



CLASS IX: SCIENCE(086)  
MIDTERM ASSESSMENT  
SESSION 2024-25

NAME: *ARNAV Khurana*

ROLL NO. *7*

Weightage:

80 marks.

Time Duration:

3 Hour

**Important Instructions:**

- This question paper consists of 39 questions in 5 sections.
- All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- Section A consists of 20 objective type questions carrying 1 mark each.
- 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.
- 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.
- Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.
- Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

**SECTION - A (20 x 1 = 20)**

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

- During summers, water kept in an earthen pot becomes cooler after some time. Which phenomenon leads to the cooling of water in an earthen pot? 1  
(a) Diffusion (b) Transpiration (c) Osmosis (d) Evaporation
- Which state of matter has no definite volume and no definite shape? 1  
(a) Solid (b) Liquid (c) Gas (d) Plasma
- The temperature at which a liquid changes into gas at the atmospheric pressure is called: 1  
(a) Boiling point (b) Freezing point (c) Melting point (d) Sublimation point
- In which state of matter do the particles have the maximum kinetic energy? 1  
(a) Solid (b) Liquid (c) Gas (d) Plasma
- Which of the following conditions is most favorable for converting gas into liquid? 1  
(a) High pressure, low temperature (c) Low pressure, high temperature  
(b) Low pressure, low temperature (d) High pressure, high temperature
- A solution that can dissolve more solute on rising the temperature is said to be: 1  
(a) Unsaturated (b) Saturated (c) Supersaturated (d) Concentrated
- In the tincture of iodine, find the solute and solvent? 1  
(a) Alcohol is the solute and iodine is the solvent (b) Iodine is the solute & alcohol is the solvent  
(c) Any component can be considered as solute or solvent (d) Tincture of iodine is not a solution

8. Which of the following is a characteristic feature of meristematic tissue?  
 (a) Cells with large vacuoles (b) Presence of intercellular spaces  
 (c) Rapid cell division (d) Highly specialized cells 1
9. Which statement below is incorrect?  
 (a) Some plant tissues continue to divide throughout their lifespan.  
 (b) Animals generally have fewer dead tissues compared to plants.  
 (c) Cells in animals tend to be more uniform and active compared to plants.  
 (d) There is clear demarcation between dividing and non-dividing regions in animals. 1
10. Which structure is found in plant cells but not in animal cells?  
 (a) Chloroplast (b) Centrioles (c) Lysosomes (d) Nucleus 1
11. Osmosis describes the movement of solvent molecules across a semipermeable membrane from a less concentrated solution to a more concentrated one. Which option does not belong to this process?  
 (a) The movement of water across the membrane depends on the dissolved substances.  
 (b) Membranes are composed of organic molecules like proteins and lipids.  
 (c) Solutes soluble in organic solvents can permeate the membrane easily.  
 (d) Plant plasma membranes contain chitin sugar. 1
12. Which organelle is responsible for the synthesis and packaging of proteins for secretion?  
 (a) Endoplasmic reticulum (b) Ribosomes  
 (c) Golgi apparatus (d) Mitochondria 1
13. A car runs at a uniform rate on a circular track of radius 100 m taking 62.8 s on each lap. The average velocity & average speed of the car for one complete lap is  
 (a) 10 m/s, 10 m/s (b) 0, 10 m/s (c) 0, 0 (d) 10 m/s, 0 1
14. A bullet of mass(m) 20 g is fired with a velocity(v) of 150 m/s from a pistol of mass(M) 2 kg. What is the recoil velocity(V) of the pistol? If recoil velocity  $V = -m v / M$   
 (a) 0.5 m/s (b) 15 m/s (c) 1.5 m/s (d) -1.5 m/s 1
15. A hockey ball of mass 200 g traveling at 10 m/s is struck by a hockey stick so as to return it along its original path with a velocity of 5 m/s. The change in momentum occurred in the motion of the ball is  
 (a) 1 kg m/s (b) 5 kg m/s (c) -3 kg m/s (d) 0 kg m/s 1
16. A cricketer pulls his hands backwards while taking a catch, to  
 (a) exert larger force on the ball (b) increase the rate of change of momentum  
 (c) reduce the force exerted on the hands (d) decrease the momentum 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 : In the mixture of copper sulphate and water, the path of light is not visible.  
 Reason : A mixture of copper sulphate and water is heterogeneous in nature. 1

18. Assertion: Sublimation is a physical change.  
Reason: Sublimation involves the direct conversion of a solid into a gas without passing through the liquid state

1

19. Assertion: The growth of plants occurs only in certain specific regions.

Reason: Meristems take up a specific role and lose the ability to divide.

1

20. Assertion: Speedometer of an automobile measures the average speed of an automobile.

Reason: Average velocity is equal to total displacement per total time taken.

