MANAV RACHNA INTERNATIONAL SCHOOL,MOHALI
PERIODIC ASSESSMENT 2 (2024-25)
GRADE – IX
SUBJECT – SCIENCE (086)

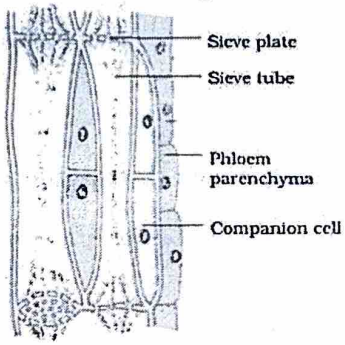
Set-B

Date: 16.09.2024
Time Allowed: 3 Hours
Maximum Marks: 80

General Instructions:

- Write the set number (A/B) of your question paper on the front page of the answer script.
- 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. Answer 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. There is internal choice only in the last part of the question.

Q. No	SECTION A Question numbers 1 to 20 are Multiple Choice Questions: (1x20=20)	Marks
1.	The property to flow is unique to fluids. Which one of the following statement is correct? (a) Only gases behave like fluids (b) Solids and gases behave like fluids (c) Gases and liquids behave like fluids (d) Only liquids are fluids	1
2.	When a pinch of common salt is dissolved in 50mL of H_2O taken in a graduated cylinder. Which of the following observation is correct? (a) Level of water in the graduated cylinder decreases. (b) Level of water in the graduated cylinder increases. (c) Level of water in the graduated cylinder remain the same. (d) All the observations are correct.	1
3.	Which of the following statement is correct when a piece of ice at -10 °C is heated to form water at +10 °C? (i) Temperature rises when ice at -10°C to converted into ice at 0°C. (ii) Temperature does not rise when ice at 0°C is converted into water at 0°C. (iii) Temperature rises when water at 0°C is converted into water at +10°C. (iv) Temperature keeps on rising continuously without any risk. (a) Only (i) is correct (b) Only (iv) is correct (c) Only (i), (ii),(iii) are correct (d) Only (i), (iii) and (iv) are correct	1
4.	2.5 g of solute are dissolved in 25 g of water to form a saturated solution at 298K. The solubility of solute at this temperature is: (a)15 g (b) 12.5 g (c) 10g (d) 20g	1
5.	Which of the following is a homogeneous mixture? (a) Sea water (b) Brass (c) NaCl solution (d) All of the above	1
6.	Which of the following solution shows Tyndall effect? (a) lemon juice in water (b) Sugar dissolved in water. (c) Iodine dissolved in alcohol. (d) Milk	1

7.	Which of the following solutions has the highest mass by volume percentage? (a) 10 g of sugar in 50 mL solution. (b) 25 g of potassium chloride in 100 ml solution. (c) 30 g of magnesium Sulphate in 50 ml solution. (d) 60 g of sodium chloride in 200 ml solution.	1
8.	A student observed the following points in a temporary mount slide (i) Large irregular flat cells with dense cytoplasm. (ii) Prominent nucleus placed centrally. (iii) Each cell bounded by cell membrane. Which type of cells he recognizes out of the following? (a) Onion peel cells (b) Nerve cells (c) Cheek cells (d) Stomatal cells	1
9.	Membrane biogenesis is the process of formation of plasma membrane. Which of the following cell organelles is not involved in this process? (a) Golgi apparatus (b) RER (c) SER (d) Mitochondria	1
10.	Given below is the diagram of tissue (Fig.1) which helps in conduction of food. Which element of the given tissue loses nucleus as it gets matured?  **Fig.1** (a) Sieve plate (b) Companion cell (c) Sieve tube (d) Phloem parenchyma	1
11.	Which among the following statements is incorrect regarding vacuoles? (a) Vacuoles are membranous structures. (b) Specialized vacuoles play an important role in expelling excess water and some salts from the cell. (c) Vacuoles are present only in plant cells. (d) In amoeba, digestion of food takes place in food vacuole.	1
12.	Which of the following cell organelle helps in detoxification of poison and drugs in liver cells of vertebrates? (a) Golgi Apparatus (b) Lysosomes (c) Rough Endoplasmic Reticulum (d) Smooth Endoplasmic Reticulum	1
13.	If a body executes uniform motion, then: (a) Speed of the body is constant. (b) Speed of the body will not be constant. (c) Acceleration of the body will be constant. (d) Speed of the body will be zero.	1
14.	A scooter of mass 90kg is moving with a constant velocity of 20km/h on a road. Net force acting on scooter moving with constant velocity is: (a) 32N (b) 1800N (c) 0N (d) 180N	1

