R. D. RAJPAL SCHOOL

SESSION 2025-26

MID TERM EXAMINATION

CLASS: IX
TIME ALLOWED: 3 HOURS

SUBJECT: SCIENCE (SET-B)
MAXIMUM MARKS: 80
NO. OF PAGES: 5

General Instructions:

(i) This question paper consists of 39 questions in 3 sections. Section A is Biology; Section B is Chemistry and Section C is Physics.

(ii) All questions are compulsory.

SECTION-A

1. The function of Golgi body includes: 1
   (a) Degradation and elimination of waste substances.
   (b) Storage, modification, and packaging of products in vesicles.
   (c) Synthesis of lipids and proteins.
   (d) Providing rigidity and turgidity to the cell.
2. Cork cells are impervious to water and gases due to presence of: 1
   (a) Suberin (b) Lipids (c) Cellulose (d) Lignin
3. Which of the following have dead cells? 1
   (a) Parenchyma (b) Sclerenchyma (c) Collenchyma (d) Aerenchyma
4. What is the function of stomata? 1
5. Name the plant tissue which is living and thin walled. 1
6. Which epithelial tissue is found in ducts of salivary glands? 1
7. How does the water hyacinth float on the surface of water? 1

The following question consists of two statements – **Assertion** (A) and **Reason** (R). Answer these questions by 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.
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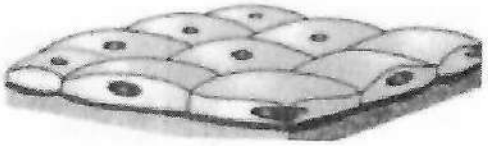
8. **Assertion (A):** Amoeba acquires its food through the process endocytosis. 1
   Reason(R): The flexibility of the cell membrane enables the cell to engulf in food and other material from its external environment.
9. **Assertion (A):** Cell growth in animals is more uniform. 1
   Reason(R): Animals have a simple body design as compared to plants.
10. (a) How does the nucleus directs the life processes of the cell? 2
    (b) What is the composition of chromosomes in prokaryotic cells?
11. Mention the main function of each of the following cell organelles? 2
    (a) Plastids (b) Endoplasmic reticulum
12. (a) Identify the epithelial tissue shown in the diagram given below: 2

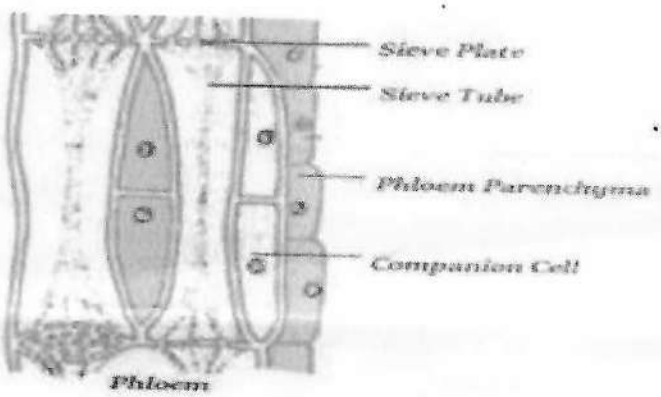


(b) State its characteristics and one location.

13. How does the cell division Mitosis and Meiosis play an important role in multicellular organisms? 3

14. (a) State why the Phloem is called the complex permanent tissue? 3

(b) Look at the given figure and state how are the sieve tubes and companion cells different from Phloem fibres?



(c) Explain the role of epidermis in desert plants.

15. Each cell has cytoplasm, acquires its structure and ability to function because of the organization of its membrane and organelles in specific ways. The cell thus has a basic structural organization. This helps the cells to perform functions like respiration, obtaining nutrition and clearing of waste material or forming new proteins. 4

(a) What is the role of cytoplasm in the cell?

(b) How does the cell act as a functional unit of life?

(c) Explain briefly the waste disposable system in the animal cell.

(d) Which part of the cell helps in obtaining nutrition in unicellular organisms?

16. (a) Differentiate between: 5

(i) Collenchyma and Sclerenchyma.

(ii) Meristematic tissue and permanent tissue.

(b) Where are the cuboidal epithelial cells located?

(c) How are the tissues important to multi-cellular organisms?

SECTION-B

17. The boiling points of diethyl ether, acetone and n-butyl alcohol are 35°C, 56°C, 118°C respectively. Which one of the following correctly represents their boiling points in Kelvin scale? 1

(a) 306 K,329 K, 391 K
(b) 308 K, 329 K, 392K
(c) 308 K,329 K, 391 K
(d) 329 K, 392 K,308 K

18. Which of the following phenomena always results in the cooling effect? 1
(a) Condensation (b) Evaporation (c) Sublimation (d) None of these

19. What happens when a liquid becomes a gas? 1
(a) The particles of solid absorb all the heat energy and there occurs no change in the distance between them.
(b) The particles of liquid absorb heat energy and distance between them increases.
(c) The particles of liquid absorb heat energy and distance between them decreases.
(d) The particles of liquid do not absorb heat energy and distance between them increases.

20. What is a saturated solution? 1
(a) A solution in which no solute is dissolved.
(b) A solution in which solvents are not dissolved.
(c) A solution in which no more solute can be dissolved at a particular temperature.
(d) A solution in which more solute can be dissolved at a particular temperature.

21. Tincture of iodine has antiseptic properties. This solution is made by dissolving 1
(a) Iodine in potassium iodide.
(b) Iodine in Vaseline.
(c) Iodine in water.
(d) Iodine in alcohol.

