

Bhavan's Tripura Vidyamandir1st Periodic Assessment: (2025-2026)**Class:- 9**

Time:- 2 Hours

Name of the student :

Subject:- Science

Total:- 50 Marks

Roll: Sec:

SECTION A**Choose the correct option.****(1X10=10)**

1. The area under a velocity-time (v-t) graph represents a physical quantity. What is the unit of this quantity?
(a) m/s (b) m (c) m/s² (d) s
2. When a person jumps from a boat to the shore, the boat moves backward due to:
(a) Action-reaction force (b) Gravitational force
(c) Frictional force (d) Buoyant force
3. Which of the following Conditions is most favourable for converting a gas into liquid:-
(a) High Pressure, low temperature (b) Low Pressure, low temperature
(c) Low Pressure, high temperature (d) High Pressure, high temperature
4. What happens to the arrangements of particles when a substance changes from solid to liquid state:-
(a) Particles come closer together
(b) Particles move further apart
(c) Particles become arranged in a regular pattern
(d) Intermolecular attraction force between particles increases.
5. Which of the following statements about the plasma membrane is FALSE?
(a) It allows the movement of only water molecules in and out of the cell
(b) It is composed of lipids and proteins
(c) It is selectively permeable in nature
(d) It helps in osmosis and diffusion
6. If a cell is placed in a hypertonic solution, what will most likely happen to the cell?
(a) It will gain water and burst (b) No change will occur
(c) It will lose water and shrink (d) The cell wall will dissolve
7. Which of the following best explains why mitochondria are called the "powerhouse of the cell"?
(a) They synthesize proteins
(b) They generate energy in the form of ATP during cellular respiration
(c) They contain digestive enzymes
(d) They regulate cell division
8. Which organelle is known to contain its own DNA and can replicate independently of the nucleus?
(a) Lysosome (b) Endoplasmic Reticulum
(c) Mitochondria (d) Golgi apparatus
9. The major distinguishing feature of a prokaryotic cell is:
(a) Presence of DNA (b) Presence of a plasma membrane
(c) Absence of membrane-bound organelles (d) Presence of ribosomes
10. The hydrolytic enzymes of the cell are mostly found in:
(a) Nucleus (b) Golgi apparatus (c) Lysosomes (d) Mitochondria

SECTION B**Answer the following questions .****(2X3=6)**

11. Distinguish between speed and velocity.
12. Rita was making tea in a kettle. Suddenly she felt intense heat from the puff of steam gushing out of spout of kettle. She wondered whether the temperature of the steam was higher than that of water boiling in the kettle. Comment on your answer.
13. Differentiate between prokaryotic and eukaryotic cells.

SECTION C**Answer the following questions.****(3X5=15)**

14. A car accelerates uniformly from 18 km h⁻¹ to 36 km h⁻¹ in 5 s. Calculate
(i) the acceleration and (ii) the distance covered by the car in that time. **(1.5+1.5)**
15. Define momentum. Write its expression and SI unit. **(1+1+1)**

Or,State Newton's 2nd law of motion. Write its mathematical expression .**(2+1)**

16. A student heats a beaker containing ice and Water. He measures the temperature of the content as a function of time. Draw the graph of temperature vs time related with it and explain it. Write one use of dry ice. (2+1)

OR

Why do trees acquire more leaves during summer? Why is ice at 273K more effective in cooling than water at the same temperature? Why do we see water droplets on the outer surface of a glass containing ice-cold water? (1+1+1)

17. Why does a desert cooler cool better on a hot dry day? Liquids generally have lower density as compared to solids, but you must have observed that ice floats on water why? Define the term Brownian Motion? (1+1+1)

18. Explain the role of the plasma membrane in selective permeability. How does it facilitate both passive and active transport? Give one example of each type.

SECTION D

Answer the following questions.

(5X3=15)

19. Prove that $F=ma$

A stone of 1 kg is thrown with a velocity of 20 m s⁻¹ across the frozen surface of a lake and comes to rest after travelling a distance of 50 m. What is the force of friction between the stone and the ice? (3+2)

20. Comment on the following statements:-

- (a) Evaporation produces cooling.
- (b) Rate of evaporation of an aqueous solution decreases with increase in humidity.
- (c) Sponge though compressible is a solid.

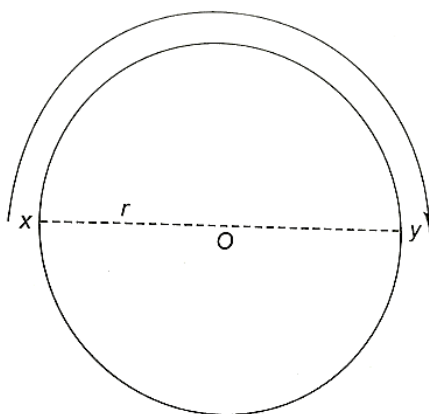
When a crystal of potassium permanganate is placed in a beaker containing water its purple colour spreads throughout the water, what do you conclude from the observation about the nature of potassium permanganate and water? (3+2)

21. (a) Compare the structure and functions of mitochondria and plastids in a plant cell.
(b) Explain the role of the plasma membrane and lysosomes in maintaining cellular balance.
(c) What would happen to a cell if the Golgi apparatus is removed? Justify your answer. (2+2+1)

22. **Read the given case and Answer the following questions.**

(1X4)=4

A cyclist moves from a certain point X and goes round a circle of radius r and reaches Y, exactly at the other side of the point X, as shown in Fig.



- i. The displacement of the cyclist would be

- (a) $2\pi r$
- (b) $2\pi r$
- (c) $2r$
- (d) $2\pi / r$

- ii. In the above problem, the distance covered by the cyclist would be

- (a) $2\pi r$
- (b) $2\pi r$
- (c) $2r$
- (d) $2\pi / r$

- iii. Which of the following relation represents the relationship between the average speed, time and distance correctly?

- (a) Average speed = distance $\times$ time
- (b) Average speed = total distance / total time
- (c) Time = average speed + distance
- (d) Distance = average speed $\times$ (time)²

- iv. Which instrument measures distance?