



# PARAMOUNT INTERNATIONAL SCHOOL

Session 2024-25

Mid Term Examination

If you don't learn from your mistakes, there's no sense of making them.

Class: IX

Time: 3 Hours

Subject: Science

Maximum Marks: 80

Set - A

## General Instructions:

1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective type questions carrying 1 mark each.
4. 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.
5. 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.
6. 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.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts

## Section - A

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

1. A pure substance consists of a ..... type of particle/particles  
 (a) Single                      (b) Double                      (c) Triple                      (d) Half
2. Which of the following is most suitable for summer?  
 (a) Cotton                      (b) Nylon                      (c) Polyester                      (d) Silk
3. Intermolecular space is the least in  
(a) Water                       (b) Steam                      (c) Ice                      (d) All of them
4. Which of the following has the strongest inter-particle forces at room temperature?  
(a) Oxygen                      (b) Water                      (c) Bromine                       (d) Iron
5. Which of the following statements is true about a solution?  
(a) It is a heterogeneous mixture.  
(b) It contains only solute.  
 (c) It has uniform composition.  
(d) It cannot be separated by physical methods.
6. In tincture of iodine, find the solute and solvent?  
(a) alcohol is the solute and iodine is the solvent  
(b) iodine is the solute and alcohol is the solvent  
(c) any component can be considered as solute or solvent

- \* (d) tincture of iodine is not a solution
7. Blood and sea water are  
 (a) Blood is a compound and sea water is a mixture (b) both are compound  
 (c) Blood is a mixture and sea water is a compound (d) both mixtures
8. Which of the following is an example of an element?  
 (a) Water ( $H_2O$ ) (b) Carbon dioxide ( $CO_2$ )  
 (c) Oxygen ( $O_2$ ) (d) Salt ( $NaCl$ )
9. Which type of cell division is involved in the growth of the body?  
 (a) Mitosis (b) Meiosis (c) both a and b (d) Neither of the two
10. The nuclear region of prokaryotes is also known as  
 (a) Nucleoid (b) Nucleolus (c) Nucleus (d) None of these
11. Nerve cells don't contain  
 (a) Axon (b) dendrite (c) nerve endings (d) tendons
12. Bone matrix is rich in  
 (a) Ca & F (b) Ca&Mg (c) P&K (d) Ca &P
13. Which of the following doesnot have cartilage  
 (a) Nose (b) Ear (c) Larynx (d) Kidney
- \* 14. Suppose a boy is enjoying a ride on a merry-go-round which is moving with a constant speed of 10 m/s. It implies that the boy is:  
 (a) At rest  
 (b) Moving with no acceleration  
 (c) In accelerated motion  
 (d) Moving with uniform velocity
15. A particle is moving in a circular path of radius  $r$ . The displacement after half a circle would be:  
 (a) Zero (b)  $\pi r$  (c)  $2r$  (d)  $2\pi r$
- \* 16. An object of mass 2 kg is sliding with a constant velocity of 4 m/s on a friction less horizontal table. The force required to keep the object moving with the same velocity is:  
 (a) 32 N (b) 0 (c) 2 N (d) 8 N

**Question No. 17 to 20 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:** When a beam of light is passed through a colloidal solution placed in dark place the path of the beam becomes visible.  
**Reason:** Light gets scattered by the colloidal particles.
18. **Assertion:** The central vacuole of some plant cells may occupy 50-90 percent of the cell

**Reason :** Many substances of importance in life of the plant are stored in vacuoles.

**Assertion-**A small children pushes heavy box, but it cannot move easily.

**Reason-**When box is heavy it cannot move from one place to another place.

20. **Assertion:** Flexibility in plants is due to collenchyma

**Reason:** It provides mechanical support and allows easy bending of plant parts.

### Section – B

**Question No. 21 to 26 are very short answer type questions**

21. Differentiate between homogeneous and heterogeneous mixture with example.

22. Which organelle is known as the powerhouse of the cell? Give reason.

23. How does simple permanent tissue differ from complex permanent tissue ?

OR

Define the term differentiation in context of plant tissues

✖ 24. Draw a distance-time graph for uniform and non-uniform motion of an object.

✖ 25. Explain why it is easier to stop a tennis ball than a cricket ball moving with the same speed.

OR

Calculate the momentum of a toy car of mass 200g moving with a speed of 5m/s.

✖ 26. What is the role of epidermis in plants?

### Section – C

**Question No.27 to 33 are short answer type questions.**

✖ 27. To make a saturated solution 36 g of NaCl is dissolved in 100 g of water at 293 K. Find its concentration at this temperature.

28. Write three differences between Physical and Chemical changes.

OR

Write any three differences between Colloidal solution and Suspension.

29. Write the differences between Prokaryotic and Eukaryotic cells.

30. a) Write any two features of cardiac muscles .

b) Name the tissue that makes the husk of the coconut.

31. Explain Newton's 3<sup>rd</sup> law of motion with 3 examples

✖ 32. a) Define Inertia and its types with examples.

b) What is uniform and non uniform acceleration?

33. a) Define force.

✖ b) Define one Newton.

c) Define average speed.

