsata* – Stingless and easy to manage C. *Apis mellifera* – Higher honey yield and better breeding capacity D. *Apis florae* – Requires less care and space	1
6	During recess, Ritesh was having lunch with his friends. One of his friends said that the intestine helps in the digestion of food. Riteish's sister was also present there. She asked the name of the tissue which is responsible for the absorption of food. A. Stratified squamous epithelium B. Columnar epithelium C. Spindle fibres D. Cuboidal epithelium	1
7	The picture shows three types of epithelial tissues found in the human body.  	1

	The inner lining of alveoli (air sacs in the lungs) is very thin and delicate. Which type of tissue forms the inner lining of alveoli? A. Tissue (I) B. Tissue (II) C. Tissue (III) D. Tissues (I) and (II)	
The following two questions consist of two statements – **Assertion** (A) and **Reason** (R). Answer these questions by selecting the appropriate option given below: **A. Both A and R are true, and R is the correct explanation of A.** **B. Both A and R are true, and R is not the correct explanation of A.** **C. A is true, but R is false.** **D. A is false, but R is true.**		
8	**Assertion (A):** Cilia are hair-like structures present on the inner surfaces of hollow organs. **Reason (R):** Ciliated epithelium causes the movement of cilia to push the particles in a particular direction.	1
9	**Assertion (A):** Vacuoles are storage sacs for solid or liquid contents. **Reason (R):** In amoeba, the vacuoles do not help in expelling excess water from the cell.	1
10	Give the contributions of the following scientists: a) Antonie van Leeuwenhoek b) Purkinje	2
11	**<u>Students to attempt either option A or B.</u>** A. A field with different plants is shown below  (i) What pattern of cropping does the field show? Explain briefly. (ii) Mention any two advantages of this type of cropping pattern. **OR** B. More intensive fish farming can be done in a composite fish culture system. Both local and imported fish species are used in the same system. Describe the composite fish culture system briefly with examples.	2

12	Manik saw his father watering his garden plants in the hot weather. He noticed that water doesn't stick to plant leaves, and leaves become dry but look fresh. He asked the following questions to his teacher: (i) Which tissue forms the outer covering of a plant, and does it have a protective role to play? How? (ii) Why does water not stick to the leaves?	2
13	(i) How do you differentiate the mechanism of movement of gases and water in and out of the cell? (ii) A student observes a type of cell division occurring in the reproductive organs that results in daughter cells having half the number of chromosomes compared to the parent cell. Identify this type of cell division and mention the site where it occurs.	3
14	(i) List any two management practices to be considered while designing a shelter for cattle. (ii) What is the lactation period? Name two breeds of cattle which are selected for their long lactation period? (iii) What are the differences between broilers and layers concerning their breeding and daily food requirements?	3
15	A crop is a plant or plant product that can be grown and harvested for profit or subsistence. By use, crops fall into 6 categories: food crops, feed crops, fibre crops, oil crops, ornamental crops, and industrial crops. Food crops, such as fruit and vegetables, are harvested for human consumption. Crops such as corn, wheat, and rice are the world's most popular food crops. There is concern that agricultural production in developing countries will cause environmental threats in the future, as production will have to increase to satisfy the growth and demand for food. Intensification leads to higher inputs of nutrients in the form of mineral fertilisers and animal feed. Pressure on the existing agricultural land may increase due to the growing demand for productive land and the degradation of existing agricultural land ways. **Attempt either subpart A or B.** A. What is organic farming? Describe the process and state two advantages of this. **OR** B. What are vermicompost and green manure? Name the nutrients which are supplied by green manure to the soil. C. What are the harmful effects of pesticides and fertilisers over a long period of time on soil? D. Genes are responsible for the transfer of characters from one generation to the next. Define the term used for crossing two genetically dissimilar plants.	4
16	**Attempt either option A or B.** A. (i) A student examines a Lotus leaf cell under a microscope and wonders which tissue makes the leaf float. Identify the tissue which makes the plant float and give its characteristics. (ii) Identify the simple tissue present in the given picture, and describe its structure and give a reason for its hard nature.	5



(iii) Draw a neat labelled diagram of a neuron and label the following.
(a) The part which is long
(b) The part where the nucleus is present
(c) The branches at the end of a neuron.