1

### SECTION - B (6 x 2 = 12)

Q. no. 21 to 26 are very short answer questions carrying 02 marks each.

21. Mention two functions of collenchyma? Where are they found?

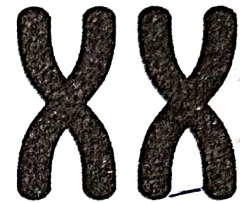
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22. What are the appendages/structures seen on the epidermis of stems and roots? What are their functions?

2

23. a) Identify the structure given alongside, also write down where this structures are to be seen?

b) What are these structures made up of? What is its function?

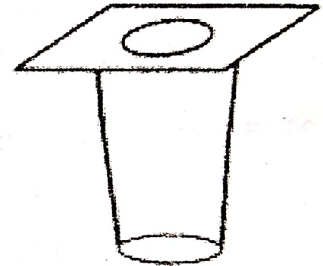


24. In the adjoining figure the card is flicked with a jerk

2

i) What do you observe in this case & why?

ii) State & name the law involved in this case



25. State which of the following situations are possible and give an example for each of these:

i) An object with constant acceleration but with zero velocity.

ii) An object moving with an acceleration but with uniform speed

2

OR

25. Usha swims in a 90 m long pool. She covers 180 m in one minute by swimming from one end to the other & back along the same straight path. Find the average speed & average velocity of Usha.

2

26. Convert the following temperature to Celsius scale:

(a) 300K

(b) 573K

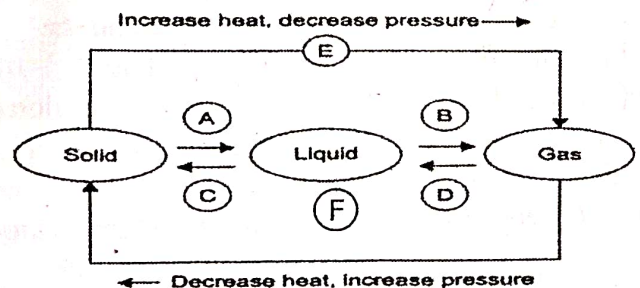
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### SECTION - C (7 x 3 = 21)

Q.no. 27 to 33 are short answer questions carrying 03 marks each.

27. Name A, B, C, D, E and F in the following diagram showing change in its state

( $\frac{1}{2} \times 6$ )



28. The teacher instructed three students 'A', 'B' and 'C' respectively to prepare a 40% (mass by volume)

solution of sodium hydroxide (NaOH). 'A' dissolved 60 g of NaOH in 100 mL of water, 'B' dissolved 30 g of NaOH in 100 g of water while 'C' dissolved 40 g of NaOH in water to make 100 mL of solution. Which one of them has made the desired solution and why? Give formula representation as well.

(1+2)

29. Draw a neat labelled diagram of the tissue that is responsible for conduction of food from the leaf to different parts of the plant (label at least four parts of the tissue) (3)

OR

29. What happens to a cell that is left in concentrated salt solution? By means of a self explained diagram show the flow of substances into and out of this cell. What is this process known as? (2.5+0.5)

30. (a) Define momentum. Write its S I unit.

(b) How much momentum will an object of mass 10 kg transfer to the floor, if it falls from a height of 5 m ( $g = 10 \text{ m/s}^2$ )? (3)

31.a)i) Under which condition is the magnitude of average velocity equal to average speed ?

ii) Which of the two can be zero under certain conditions : average speed of a moving body or average velocity of a moving body ?

b) A train starting from rest moves with a uniform acceleration of  $0.2 \text{ m/s}^2$  for 5 minutes. Calculate the speed acquired and the distance traveled in this time.

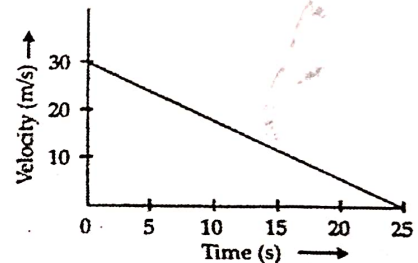
(3)

32. Velocity time graph of a 50 g marble rolling on a floor is given below. Find:

(i) time in which it stops.

(ii) negative acceleration produced on it.

(iii) positive force acting on the marble.



OR

32. A large truck & a car, both moving with a velocity of magnitude  $v$ , have a head on collision & both of them come to a halt after that. If the collision lasts for 1 s

a) which vehicle experiences a greater force of impact ?

b) Which vehicle experiences a greater change in momentum ?

c) which vehicle experiences a greater acceleration ?

(1+1+1)

Justify your answer in each case.

33. a) Differentiate between prokaryotic and eukaryotic cells with examples for each type (give two differences)

b) Why are viruses considered living or nonliving? Why?

(2+1)

### SECTION - D (3 x 5 = 15)

Q.no. 34 to 36 are Long answer questions carrying 05 marks each..

