विद्या सर्वार्थ साधिका

ANANDALAYA

PERIODIC TEST -1

Class: IX

Subject: Science (086) MM : 40

Date : 18-07-2024 Time: 1 Hr. 30 min.

General Instructions:

1. There are 17 questions in all. All questions are compulsory.
2. This question paper has five sections: Section A, Section B, Section C, Section D and Section E. All the sections are compulsory.
3. Section A consists of 8 multiple choice questions of 1 mark each, Section B consists of 2 very short questions of 2 marks each, Section C consists of 2 short answer type questions of 3 marks each, Section D consists of 2 long answer questions of 5 marks each and Section E consists 3 source-based/case study based questions of 4 marks each with sub-parts.

SECTION A

1. Which one of the following is the correct statement? (1)
   (A) Distance is a scalar quantity whereas displacement is a vector quantity
   (B) Distance travelled is always smaller than displacement.
   (C) Distance travelled is always equal to displacement
   (D) Distance is always measured in km whereas displacement is always measured in m.

2. An object travels 16 m in 4 s and then another 16 m in 2 s. What is the average speed? (1)
   (A) 4 m/s (B) 8 m/s (C) 5.33 m/s (D) 6 m/s

3. Which of the following statements is not correct? (1)
   (A) Matter is particulate in nature.
   (B) Interparticle spaces are the maximum in the gaseous state of a substance.
   (C) Particles which constitute the matter follow the zig-zag path.
   (D) Solid state is the most compact state of a substance.

4. When heat is constantly supplied by a burner to boiling water, the temperature of the water during vaporisation _____. (1)
   (A) rises very slowly (B) rises rapidly until steam is produced
   (C) first rises and then becomes constant (D) does not rise at all

5. 'Cell arises from the pre-existing cell' as stated by _____. (1)
   (A) Ernst Haeckel (B) Rudolf Virchow (C) Robert Hooke (D) Matthias Jakob Schleiden

6. A cell will swell up if _____. (1)
   (A) The concentration of water molecules in the cell is higher than the concentration of water molecules in the surrounding medium.
   (B) The concentration of water molecules in the surrounding medium is higher than the concentration of water molecules in the cell.
   (C) The concentration of water molecules is the same in the cell and the surrounding medium.
   (D) The concentration of water molecules does not matter.

   For question numbers 7 and 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. Assertion: Velocity versus time graph of a particle in uniform motion along a straight path is a line parallel to the time axis. (1)
Reason : In uniform motion the velocity of a particle increases as the square of the time elapsed.

8. Assertion : Naphthalene does not leave a residue when kept in open for some time. (1)
Reason : The conversion of a gas directly into solid is called condensation.

SECTION B

9. (a) What do you call the 'Rate of change of velocity' as? Give its SI Units. (2)
(b) The velocity of a body changes from 3 m/s to 8 m/s in 2 s. What is the 'rate of change of velocity'?

10. Give two ways in which melting points and boiling points can be useful. (2)

SECTION C

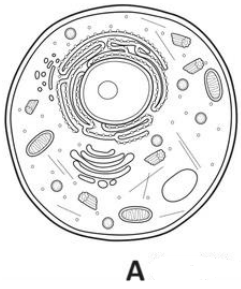
11. Comment on the following statements: (3)
(a) Evaporation causes cooling.
(b) Rate of evaporation of an aqueous solution decreases with increase in humidity.
(c) Sponge though compressible is a solid.

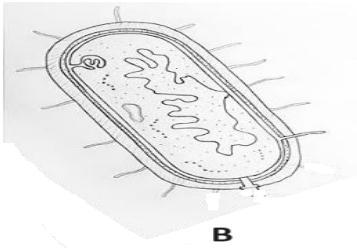
12. (a) What will happen when RBC cells are placed for 15 minutes in the hypotonic solution? (3)
(b) In plant cells, the nucleus is located toward the periphery. Why?
(c) When a person takes the concentrated solution of salt, after some time he starts vomiting. Explain the phenomenon responsible for such a situation.

SECTION D

13. (a) Write the three equations of motion. (5)
(b) A motorboat starting from rest on a lake accelerates in a straight line at a constant rate of 3.0 ms^{-2} for 8.0 s. How far does the boat travel during this time? What will be its velocity at 8 seconds?