OR

B. (i) What changes occur on the outer layer of a young stem when it becomes a tree? Explain briefly.
(ii) Illustrate the structure of tracheids and vessels with labelled diagrams and explain how their structure supports their function.
(iii) Identify the given tissue and mention its location and one function.

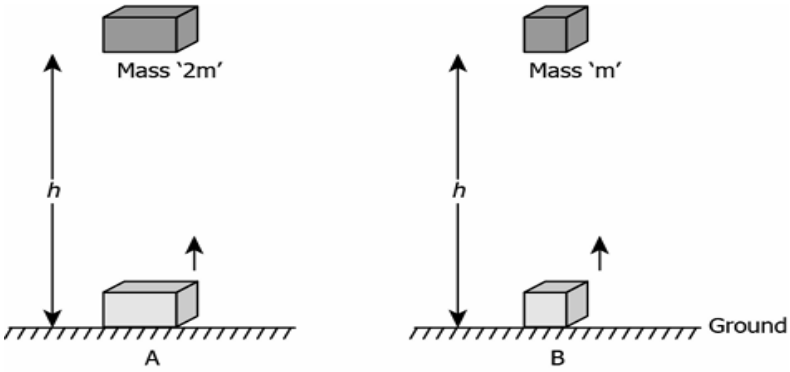
	Section – B	
17	Which of the following is not correct about evaporation? A. It is a surface phenomenon. B. It takes place at all temperatures below the boiling point. C. It causes cooling as it takes heat from the surroundings. D. Its rate decreases with a decrease in humidity.	1
18	Boron and carbon are A. Metalloids B. Metalloid and non-metal, respectively C. Metals D. Non-metal and metalloid, respectively	1

19	Which of the following are incorrect? I. The mass of reactants is more than the mass of products in a chemical reaction. II. The mass of reactants or products can neither be created nor destroyed. III. The mass of reactants before reaction is equal to the mass of products after reaction. IV. The mass of reactants decreases during the reaction. A. I and II B. II and III C. III and IV D. I and IV	1
20	Identify any two statements that are true for pure substances among the following: I. Pure substances contain only one kind of particle. II. Pure substances may be compounds or mixtures. III. Pure substances have the same composition throughout. IV. Pure substances can be exemplified by all elements other than nickel. A. I and II B. III and IV C. II and III D. I and III	1
21	Which of the following is a correct statement? A. Na_2S is Sodium sulphide, Na_2SO_3 is Sodium sulphite, and Na_2SO_4 is Sodium sulphate. B. Na_2S is Sodium sulphite, Na_2SO_3 is Sodium sulphide, and Na_2SO_4 is Sodium sulphate. C. Na_2S is Sodium sulphite, Na_2SO_3 is Sodium sulphate, and Na_2SO_4 is Sodium sulphide D. Na_2S is Sodium sulphide, Na_2SO_3 is Sodium sulphate, and Na_2SO_4 is Sodium thiosulfate.	1
22	Which of the following represents the properties of an isotope? I. Isotopes have the same number of neutrons. II. Isotopes have the same number of electrons and protons. III. Isotopes are atoms of the same element. IV. Isotopes are atoms of different elements. A. I and II B. II and III C. II and IV D. I, II and IV	1

