Indian School Al Wadi Al Kabir

Midterm Examination (2024-2025)

Class: IX Sub: Science (086) Max. Marks: 80

Date: 26/09/2024 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. Answer to these questions should be in the range of 80 to 120 words.

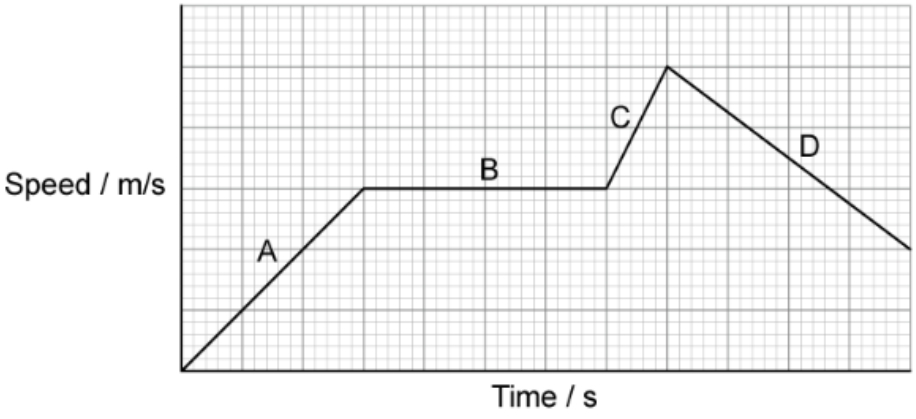
vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts

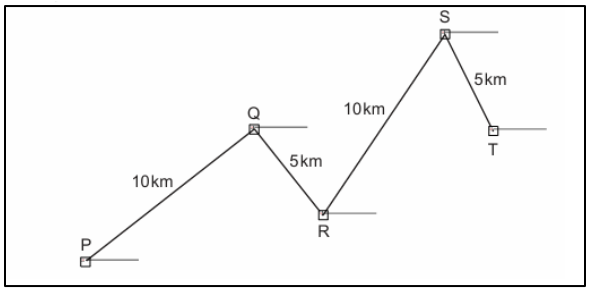
SECTION - A

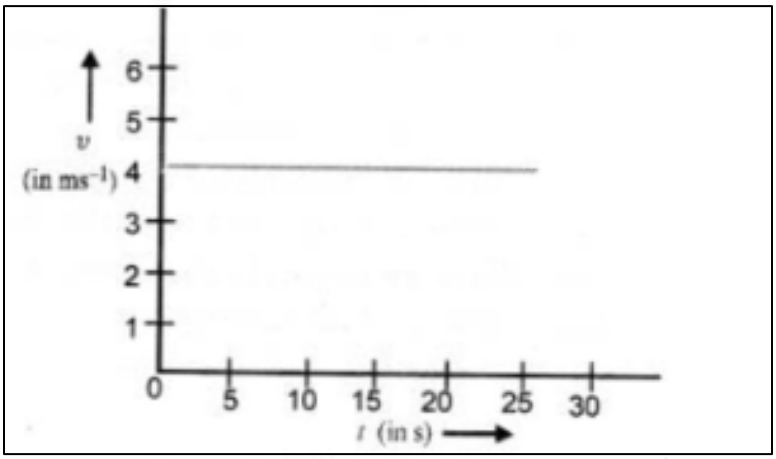
Select and write one most appropriate option out of the four options given for each of the questions 1 – 20

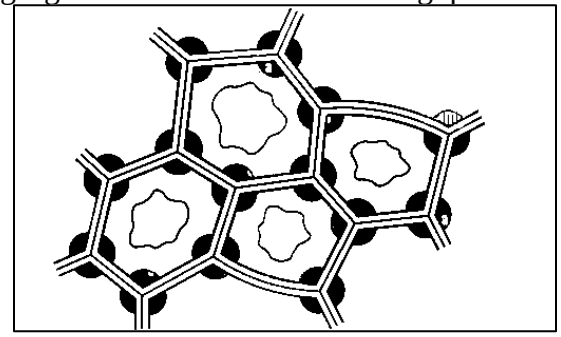
Q. No	Questions	Marks
1	Mixture can be: a) Homogeneous. b) Heterogeneous. c) Both (a) and (b). d) pure substance.	1
2	Which of the following has highest kinetic energy? a) Particles of ice at 0 °C. b) Particles of water at 0 °C. c) Particles of water at 100 °C. d) Particles of steam at 100 °C.	1
3	The boiling points of diethyl ether, acetone and n-butyl alcohol are 35^0C, 56^0C,118^0C respectively. Which one of the following correctly represents their boiling points in Kelvin scale? a) 306K, 329K,391K b) 308K, 329K, 392K c) 308K, 329K, 391K d) 329K,392K, 308K	1

