# Indian School Al Wadi Al Kabir
## Final Examination (2024-2025)

Class: IX | Subject: Science | Max. marks: 80
Date: 23/02/2025 | SET-II | Time: 3 hours

General Instructions:

i. This question paper consists of 39 questions in 5 sections.
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.
iii. Section A consists of 20 objective-type questions carrying 1 mark each.
iv. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
v. Section C consists of 7 Short Answer type questions carrying 03 marks each.Answers to these questions should be in the range of 50 to 80 words.
vi. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.
vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts

SECTION - A

Select and write one most appropriate option out of the four options given for each of the questions 1 – 20

| Q.No | Questions | Marks |
|---|---|---|
| 1 | The valency of Mg in $MgCl_2$ is:<br>A. 1<br>B. 2<br>C. 0<br>D. 3 | 1 |
| 2 | If K, L and M shells of an atom are full, the total number of electrons in that atom are:<br>A. 2<br>B. 28<br>C. 18<br>D. 32 | 1 |
| 3 | Mass number is equal to:<br>A. Number of electrons<br>B. Number of protons<br>C. Total number of protons and neutrons<br>D. Difference between mass number and number of electrons. | 1 |

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| 4 | Which of the following statement is always correct?<br>A. An atom has equal number of electrons and protons.<br>B. An atom has equal number of electrons and neutrons.<br>C. An atom has equal number of neutrons and protons.<br>D. An atom has equal number of electrons, protons and neutrons | 1 |
| 5 | Which of the following can be called a colloid?<br>A. Milk<br>B. Tincture of iodine<br>C. Salt solution<br>D. Vinegar | 1 |
| 6 | During summer, water kept in an earthen pot becomes cool because of the phenomenon of:<br>A. Diffusion<br>B. Transpiration<br>C. Osmosis<br>D. Evaporation | 1 |
| 7 | The physical state of a matter depends upon:<br>A. Temperature and pressure<br>B. Temperature only<br>C. Pressure only<br>D. Nature of substance | 1 |
| 8 | If the volume of a cell increases when it is placed in a solution, that solution is said to be _____ to the cell.<br>A. Hypertonic<br>B. Subatomic<br>C. Isotonic<br>D. Hypotonic | 1 |
| 9 | If the ribosomes of the cell are destroyed then:<br>A. Respiration will stop<br>B. Fats will not be stored<br>C. Proteins will not be synthesised<br>D. Waste materials will not be eliminated | 1 |
| 10 | Cells of this plant tissue have dense cytoplasm, thin cellulose walls and prominent vacuoles. Identify the tissue.<br>A. Collenchyma<br>B. Sclerenchyma<br>C. Meristematic tissue<br>D. Parenchyma | 1 |
| 11 | Aditi observed following observations in a permanent slide.<br>(i) Cells are long and cylindrical.<br>(ii) Light and dark striations are present.<br>It could be a slide of:<br><br>A. Striated muscle fibre<br>B. Smooth muscle fibre<br>C. Neuron<br>D. Parenchyma cells | 1 |

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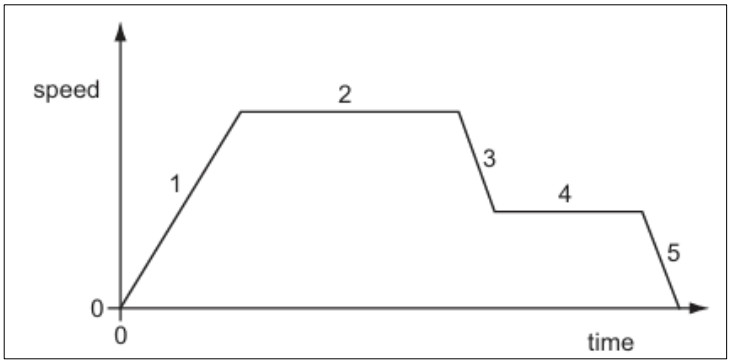
| 12 | Which of the following is not included in 'organic farming'?<br>A. Compost and Vermi-compost<br>B. Chemical fertilisers<br>C. Green manures<br>D. Crop rotation | 1 |
| 13 | The speed-time graph for a car journey is shown.<br>  <br><br>During which two parts of the journey is the car moving at constant speed?<br>A.1 and 3<br>B.1 and 5<br>C. 2 and 4<br>D. 3 and 5 | 1 |
| 14 | 1 kilowatt = _____.<br>A.1 watt<br>B.10 watts<br>C.100 watts<br>D.1000 watts | 1 |
| 15 | Apiculture deals with:<br>A. Bee keeping<br>B. Rearing pigs<br>C. Cattle farming<br>D. Dairy farming | 1 |
| 16 | Which one of the following species of honey bee is an Italian species ?<br>A. *Apis dorsata*<br>B. *Apis florae*<br>C. *Apis cerana indica*<br>D. *Apis mellifera* | 1 |
| Q. no 17 to 20 are Assertion - Reasoning based questions. These consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:<br>(a) Both A and R are true and R is the correct explanation of A<br>(b) Both A and R are true and R is not the correct explanation of A<br>(c) A is true but R is false<br>(d) A is false but R is true | | |
| 17 | **Assertion (A)**: Ice at $0^0$C appears colder to the mouth than water at $0^0$C.<br>**Reason (R):** Ice at $0^0$C has lower energy (equal to the latent heat of fusion) than water at $0^0$C. | 1 |
| 18 | **Assertion(A):** A cell divides by meiosis and produces four new cells instead of just two.<br>**Reason(R):** Meiosis helps in growth and repair. | 1 |