### Section – D

**Question No. 34 to 36 are Long answer type questions.**

34. (a) Define diffusion. Explain the rate of order of diffusion in solid, liquid and gas.

(b) How can we liquefy a gas?

OR

- (a)  $\text{CO}_2$  is a gas. Write its two gaseous properties to justify it.  
(b) A gas exerts pressure on the walls of the container, why?  
(c) Solid  $\text{CO}_2$  is also known as dry ice. Why?  
(d) Write two points of differences between evaporation and boiling.
35. (a) State one function of each the following  
1) Nervous Tissue. 2) Glandular Epithelium. 3) Cuboidal Epithelium  
(b) Give reason  
1) Muscles are able to contract and relax to bring about movements.  
2) Cells of sclerenchyma tissue has a narrow lumen
36. a) Write any three applications of Newton's second law of motion with explanation.  
b) A bullet of mass 10 g is fired with a rifle. The bullet takes 0.003 seconds to move through its barrel and leaves it with a velocity of 300 m/s. What is the force exerted on the bullet by the rifle?

OR

- a) A car starts from rest and moves along the x-axis with constant acceleration  $5\text{ms}^{-2}$  for 8 seconds. If it then continues with constant velocity, what distance will the car cover in 12 seconds since it started from rest?  
b) Show that how can you find velocity with the help of distance-time graph.

### Section – E

**Question No. 37 to 39 are case-based/data-based questions with 2 to 3 short sub-parts. Internal choice is provided in one of the sub-parts.**

37. A matter is anything that has mass and occupies spaces. Pen, clips, paper, sand, air, ice, etc are different forms of matter. Every matter is made up of small particles. These particles are so tiny that they can't be seen with naked eyes. Let's see about the different characteristics of particles of matter.

- All matter is made up of very tiny small particles.
- Particles of matter has spaces between them.
- Particles of matter are continuously moving.
- Particles of matter attract each other.

Use this information to answer the following questions:

- (a) How can you justify that table is a solid?  
(b) How can matter change its state?  
(c) What are the characteristics of matter?

OR

- (c) In which of the following, the particles have highest forces of attraction?  
Water, NaCl (solid), ice or wax.

Plasma membrane or Cell membrane is the outermost covering of the cell that separates the contents of the cell from its external environment. The plasma membrane is flexible and is made up of organic molecules called lipids and proteins. The flexibility of the cell membrane also enables the cell to engulf in food and other material from its external environment. Such processes are known as endocytosis. The plasma membrane allows or permits the entry and exit of some materials in and out of the cell. It also prevents movement of some other materials. The cell membrane, therefore, is called a selectively permeable membrane.

Some substances like carbon dioxide or oxygen can move across the cell membrane by a process called diffusion. There is spontaneous movement of a substance from a region of high concentration to a region where its concentration is low. Similar thing happens in cells – some substance like CO<sub>2</sub> (carbon dioxide is cellular waste and requires to be excreted out by the cell) accumulates in high concentrations inside the cell. In the cell's external environment, the concentration of CO<sub>2</sub> is low as compared to that inside the cell. As soon as there is a difference of concentration of CO<sub>2</sub> inside and outside a cell, CO<sub>2</sub> moves out of the cell, from a region of high concentration, to a region of low concentration outside the cell by the process of diffusion. Water obeys the law of diffusion. The movement of water molecules through such a selectively permeable membrane is called osmosis. The movement of water across the plasma membrane is also affected by the amount of substance dissolved in water. Thus, osmosis is the net diffusion of water across a selectively permeable membrane toward a higher solute concentration.

- (1) The plasma membrane is made up of \_\_\_\_\_
    - (a) Proteins
    - (b) Lipids
    - (c) Proteins and Lipids (Lipoproteins)
  - (2) Which of the following substance is known as cellular waste?
    - (a) Oxygen
    - (b) Nitrogen
    - (c) Carbon dioxide
  - (3) The movement of a substance from the region of higher concentration to the region where its concentration is lower is called as \_\_\_\_\_
    - (a) Osmosis
    - (b) Diffusion
    - (c) Excretion of CO<sub>2</sub> (carbon dioxide)
  - (4) Why cell membrane is known as selectively permeable membrane?
39. One day Rahul decided to go his office by his car. He is enjoying the driving along with listening the old songs. His car is moving along a straight road at a steady speed. On a particular moment, he notices that the car travels 150 m in 5 seconds.
- (i) What is its average speed ?
    - (a) ~~20~~ m/s
    - (b) 30 m/s
    - (c) 10 m/s
    - (d) 40 m/s
  - (ii) How far does it travel in 1 second ?
    - (a) 20 m
    - (b) 30 m
    - (c) ~~10~~ m
    - (d) 40 m
  - (iii) How long does it take to travel 240 m ?
    - (a) ~~2~~ s
    - (b) 4s
    - (c) 6s
    - (d) 8s

(iv) Which of the following statement is correct regarding velocity and speed of a moving body?

- (a) velocity of a moving body is always higher than its speed
- (b) speed of a moving body is always higher than its velocity
- (c) speed of a moving body is its velocity in a given direction
- (d) velocity of a moving body is its speed in a given direction

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*How*

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