विद्या सर्वार्थि साधिका

ANANDALAYA

PERIODIC TEST - 1

Class: IX

Subject: Science (086) MM : 40

Date : 16-07-2025 Time: 1 Hour 30 min

General Instructions:

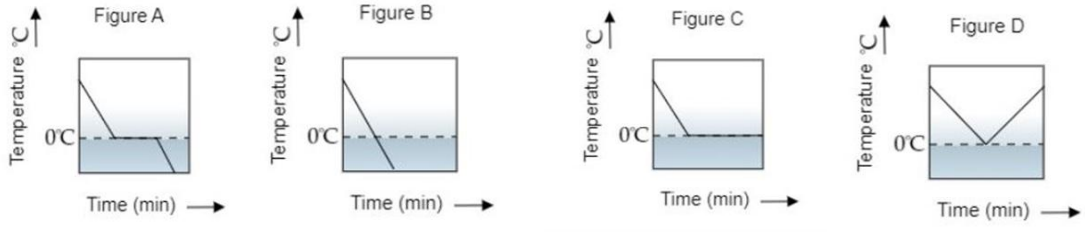
1. This question paper consists of 17 questions. All questions are compulsory.
2. Section A consists of 8 Objective type questions carrying 1 mark each.
3. Section B consists of 2 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
4. Section C consists of 2 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
5. Section D consists of 2 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.
6. Section E consists of 3 Source-based/case-based units of assessment of 04 marks each with sub-parts.

SECTION A

1. Which one of the following is true regarding distance and displacement? (1)
   (A) Distance is always equal to displacement.
   (B) Distance is always greater than displacement.
   (C) Distance can be equal or greater than displacement.
   (D) Distance is always less than displacement.

2. An object travels 20 m in 4 s and then another 16 m in 2 s. What is the average speed of the object? (1)
   (A) 6.6 m/s (B) 5 m/s (C) 8 m/s (D) 6 m/s

3. A glass tumbler containing hot water is placed in the freezer compartment of a refrigerator (temperature below 0°C). If the temperature of the water is measured over time, which of the following graphs best represents the change in temperature of the water with respect to time? (1)



4. Latent heat of fusion is the amount of heat energy required to change _____. (1)
   (A) 1 Kg of solid completely into liquid at room temperature.
   (B) 1 Kg of solid completely into liquid at its melting point.
   (C) 1 g of solid completely into liquid at its melting point.
   (D) 1 g of solid completely into liquid at room temperature.

5. Which of the following exhibits the property of diffusion? (1)
   (A) Iron nail in water (B) smoke mixing with air
   (C) stone in water (D) sand setting in water

6. Which statement does not pertain to the endoplasmic reticulum? (1)
(A) It serves as a conduit for protein transportation between the nucleus and cytoplasm.
(B) It facilitates the movement of materials within the cytoplasm.
(C) It may function as a site for certain cellular biochemical processes.
(D) It can serve as the site for energy production.

For question numbers 7 & 8, two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is NOT the correct explanation of A.
(C) A is true but R is false.
(D) A is false and R is also false.

7. A: The path of an object maintaining a uniform motion is a straight line path. (1)
R: In uniform motion the direction and magnitude of velocity change continuously.

8. A: An inflated balloon will shrink if it is placed in a refrigerator. (1)
R: As temperature decreases, the air inside the refrigerator comes closer and creates pressure on balloon.

SECTION B

9. A body accelerating from rest reaches a velocity of 6 m/s in 3 s. How far does it go during this 3 second? (2)

10. What happens when you open a bottle of perfume? Name the phenomenon for your observation? (2)

SECTION C

11. (a) What is the physical state of water at (i) 250 ^{o}C and (ii) 373 K? (3)
(b) How does evaporation cause cooling?

12. Mehek placed dried raisins in plain water for two hours. Then she placed them into a sugar solution for next three hours. She recorded her observations in both the conditions. Write her observations with scientific reasons. (3)

SECTION D

13. (a) What is displacement? (5)
(b) Write one difference between distance and displacement.
(c) A girl cycling along a circular path of radius 7 m makes 2½ rotations in 20 s.
(i) What is the distance travelled and the displacement?
(ii) Also find its speed and velocity.

14. (a) Draw the diagram of a plant cell and label the following parts: (5)
(i) matrix-like substance in the nucleus (ii) RER (iii) Outermost cell layer
(b) Write any two differences between a prokaryotic cell and a eukaryotic cell.

SECTION E

Questions 15 to 17 are Source-based/Case study-based questions of 4 marks with sub-parts.

15. During uniform motion of an object along a straight line, the velocity remains constant with time. In this case, the change in velocity of the object for any time interval is zero. However, in non-uniform motion, velocity varies with time. It has different values at different instants and at different points of the path. Thus, the change in velocity of the object during any time interval is not zero. To answer such a question, we have to introduce another physical quantity called acceleration. (4)
If an object travels in a straight line and its velocity increases or decreases by equal amounts in equal intervals of time, then the acceleration of the object is said to be uniform.
(i) Define Acceleration

(ii) A mass moving with a speed of 3 m/s is accelerated to 6 m/s in 2 seconds. What is the acceleration of the mass?

(iii) (A) Draw a (v-t) graph to show uniformly accelerated motion.

OR

(B) Draw a (s-t) graph to show a uniformly accelerated motion.

16. Riya conducted an experiment at home to study the boiling behaviour of water and the energy involved during a phase change. She heated a beaker of water using a stove and recorded temperature readings every minute until all the water evaporated. She records her observations as follows. (4)

Observations

- The temperature of water increased steadily from 25°C to 100°C.
- At 100°C, the temperature remained constant even though heating continued.
- After about 20 minutes at 100°C, all the water turned into steam.
- A thermometer placed in the steam still showed 100°C.

Riya's chemistry teacher concludes these observations as:

- The boiling point of pure water at 1 atmospheric pressure is 100°C.
- When water reaches this temperature, it starts converting into steam.
- Despite continuous heating, the temperature does not increase beyond the boiling point during the phase change.
- The energy supplied after water reaches 100°C is used to break intermolecular bonds, not to raise the temperature.
- This energy is called the latent heat of vaporization.
- For water, it is 2260 kJ/kg — a large amount of heat is needed to change water into vapour without changing its temperature.

(a) Write the relation of boiling point of; liquid with the atmospheric pressure.

(b) Can sand change the boiling point of water when added to it? Justify your answer.

(c) Imagine you are on Mars, where atmospheric pressure is significantly lower than on Earth. How would this difference affect the boiling behaviour of water? Explain your reasoning.

17. A membrane surrounds each cell, separating its contents from the outside world. To sustain their sophisticated structure and function, large and complex cells, such as those seen in multicellular animals, require a lot of chemical activity. These cells use membrane-bound tiny structures within themselves to keep different kinds of activities apart from one another. The cytoplasm fills the space between the plasma membrane and the plasma membrane's outer layer, and it includes a variety of specialised cell organelles. (4)

(a) (i) Name the jelly-like fluid substance present in cells.

(ii) Which cell organelle is connected to the cell membrane in animal cells?

(b) Why is the plasma membrane called a selectively permeable membrane?

(c) How does the movement of CO_2 take place in the plant cell?