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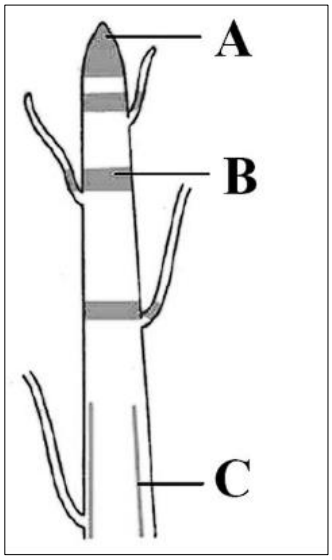
| 19 | **Assertion (A):** If the net external force on the body is zero, then its acceleration is zero.<br>**Reason(R):** Acceleration does not depend on force. | 1 |
| 20 | **Assertion(A):** Areolar connective tissue is present beneath the skin and stores fat.<br>**Reason(R):** Areolar tissue fills the space inside the organs, supports internal organs and helps in repair of tissues. | 1 |
| | SECTION – B<br>Q. no. 21 to 26 are very short answer questions | |
| 21 | A. Define latent heat of fusion.<br>B. Convert $311^0$C to the Kelvin scale. | 2 |
| 22 | Describe the structure of a nerve cell. | 2 |
| 23 | A. Identify the epithelial tissue found in the following organs and also state one function:<br>i) Skin<br>ii) Respiratory tract<br>**OR**<br>B. i) Observe the diagram given below carefully and label the regions marked A and C in the diagram.<br>  <br><br>ii) Which meristematic tissue is responsible for increase in length of root and for the transformation of the stem of a plant into trunk when it grows into a tree? | 2 |
| 24 | A. Is sound wave longitudinal or transverse? Explain.<br>B. Differentiate transverse and longitudinal waves.<br>**OR**<br>A. Which wave property determines: i) loudness, ii) pitch?<br>B. Two sound waves A and B are shown in figure given below. Identify the sound wave having:<br>i) loud sound<br>ii) soft sound | 2 |