15.	Tissue "A" repairs the injured tissue sand fill spaces within organs. Tissue "B" serves as a fat reservoir and carries out the function of insulator. Identify the animal tissue based on the given description (a) Tissue A is adipose; Tissue "B "is areolar tissue. (b) Tissue "A" is areolar tissue; Tissue "B" is adipose tissue. (c) Both are adipose tissues. (d) Both are epithelial tissues.	1
16.	Choose the correct characteristic feature about the cardiac cells. (a) Smooth, multinucleated and involuntary (b) Striated, uninucleated, unbranched and involuntary. (c) Striated, multinucleated, branched and voluntary. (d) Striated, uninucleated, branched and involuntary.	1
	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 (A):** Alloys are homogeneous mixture. **Reason (R):** Alloys cannot be separated into their components by physical methods.	1
18.	**Assertion (A):** Plants cell have a single large vacuole. **Reason (R):** Vacuole is responsible for ingestion of food substances.	1
19.	**Assertion (A):** Value of acceleration due to gravity does not depend on the mass of the object on which force of gravity acts. **Reason (R):** Acceleration due to gravity is same as the universal gravitational constant.	1
20.	**Assertion (A):** Epithelial tissue covers most of the organs and cavities within the body. **Reason (R):** All epithelial tissues are separated from the underlying tissue by an extracellular fibrous basement membrane.	1
	SECTION B **Question numbers 21 to 26 are Very short answer type questions:(2x6=12)**	
21.	i. Ramesh took two beakers A and B containing hot water and cold water respectively. In each beaker, he dropped a crystal of copper Sulphate. He kept the beakers undisturbed. After some time, what did he observe and why? ii. A sample of water under study was found to boil at 102°C at normal temperature and pressure. Is the water pure? Justify.	2
22.	Which cell organelle would you associate with ATP production? How is this organelle able to make its own proteins?	2
23.	i. Where is nervous tissue found in the body? ii. What role do dendrites play in nerve impulse conduction? **OR** What cell arrangement promotes the epidermis to function as a protective tissue? (two points)	2
24.	A person moves a distance of 2.5km towards east, then 3 km towards north and then 1.5 km towards east. Find the: i. the distance covered by the person, ii. the displacement of this motion.	2

25. For how long a force of 100N should act on a resting truck of 2000kg so that it acquires a velocity of 36km/h. **2**

OR

Give reason:

i. A car and motorbike moving with same velocity have different momenta.

ii. An athlete comes running from a distance, he is able to jump longer.

26. In which case the force of attraction will be larger (a) force of attraction of the earth on your body or (b) force of attraction of the body on the earth? Justify your answer. **2**

SECTION C

Question numbers 27 to 33 are short answer type questions:(3x7=21)

27. Give reasons for the following: **3**

i. Ice at 0°C appears colder in the mouth than water at 0°C.

ii. Doctors advise to put strips of wet cloth on the forehead of a person having high fever.

iii. What will you observe when ammonium chloride is heated?. Name the phenomenon.

28. Rama testes a solubility of four substances at different temperatures and found in grams of each substance dissolved in 100 g of water to form a saturated solution. **3**

S.No.	Substance dissolve (in grams)	Temperature (K)		
		293	313	333
1.	Ammonium Chloride	37g	41g	55g
2.	Potassium Chloride	35g	40g	46g
3.	Sodium Chloride	36g	36g	37g
4.	Potassium Nitrate	32g	62g	106g

i. Find the amount of ammonium chloride that will separate out when 55g of its solution at 333 k is cooled to 293 K.

ii. What is the effect of temperature on the solubility of salt?

iii. What mass of sodium chloride would be needed to make a saturated solution in 10 g of water at 293 K?