34. Comment on the following statements:

(a) Water at room temperature is a liquid.

(b) Rate of evaporation of an aqueous solution decreases with increase in humidity.

(c) Sponge though compressible is a solid.

(d) Evaporation causes cooling.

(e) An iron almirah is a solid at room temperature.

(1+1+1+1+1)

OR

34. Distinguish between the following (at least 2 points each)

(a) Metals and Non-Metals

(b) Elements and Compounds

(c) Homogeneous Mixture and Heterogeneous Mixture

(2+2+1)

- Which are the two organelle seen in the plants but not in animal cells? Write their functions in the plant cell.
- b) Draw the structure of an animal cell label any four structures visible under a microscope. Label an organelle seen only in animal cells. (2+2+1)

36. a) Derive the (first equation) velocity- time relationship using the velocity time graph of uniformly accelerated motion.
- b) A train moves with a speed of 30km/h in the first 15 minutes, with another speed of 40km/h in the next 15 minutes, and then with a speed of 60km/h in the last 30 minutes. Calculate the average speed of the train for this journey. (2+3)

OR

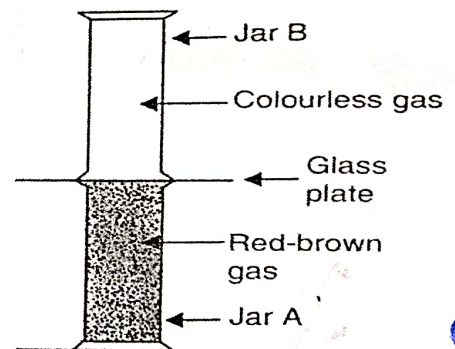
- 36.a) State the law of conservation of momentum. (1+2+2)
- Discuss the conservation of momentum in each of the following cases :
- a gunman gets a jerk on firing a bullet .
  - propulsion of a rocket
- b) A truck of mass 500 kg moving at 4 m/s collides with another truck of mass 1500 kg moving in the same direction at 2 m/s. What is their common velocity just after the collision if they move off together ?

### SECTION - E (4 x 3 = 12)

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. Look at the diagram on the right side. Jar A contains a red-brown gas whereas jar B contains a colourless gas. The two gas jars are separated by a glass plate placed between them. We observe that the red-brown gas will diffuse from jar A into colourless gas in jar B due to which its red-brown colour will also spread into jar B.

- What name is given to the phenomenon which takes place?
- Name the brown gas which could be in jar A.
- Why sea water can be classified as a homogeneous as well as heterogeneous mixture. Comment.



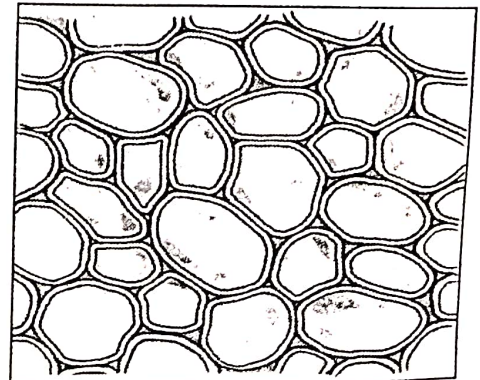
OR

- Classify the following into metals, non-metals and metalloids Germanium, Copper, Diamond, Iodine. (1+1+2)

38. Carefully read the following passage and answer the questions given below:

Plant tissues are composed of cells that are similar and perform a specific function. Together, tissue types combine to form organs. Each organ itself is also specific for a particular function. Plant tissue systems fall into one of two general types: meristematic tissue, and permanent.

- Which is the type of tissue given in the picture alongside? Why do you say so?
- Note down two special varieties/modifications of this tissue?
- Do these cells divide to give rise to more cells? Why or why not? What is the process of formation of these tissues known as? Define the term.



OR

c) Give two differences of this above mentioned tissue with that of Sclerenchymatous tissue? (1+1+2)

39.) Distance and displacement are two quantities that seem to mean the same but are different with different meanings and definitions. Distance is the measure of "how much distance an object has covered during its motion" while displacement refers to the measure of "how far is the object actually from initial place." Using the data answer the following questions. (1+1+1+1)

- a) Kapil travels 20 km North but then comes back to South for 40 km to pick up a friend. What is kapil's total distance travelled and the displacement?
- b) In which of the following cases of motion, the distance moved and the magnitude of displacement are equal?
- i) If the car is moving on a straight road
  - ii) If the car is moving in circular path
  - iii) The pendulum is moving to and fro
  - iv) The earth is revolving around the sun
- c) Which of the following is not a characteristic of displacement?
- i) It is always positive.
  - ii) It has both magnitude and direction.
  - iii) It can be zero
  - iv) Its magnitude is less than or equal to the actual path length of the object
- d) Define uniform motion. Draw the displacement -time graph to represent uniform motion.
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