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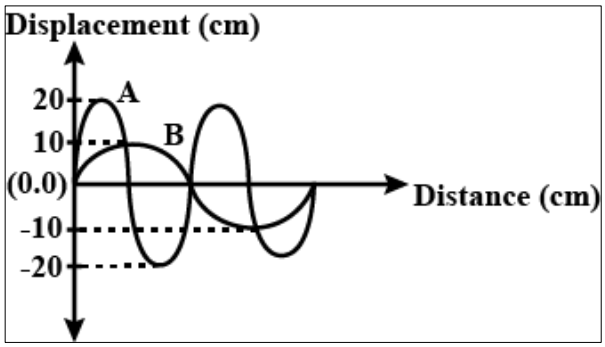
| |  | |
| 25 | A. The volume of 10 g of a substance is 20 $cm^3$.If the density of water is 1 $gcm^{-3}$, will the substance float or sink?<br>B. State Archimedes' principle. | 2 |
| 26 | Diagrammatically distinguish between any two types of muscle cells. | 2 |
| | SECTION - C<br>Q.no. 27 to 33 are short answer questions. | |
| 27 | A. List any three characteristics of colloids.<br>B. A solution contains 20ml of alcohol in 380ml of water. Calculate the concentration in terms of volume-by-volume percentage of the solution. | 3 |
| 28 | A. Define atomicity. Give two examples of diatomic molecules.<br>B. Calculate the molecular mass of the following.<br>i) $CH_3OH$<br>ii) $NH_3$<br>[Atomic mass of H=1u, N=14u, O=16u, C=12u]<br>**OR**<br>A. Give one example each for cation and anion.<br>B. Define molecular mass and calculate the molecular mass of $H_2SO_4$.<br>[Atomic mass of H=1u, S=32u, O=16u] | 3 |
| 29 | A. Why do plant cells possess large sized vacuole?<br>B. What would happen if the plasma membrane ruptures or breaks down?<br>C. Name the cell organelle performing the following functions.<br>i)Powerhouse of the cell.<br>ii) Suicidal bags of the cell. | 3 |
| 30 | A. What is the relationship between mass and inertia?<br>B. A karate player breaks a slab of ice with a single blow. Give reason and state the Newton's law related to this. | 3 |
| 31 | A. State the universal law of gravitation.<br>B. Derive an expression for the force of attraction between two bodies.<br>C.A stone falls to the ground in 0.4s. Calculate its speed just before striking the ground. (g = 10 $m/s^2$). | 3 |

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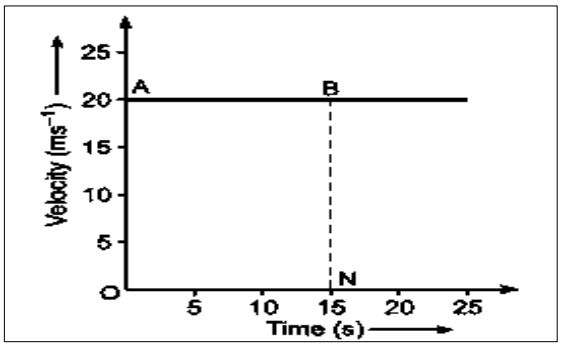
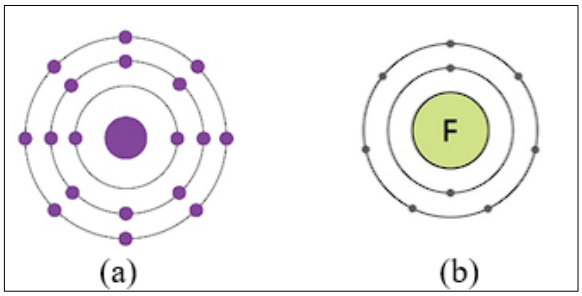
| 32 | The velocity-time graph shows the motion of a cyclist.<br>  <br><br>Find<br>A. its acceleration<br>B. its velocity and<br>C. the distance covered by the cyclist in 15 seconds. | 3 |
| 33 | Draw neat labelled diagrams of the following elements of xylem tissue.<br>i) Tracheid<br>ii) Vessel<br>iii) Xylem parenchyma | 3 |
| | SECTION - D<br>Q.no. 34 to 36 are Long answer questions. | |
| 34 | **Attempt either A or B:**<br>A.<br>i) Mention any two advantages of using Italian bee variety in honey production.<br>ii) What is pasturage and how is it related to honey production?<br>iii) Farmers use bee-keeping as an additional income generating activity. Give reason.<br><br>**OR**<br>B.<br>i) List the factors for which crop varietal improvement is done.<br>ii) What is meant by the term 'green manure'? State its role in agriculture.<br>iii) How would you differentiate between mixed cropping and intercropping? | 5 |
| 35 | **Attempt either option A or B:**<br><br>A.<br>i) Find out the valency of the atoms represented by (a) and (b).<br>  <br><br>ii) Isotopes of an element are chemically similar. Give reason.<br>iii) Describe isotopes with the help of an example. | 5 |