OR

i. What do you understand by 5% sugar solution? Calculate the amount of solute and solvent.

ii. Give two examples from nature where Tyndall effect is visible.

29. **3**

i. A student performed an experiment by placing the de-shelled egg in a concentrated salt solution for five minutes. What changes did he observe in the egg? Give reason for the same.

ii. What will happen to the plasmolysed cell when kept in hypotonic solution?

30. Given below in the Fig. 2 is the plant tissue. **3**

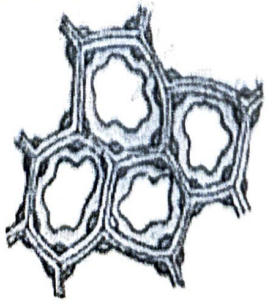
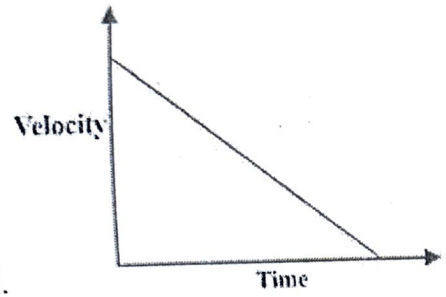
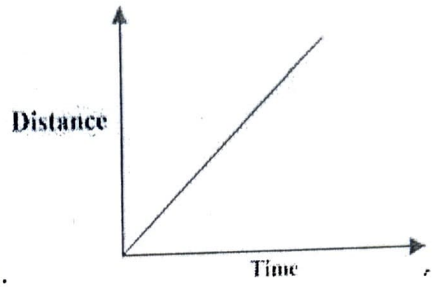
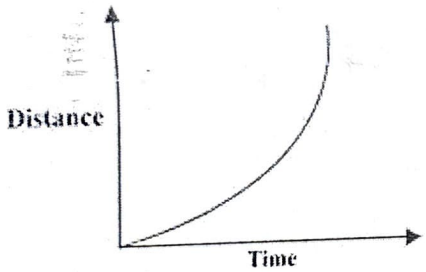


Fig.2

i. Identify the tissue given in Fig.2

	ii. Name anyone part of the plant where these cells are present. iii. Infer the characteristic features of these cells.	
31.	Compare and contrast between speed and velocity. (Any 3 points)	**3**
32.	i. Determine the value of acceleration due to gravitational force of earth on an object of mass m (you can take mass of earth = 6×10^{24}kg and radius of earth = 6.4×10^{6}m) ii. An object of mass 2kg is taken to the centre of earth. What will be its mass and weight?	**3**
33.	What type of force is acting on each object for which graphs are given below? Give reason for your answer. i.  ii.  iii. 	**3**
	SECTION D **Question numbers 34 to 36 are Long answer type questions: (5x3=15)**	
34.	i. Iron filings and sulphur were mixed together and divided into two parts, 'A' and 'B'. Part 'A' was heated strongly while Part 'B' was not heated. Dilute hydrochloric acid was added to both the parts and evolution of gas was seen in both the cases. How will you identify the gases evolved? Write the equation involved. ii. Hydrogen itself is a fuel and oxygen is a supporter for combustion. Comment on the product formed when they both chemically combined. Justify the difference in the nature of the product formed and the reactants.	**3+2**
	OR	
	i. Categorise the following examples of colloids into different categories of colloids with their dispersing medium and dispersed phase. (Fog, Milk, Jelly, Shaving cream. ii. Ramesh and Sarika each were given a mixture of iron fillings and Sulphur powder. Ramesh heated the mixture strongly. Sarika did not heat up the mixture. Write the two points of differences between the products formed by each one of them. iii. State two ways by which a saturated solution can be converted into unsaturated solution.	**2+2+1**

35. i. Draw a diagram of a cheek cell and label the following- **3+2**

a) Packaging and dispatching unit of the cell.
b) Scavengers of the cell.
c) Transport channel of the cell.
d) Powerhouse of the cell.

ii. Differentiate between cell wall and cell membrane based on the composition and permeability.