23	The following shows the symbol for sodium. $^{23}_{11}Na$ What can be concluded about sodium from the symbol? A. It contains 11 neutrons. B. It contains 12 protons. C. It contains 12 neutrons. D. It contains 34 electrons.	1
The following question consists of two statements – **Assertion** (A) and **Reason** (R). Answer these questions by selecting the appropriate option given below: **A. Both A and R are true, and R is the correct explanation of A.** **B. Both A and R are true, and R is not the correct explanation of A.** **C. A is true, but R is false.** **D. A is false, but R is true.**		
24	**Assertion (A):** In water, the ratio of mass of hydrogen to the mass of oxygen is always 1:8, whatever the source of water. **Reason (R):** According to the law of constant proportion, the elements are always present in definite proportion by mass in a chemical substance.	1
25	Define melting point. If the melting point of an object A is high, then what state do you expect it to be in at room temperature?	2
26	**<u>Attempt either option A or B.</u>** A. For an element X, it is given that the atomic number = 17 and mass number = 35u (i) Write the electronic configuration of the element X. (ii) Find the valency and valence electrons. (iii) Draw the atomic structure of X. **OR** B. Answer the following questions based on the table below. (i) What are isobars? Select a pair of isobars from the table. (ii) Write the number of electrons and neutrons present in element C and write the name of the element.	3
27	A. How are emulsions different from gels? Give examples for each. B. Why does the solution of salt not show the Tyndall effect, whereas the mixture of water and milk does?	3
28	To describe the distribution of electrons in different orbits (shells), Bohr and Bury suggested that the maximum number of electrons present in a shell is given by the formula $2n^{2,}$ where n is the orbit number. The outermost shell can accommodate a maximum of 8 electrons. Atoms with a completely filled outermost shell show little chemical activity.	4

Element	A	B	C	D	E
Mass no.	1	7	14	40	40
Atomic no	1	3	7	18	20

	A. An element 'X' has an atomic number of 15. Write its electronic configuration and name the shells in which its electrons are distributed. B. If an atom has its 'K' and 'L' shells completely filled and no electrons in the 'M' shell, what is the name of this element and its valency? Draw the atomic structure. **OR** The electronic configuration of the fluoride ion and Neon is the same. Then what is the difference between them? Explain. Write the electronic configuration for both. C. The electronic configuration of calcium is (atomic number of Ca is 20) (a) 2,8,8,2 (b) 2,8,10 (c) 2,8,7,3 (d) 2,8,3,7	
29	**<u>Attempt either option A or B.</u>** A. A compound XH is formed by the combination of an element X with hydrogen. (a) Find the valency of the element. (b) State the formula of the compound formed by the combination of (i) X with nitrogen (ii) X with oxygen (c) Write the chemical formulae of (i) Sodium carbonate (ii) Ammonium chloride (d) Calculate the formula unit mass of $CaCO_3$ (Atomic mass of C = 12 u, Ca = 40 u, O = 16 u) **OR** B. (a) Define polyatomic ions. Write an example. (b) Write the number of valence electrons present in Al and the Al^{3+} ion. (atomic number of Al is 13) (c) Define atomic mass unit. (d) An ion contains 12 protons and 12 neutrons and has a charge of +2. Determine its atomic number and write the correct chemical symbol for the ion.	5
	Section – C	
30	A boy walks 10m in a straight path moving away from a lamp pole in a garden and walks 5m back on the same path. What is the displacement of the boy from the lamp pole? A. 0m B. 5m C. 10m D. 15m	1