4	Which of the following statements accurately describe pure substances? (i) Pure substances consist of only one type of particles. (ii) Pure substances can be compounds or mixtures. (iii) Pure substances maintain a consistent composition throughout. (iv) Pure substances are exemplified by all elements except nickel. a) (i)and (ii) b) (i)and (iii) c) (iii) and (iv) d) (ii)and (iii)	1
5	Which of the following are physical changes? (i) Melting of iron metal. (ii) Rusting of iron metal. (iii) Bending of an iron rod. (iv) Drawing a wire of iron metal. a) (i), (ii) and (iii) b) (i), (ii) and (iv) c) (i), (iii) and (iv) d) (ii), (iii) and (iv)	1
6	Which of the following is a homogeneous mixture? a) Salt water b) Sand and iron filings c) Oil and water d) Milk and water	1
7	In which of the following conditions, would the distance between the molecules of hydrogen gas increase? (i) Increasing pressure on hydrogen contained in a closed container. (ii) Some hydrogen gas leaking out of the container. (iii) Increasing the volume of the container of hydrogen gas. (iv) Adding more hydrogen gas to the container without increasing the volume of the container. a) (i) and (iii) b) (i) and (iv) c) (ii) and (iii) d) (ii) and (iv)	1
8	Which property of plasma membrane helps 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 substances across the membrane.	1
9	Which of the following function is performed by smooth endoplasmic reticulum?	1

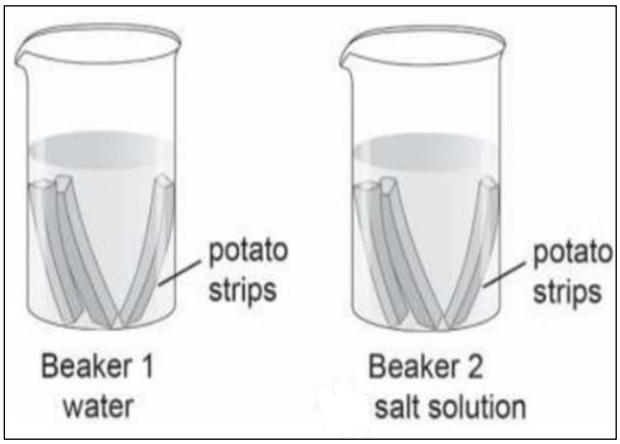
	a) It helps to expel excess water and waste out of the cell. b) It helps to produce ATP molecules. c) It helps to digest small foreign particles. d) It helps to detoxify the drugs.	
10	How does endoplasmic reticulum help transport protein between various regions of the cytoplasm? a) By forming a network of membrane-bound tubes in the cytoplasm. b) By occupying most of the space in the cytoplasm. c) By storing and packaging the proteins. d) By directing all cell organelles to perform the same biochemical activity.	1
11	Colourless plastids are known as: a) Thermoplast. b) Chloroplasts. c) Leucoplasts. d) Chromoplasts.	1
12	Survival of plants in terrestrial environment has been made possible by the presence of: a) Intercalary meristem. b) Conducting tissue. c) Cork cells. d) Epidermal cells.	1
13	In which section of the graph is the most distance covered?  a) A b) B c) C d) D	1

14	A car travels along the route PQRST in 30 minutes.  What is the average speed of the car? a) 10km/hour b) 20km/hour c) 30km/hour d) 60km/hour	1
15	Meristematic tissues in plants are: a) Localised and dividing cells. b) Localised and permanent. c) Not limited to certain regions. d) Growing in volume.	1
16	Which is **not** a function of epidermis? a) Protection b) Transpiration c) Conduction of water d) Gaseous exchange	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: (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		
17	**Assertion**: Rate of evaporation of an aqueous solution increases with increase in humidity. **Reason**: When there is increase in humidity, atmosphere will not take water vapour easily which decreases the process of evaporation.	1
18	**Assertion**: Permanent tissues are derived from meristematic tissue once they lose the ability to divide. **Reason**: Meristematic tissue is the dividing tissue present in the growing regions of the plant.	1
19	**Assertion**: When a firefly hits a bus, each of them exerts the same force on each other. **Reason**: Firefly has less mass as compared to the mass of the bus.	1