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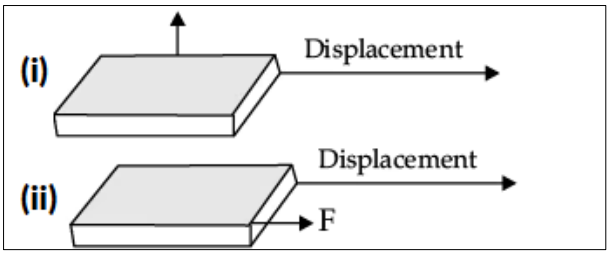
| | **OR**<br>B.<br>i) An atom of an element has mass number 39 and atomic number 19. Calculate the number of electrons and neutrons.<br>ii) Write the electronic configuration and draw the atomic structures of the following.<br>a) Lithium (Atomic number-3)<br>b) Aluminium (Atomic number-13)<br><br>iii)Write the electronic configuration of any one pair of isobars. | |
| 36 | **<u>Attempt either option A or B:</u>**<br><br>A.<br>Study the given figure and answer the following questions.<br><br>  <br><br><br>i) What will be the work done in the above situations? State whether it will be positive, negative or zero.<br>ii) What are the conditions for work to be done?<br>iii) Write an expression for work in terms of force and displacement.<br>iv) A force of 12 N acts at a distance of 12 m in the direction of force. Find the work done?<br>v) What is the angle between force and displacement when the work done is negative? Give an example for negative work.<br><br>**OR**<br>B.<br>i) Name the type of energy possessed by a stretched rubber band. Define that energy.<br>ii) An object increases its energy when raised through a height. Derive an expression for this energy at a height.<br>iii)A machine exerts an average force of 600 N to push a body to a distance of 10 meters in 30seconds. Calculate the power of the machine. | 5 |
| SECTION – E<br>Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub - parts. Internal choice is provided in one of these sub-parts. | | |
| 37 | The chemical formula of a compound is a symbolic representation of its composition. The chemical formulae of different compounds can be written | 4 |

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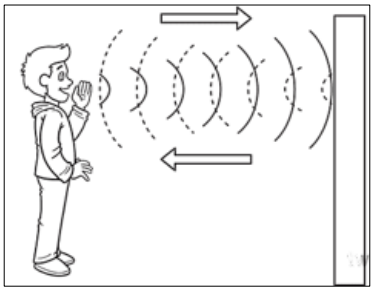
| | easily. For this exercise, we need to learn the symbols and combining capacity of the elements. The combining power (or capacity) of an element is known as its valency. Valency can be used to find out how the atoms of an element will combine with the atom(s) of another element to form a chemical compound. | |
| | A. Write the chemical formulae of the following.<br>i) Aluminium chloride<br>ii) Magnesium oxide | |
| | **Attempt either subpart B or C.**<br><br>B. Differentiate between molecules of elements and molecules of compounds.<br>**OR**<br>C. Chlorine atom is electrically neutral but chlorine ion is charged. Explain. | |
| 38 | Amit, a dairy farmer, aimed to improve milk production in his farm. He observed that his local Sahiwal cows were highly resistant to diseases but had shorter lactation periods. After consulting an expert, he decided to cross-breed them with Jersey cows, known for their longer lactation periods. This resulted in healthier cattle with increased milk yield. Additionally, he ensured proper nutrition and shelter for his animals, keeping them in well-ventilated sheds. His efforts paid off as milk production increased significantly. Amit's success highlighted the importance of selective breeding, good management, and proper care in improving dairy farming productivity. | 4 |
| | **Attempt either subpart A or B.**<br><br>A. What do you understand by the terms milch animals and draught animals?<br>**OR**<br><br>B. What is the advantage of cross-breeding local and exotic cattle breeds? | |
| | C. List the two types of feed requirements for dairy animals. | |
| | D. What good management practices are used in cattle farming? | |
| 39 | Echo is caused due to the reflection of sound. Echo can be heard on shouting in mountains. Also, it can be heard on talking in an empty closed room. Sound originated due to echo is same as the original sound, only the direction gets reversed due to reflection. Echo necessarily needs a hard surface or surfaces of high density for reflecting sound waves back. Because if sound waves meet soft surfaces, which are of low density, then sound waves will get absorbed and there will be no echo. To hear an echo, distance between sound source and reflecting surface should be minimum 17.2m. Time interval between the waves should be minimum 0.1s, to hear an echo. The conditions for an echo are utilized in many ways, Echo is used in hydrographic studies which involves the measurement of water depth. The similar method is used for the discovery of marine life, underwater minerals, sunken ship etc. | 4 |



A. State the laws of reflection of sound.

B. Write two necessary conditions for an echo to be heard?

**Attempt either subpart C or D.**

C. Raj, while verifying the laws of reflection of sound, measured the angle between the incident sound wave and reflected sound wave to be 130°. What is the angle of incidence?

**OR**

D. What do you mean by frequency of a sound wave? A person is listening to a tone of 200 Hz sitting at a distance of 250m from the source of the sound. What is the time interval between successive compressions from the source?