31	Compare the energy possessed by virtue of position for the 2 bodies shown below.  A. By virtue of their positions, the energy possessed by body A is half the energy possessed by body B. B. By virtue of their positions, the energy possessed by body A is twice the energy possessed by body B. C. By virtue of their positions, the energy possessed by body A is 4 times the energy possessed by body B. D. By virtue of their positions, the energy possessed by both Body A and Body B is the same.	1
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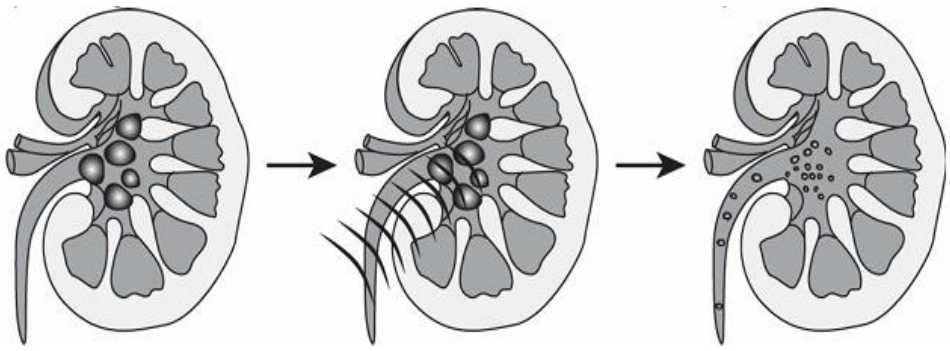
32	**Assertion (A):** A higher-pitched sound has a higher frequency. **Reason (R):** Pitch of sound depends on the amplitude of the sound wave.	1
33	(i) Name the property by virtue of which a body resists the change in its state of rest or of motion. (ii) When a fast-moving horse stops suddenly, a careless rider falls in the forward direction. Give the reason.	2
34	**<u>Attempt either option A or B.</u>** A. (i) Define pressure and write its SI unit. (ii) Why does a nail have a pointed tip? **OR** B. (i) State Archimedes' principle. (ii) What property of materials determines whether an object will float or sink in a liquid? Explain.	2
35	The velocity-time graph for the motion of an object in a straight path is a straight line parallel to the time axis. (i) Identify the nature of the motion of the body. (ii) Find the acceleration of the body. (iii) Draw the shape of the distance-time graph for this type of motion.	3

36	(i) State Newton's second law of motion. (ii) Using Newton's second law of motion, derive the relation between force and acceleration.	3
37	(i) What is meant by acceleration due to gravity? (ii) Two objects of masses 100 kg and 200 kg are separated by a distance of 1 m. (Take $G = 6.7 \times 10^{-11}$ N m^2 kg^{-2}) (a) Calculate the force of gravitation between the two objects (b) If the distance between them is doubled, what will be the new force of gravitation?	3
38	Mr Kumar was experiencing severe pain due to kidney stones. His doctor recommended a treatment called Extracorporeal Shock Wave Lithotripsy (ESWL). In this procedure, ultrasonic waves with a frequency of around 27,000 Hz are generated outside the body and focused precisely on the kidney stones. These high-energy ultrasound waves travel through the body tissues without causing damage and concentrate their energy on the stones. The intense vibrations cause the stones to break into small fragments, which can then pass out naturally through the urinary system. The entire procedure takes about 45-60 minutes, and the patient can usually go home the same day.  Based on this information, answer the following questions: A. What is the range of ultrasound frequencies? B. Why can't humans hear the ultrasonic waves used in this treatment? <u>Attempt either subpart C or D.</u> C. (a) Explain why ultrasound is preferred over audible sound waves for breaking kidney stones. (b) Will these waves damage the surrounding body tissues? **OR** D. State two other medical applications of ultrasound.	4
39	**<u>Attempt either option A or B.</u>** A. (i) State the law of conservation of energy. (ii) Derive an expression for the kinetic energy of an object of mass 'm' moving with velocity 'v'. (iii) Calculate: (a) The potential energy of the stone at the top of the building, and (b) The kinetic energy of the stone just before it hits the ground.	5

	OR B. (i) Define the SI unit of work. (ii) Show that the gravitational potential energy of an object of mass 'm' raised through a height 'h' from the ground is given by mgh. (iii) A boy of mass 40 kg runs up a flight of 30 steps in 10 seconds. Each step is 20 cm high. (Take $g = 10\ m\ s^{-2}$). Calculate: (a) The work done by the boy against gravity, and (b) The power developed by the boy.	