14. (a) Name the cell organelle based on the following functions: (5)
(i) It is the site for lipids synthesis and helps in the detoxification of drugs.
(ii) The inner membrane is folded to form cristae, it has its DNA and proteins.
(iii) It helps in the formation of lysosomes.
(iv) It imparts colour to the fruit and flowers.
(b) (i) Identify the figures labelled as **A** and **B.**


A


B

(ii) Write any two differences between figures A and B based on their size and cell inclusions.

SECTION E

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

15. To describe the motion of an object, we can use line graphs. In this case, line graphs show dependence of one physical quantity, such as distance or velocity, on another quantity, such as time. Distance-time graphs can be employed under various conditions where objects move with uniform speed, non-uniform speed, remain at rest etc. for uniform speed, a graph of distance travelled against time is a straight line. We know that the product of velocity and time give displacement of an object moving with uniform velocity. We can also find the magnitude of the displacement from this graph.

(i) What is the nature of the distance-time graphs for uniform and non-uniform motion of an object? (1)

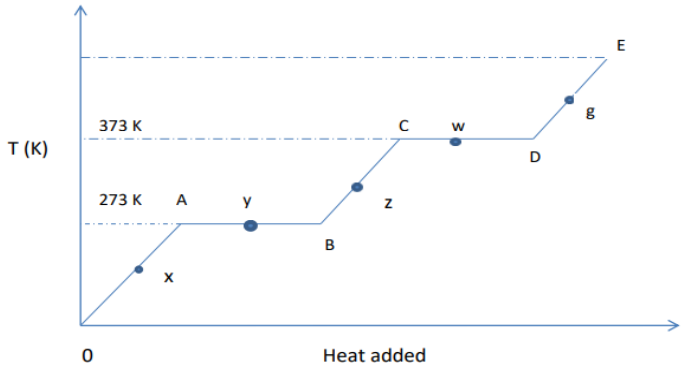
(ii) What can you say about the motion of an object whose distance-time graph is a straight line parallel to the time axis? (1)

(iii) Draw a velocity - time graph for a uniformly accelerated motion. What will be the area below the graph equal to? (2)

OR

(iii) Draw a distance - time graph for a uniform motion. How will you find the velocity (or speed) from this graph?

16. A teacher asked a group of students to heat a given sample of ice and draw a heating curve representing temperature rise as a function of heat added. After performing the experiment at one atmospheric pressure, the students gave the following curve



(i) What is the physical state of substance at point y? (1)

(A) Ice only (B) Water only (C) Ice and water coexist (D) Ice and vapour

(ii) Heat added per gram of the substance along the line CD is known as _____. (1)

(A) specific heat (B) reserve heat

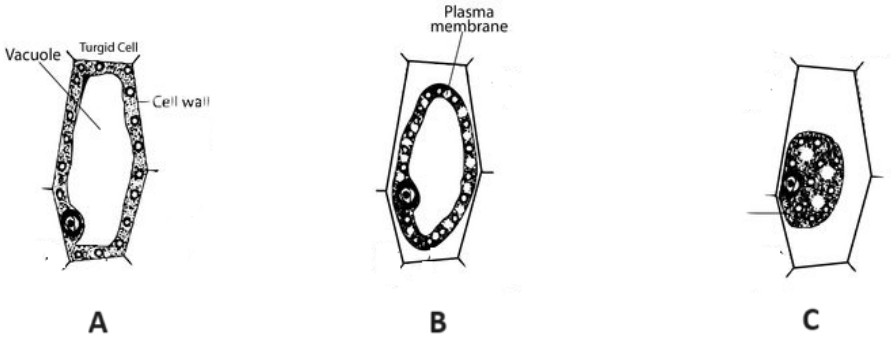
(C) solar heat (D) latent heat of vaporisation

(iii) What is the physical state of water at point w. Give reason (2)

OR

(iii) Which lines represent the change of state without undergoing any change of temperature?

17. The students prepared the temporary mount of onion peel cells in the laboratory to observe the components of the plant cells. Pratik observed under the microscope that onion peel cells on his slide appeared as given below in figures **A, B** and **C**.



(i) Which physical process can be explained from the given figures **A, B** and **C**? (1)

(A) Osmosis and Plasmolysis (B) Imbibition and Plasmolysis

(B) Plasmolysis only (D) Imbibition only

(ii) The cell content in Figure **B** is _____ to its surrounding medium. (1)

(A) hypertonic (B) hypotonic (C) isotonic (D) hydrotonic

(iii) Identify and define the type of cell membrane of the cell labelled as **A**. (2)

OR

(iii) What should Pratik do if he wants cells **B** and **C** to appear as cell A in the onion peel of his slide?