OR

i. Draw a well labelled diagram of eukaryotic nucleus and label the following parts. **3+2**

a) Nuclear pore b) Nucleolus
c) Chromatin d) Nucleoplasm

ii. How is chromatin and chromosome related to each other?

36. i. Mathematically formulate Newton's second law of motion. **3+2**

ii. A bullet of mass 4g fired with a velocity of 50m/s enters a wall up to a depth of 10cm. Calculate the average resistance offered by wall.

OR

i. With the help of Newton's second law of motion, prove that Newton's first law of motion is true.

ii. Two objects X and Y of masses 35kg and 55kg, moving with velocities 40km/h and 60km/h respectively. Answer the following with reason.

a) Which will have greater inertia?
b) Which will stop first if equal negative acceleration is applied on both?

SECTION E

Question numbers 37 to 39 are Case based questions: (4x3=12)

37. The given table shows the melting and boiling points of four substances W, X, Y and Z. **1+1+2**

Substance	Melting Point (°C)	Boiling Point (°C)
W	–15	65
X	–262	–242
Y	–41	90
Z	–110	–5

Now refer the given Fig.4 and answer the following questions:

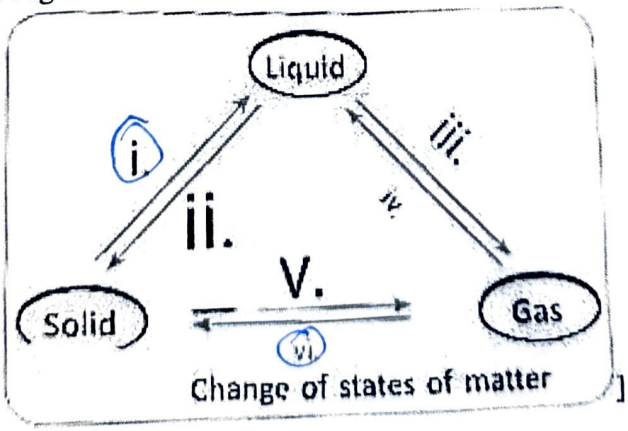
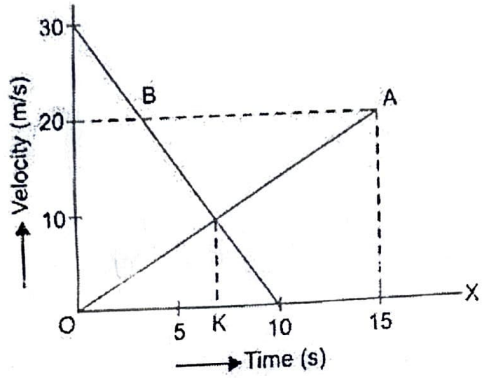


Fig.4

i. In which state of the matter substance Z will exist at room temperature? Explain.

ii. At which temperature substance W undergoes change (ii)? Give reason.

	iii. Write the names of the processes (i) and (iv) and define them. **OR** iii. At 90°C temperature substance Y undergoes a change. Write the name of the change and define it.	
38.	A connective tissue that binds, supports and packs different organs of animal body. It helps in transport of exchange of gases, hormones, nutrients and excretory products. This tissue comprises of abundant matrix, secreted by living cells of connective tissue. On the basis of nature of matrix, connective tissue can be of various types. Few examples of connective tissue are bone, cartilage, tendons, ligaments etc. i. How does the matrix of bone differ from the matrix of cartilage? ii. In which connective tissue haversian canal is present? iii. Write the composition and any two functions of fluid tissue. **OR** iii. Differentiate between tendons and ligaments.	**1+1+2**
39.	The velocity time graphs of two bodies A and B are shown in Fig.5 Observe these graphs carefully and answer the following questions :  **Fig. 5** i. What do you infer from the slopes of the graphs? ii. What are the initial velocities of A and B? iii. What is acceleration of A? **OR** iii. What distance is travelled by B before coming to rest?	**1+1+2**