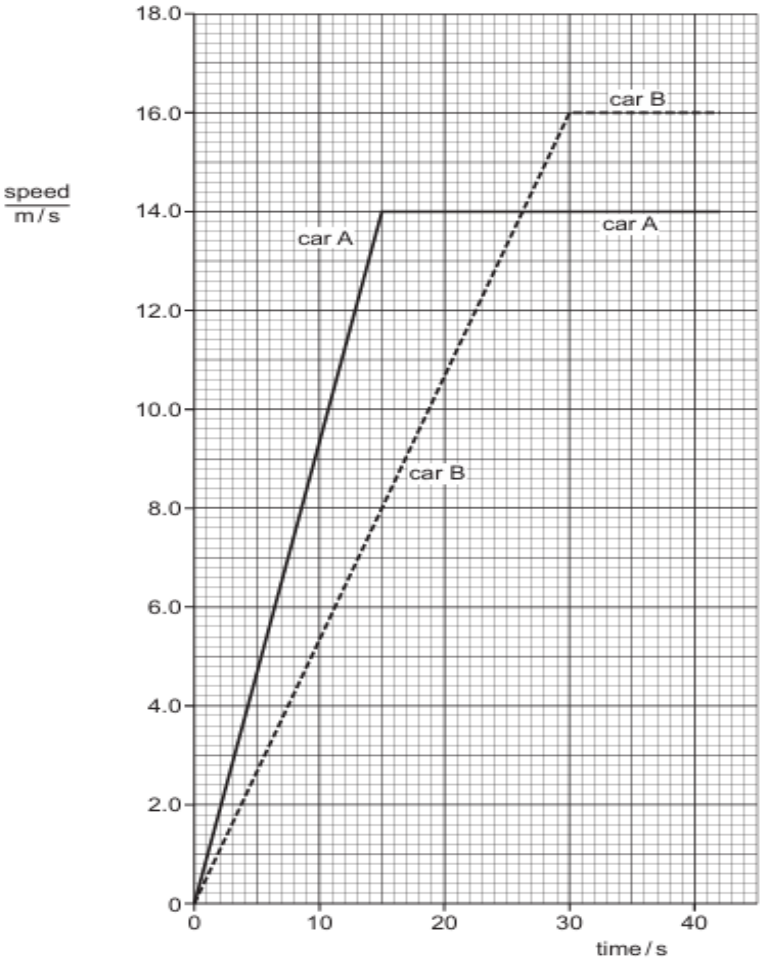
20	**Assertion**: The shape and size of cells are related to the specific function they perform. **Reason**: Some cells like ovum and bone cell can change its shape to perform its functions.	1
	SECTION – B Q. no. 21 to 26 are very short answer questions	
21	Why does our palm feel cold when we put some acetone or petrol or perfume on it?	2
22	How are the following related to each other? a) Chloroplast and chlorophyll b) Nucleus and nucleoid	2
23	a) What do you understand by the term membrane biogenesis? b) Mention any one point of difference between mitosis and meiosis.	2
24	a) Velocity-time graph of a body is shown in figure.  What conclusion can be drawn about the velocity of the body from this graph? b) What does the slope of velocity-time graph give? **OR** a) Is acceleration a scalar or vector quantity? Explain. b) Draw distance-time graph of a moving object on which net external force acting is zero.	2
25	a) State Newton's first law of motion. b) When a fast-moving horse stops suddenly a careless rider falls in the forward direction. Give reason.	2
26	If cells of onion peel and RBC are separately kept in hypotonic solution, what will happen to each of them? Explain. **OR** a) Name the two strange organelles of the cells. b) Why is the inner membrane of mitochondria deeply folded?	2