22. What is the dispersed phase in foam (like shaving cream)? 1
(a) Solid (b) Liquid (c) Gas (d) Plasma

23. Which of the following is correct pair of elements and its symbol? 1
(a) Copper- Co (b) Iron- Ir (c) Bromine-B (d) Lead- Pb

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24. **Assertion (A):** When a beam of light is passed through a colloidal solution, its path becomes visible. 1
Reason (R): Light do not gets scattered by colloidal particles.

25. A solution contains 20g of salt in 220 g of water. Calculate the concentration in terms of mass by mass percentage of the solution. 2

26. Give reasons:- 3
(a) The smell of hot sizzling food reaches you several meters away, but to get smell from cold food you have to go close.
(b) Naphthalene balls disappear with time without leaving any solid.

27. When 4.2 g of sodium hydrogen carbonate ($NaHCO_3$) is added to a solution of Hydrochloric acid (HCl) weighing 10.0 g, it is observed that 2.2 g of carbon dioxide (CO_2) is released into the atmosphere. The residue left behind is found to weigh 12.0 g. Show that these observations are in agreement with the law of conservation of mass. 3

28. A student add sugar to the beaker of water at room temperature (25°C) and stirs until no more sugar dissolves. Then, the student gently heat the beaker. Upon heating, the student observes that no more

sugar can now be dissolved in the same amount of water.

(a) When no more sugar could be dissolved at 25 °C, what kind of solution gets formed?

(b) How does increasing temperature affects the solubility?

(c) What is the nature of the above mentioned mixture? Homogeneous or Heterogenous. Define its components. 4

29. (a) Explain the interconversion of three states in terms of force of attraction and kinetic energy of the molecules.

(b) Why does the temperature of a substance remain constant during its melting point and boiling point, even though heat is being continuously supplied? 5

SECTION-C

30. What is the acceleration of a body moving with uniform velocity? 1

(a) Varies (b) Zero (c) Positive (d) Negative

31. Which of the following is an example of balanced forces? 1

(a) A rocket taking off from the ground. (b) An object falling freely under gravity.

(c) A book resting on a table. (d) All of the above.

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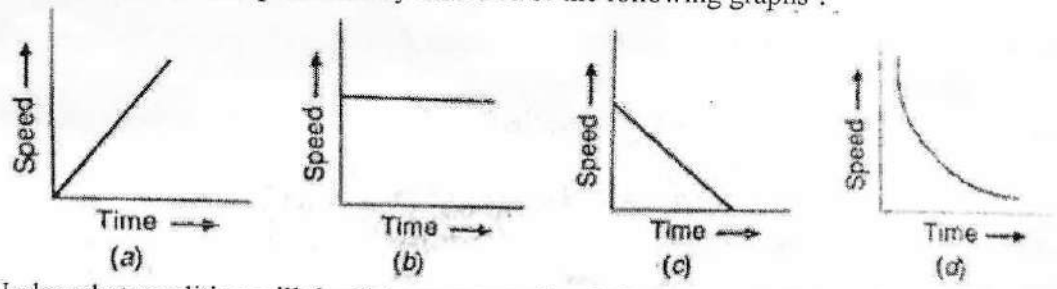
32. Assertion (A): The force of gravitation between two objects decreases when the distance between them increases.

Reason (R): The force of gravitation is inversely proportional to the square of the distance between the two objects. 1

33. What type of motion is represented by each one of the following graphs ? 2



34. (a) Under what condition will the distance covered and displacement of a moving particle will have the same magnitude?

(b) A ball thrown vertically upwards rises to a height H and comes back to the point of projection. Calculate the total distance and displacement of the ball. 2

35. A cyclist is moving on a circular track of radius 105 m. He completes one round of the track in 33 s. 3

(a) What can you say about the speed of the cyclist? Is it a constant value?

(b) What can you say about the velocity of the cyclist? Is it uniform? Explain your answer.

(c) Calculate the speed of the cyclist. (Use $\pi=22/7$)

36. (a) When a carpet is beaten with a stick, dust comes out of it. Explain. 3
(b) A motorcar of mass 1200 kg is moving along a straight line with a uniform velocity of 90 km/h. Its velocity is slowed down to 18 km/h in 4s by an unbalanced external force. Calculate the acceleration and change in momentum.

37. A ball of mass 10 g is moving with a velocity of 50 m/s. On applying a constant force on the ball for 2 seconds, it acquires a velocity of 70 m/s. Calculate :
(a) The initial and final momentum of ball.
(b) The rate of change of momentum.
(c) The acceleration of ball. 3

38. Galileo was the first scientist to study the motion of different bodies under the force of attraction of earth. From his experiments, Galileo found that if bodies of different masses and sizes are simultaneously made to fall in vacuum from the same height, they all reach the earth simultaneously. Moreover he found that the velocity of a freely falling body does not remail constant but it increases at a constant rate. In other words, the acceleration of a freely falling body does not depend on the mass of the body. This acceleration is called acceleration due to gravity. 4
(a) Write two differences between acceleration due to gravity and gravitational constant.
(b) A stone is dropped from rest and falls freely under gravity. Calculate the distance covered by it in the first 2 seconds.

39. (a) When a smooth card placed over the mouth of a tumbler is flicked sharply in the horizontal direction, the card flies away but the coin kept over the card falls into the tumbler. Explain. 5
(b) Draw a graph showing variation of force with acceleration if mass remains constant.
(c) Action and reaction forces are equal and opposite, then why they do not cancel each other? Explain.