SECTION - C Q.no. 27 to 33 are short answer questions.		
27	a) State one similarity and one difference between evaporation and boiling. b) Account for the following: Wet clothes dry slowly during rainy season.	3
28	i) Identify the following as mixtures or compounds. a) Blood b) Salt c) Sugar d) Brass ii) Write any two differences between compounds and mixtures. OR i) Give any one difference between homogeneous and heterogeneous mixtures. Give one example of each. ii) Particles of solution cannot be seen with naked eye. Give reasons.	3
29	Draw a neat labelled diagram showing the sectional view of phloem.	3
30	Give reasons for the following a) When a tree is vigorously shaken, some of the leaves fall from the tree. b) A cricketer moves his hands backwards while catching a ball. c) If a man jumps out from a boat, the boat moves backwards.	3
31	A car weighing 1800 kg moving with a velocity of 40 m/s retards uniformly coming to rest in 20 seconds. Calculate the a) initial and final momentum of the car. b) rate of change of linear momentum of the car. c) acceleration of the car.	3
32	a) Define uniform circular motion. Give an example b) Is uniform circular motion an accelerated motion? Justify. c) What is the difference between speed and velocity in uniform circular motion?	3
33	Study the following figure and answer the following questions:  a) Mention any one characteristic feature of the tissue shown in the figure given below. b) Copy the diagram and label all the parts of the figure given.	3

SECTION - D Q.no. 34 to 36 are Long answer questions.		
34	i) Account for the following: a) When sugar crystals dissolve in water, the level of water does not rise appreciably. b) Naphthalene balls disappear with time without leaving any solid residue. c) A wooden table should be called a solid. ii) Identify the heterogeneous mixtures. a) Oil in water b) Sugar solution c) Alcohol in water d) Chalk powder in water iii) How does temperature affect the rate of evaporation? **OR** i) Convert 574K to Celsius scale. ii) Define boiling point. iii) The molecules of water have more energy compared to molecules of ice at same temperature. Justify this statement. iv) List any two properties of solutions.	5
35	a) Explain the three types of meristematic tissues. b) With the help of a simple and neat labelled diagram show the location of meristematic tissues in the plant body. **OR** a) How is xylem different from that phloem? b) Mention any two characteristic features of parenchymatous tissue. c) Why is husk of coconut hard and stiff?	5
36	a) State Newton's second law of motion. b) Using Newton's law of motion, derive the relation between force and acceleration. c) What is the unit of force? d) If the force acting on a body is 10 N, and the acceleration is 4 m/s ^{2}, what can be the mass of the body? **OR** a) Define momentum. Write its SI unit. b) A heavy and a light object have same momentum. Which of these is travelling faster? Justify. c) A truck of mass 'm' is moved under a force 'F'. If the truck is then loaded with an object equal to the mass of the truck and the driving force is halved, then how does the acceleration change? Explain.	5
SECTION – E 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	Pure substances are substances which contain only one type of particles. Mixtures contain two or more different types of particles. Elements and compounds are pure substances. An element is the basic form of matter that cannot be broken down into simpler substances by chemical reactions. Elements can be normally divided into metals, non-metals and metalloids. A compound is a substance composed of two or more elements, chemically combined with one another in a fixed proportion. a) What are metalloids? b) Give any one difference between element and compound. c) Give two reasons to justify that water is a compound. OR c) Elements can be classified as metals, non-metals and metalloids. Give any one property of metals and non-metals. Also give one example each of metals and non-metals	4
38	Sania cuts out 5 cm long potato strips. She puts three potato strips in each of the following beakers: Sania leaves the potato strips in the beaker for 5 hours. • Beaker 1 containing only water. • Beaker 2 containing salt solution.  She records the length of the potato strips in each beaker after 5 hours.	4

	Length of the potato strip before placing in the beaker (cm)	Length of the potato strip after 5 hours in the beaker (cm)
Beaker 1 water	5.0	5.3
	5.0	5.2
	5.0	5.2
Beaker 2 salt solution	5.0	5.0
	5.0	5.0
	5.0	4.9

	a) What is osmosis? b) What change do you observe in the length of the potato strips in beaker 2 after 5 hours and why? c) What is hypertonic solution? **OR** c) What happens when the plasma membrane of a cell breaks down?	
39	Figure shows the speed–time graphs for two cars, A and B. Analyze and use information from the graph to answer the following questions.  a) Determine the speed of car A at time 10 s. b) Describe the motion of car B after 30 s. c) State and explain which car, A or B, has the greater acceleration during the first 10 seconds. **OR** c) Calculate the distance moved by car B from time 0s to time 30.0 s.	4