विद्या सर्वार्थि साधिका

ANANDALAYA

PERIODIC TEST - 2

Class: IX

Subject: Science (086) MM : 80
Date : 20-09-2023 Time: 3 hours

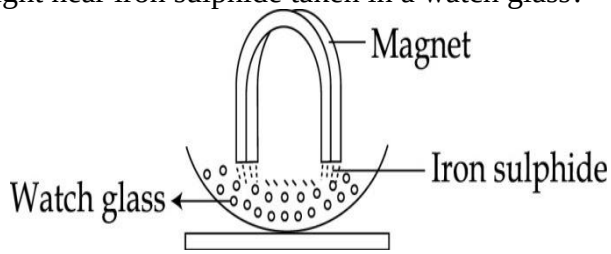
General Instructions:

i. This question paper consists of 39 questions in 5 sections.
ii. All questions are compulsory. However, an internal choice is provided in some questions. Students are expected to attempt only one of these questions.
iii. Section A consists of 20 objective type questions carrying 1 mark each.
iv. 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.
v. 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.
vi. 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.
vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

SECTION A

1. A homogeneous mixture has uniform composition. Identify the mixture which is not homogeneous. (1)
   (A) Sugar solution (B) Soft drinks
   (C) Milk (C) Sulphur in carbon disulphide

2. When a magnet is brought near iron sulphide taken in a watch glass? (1)

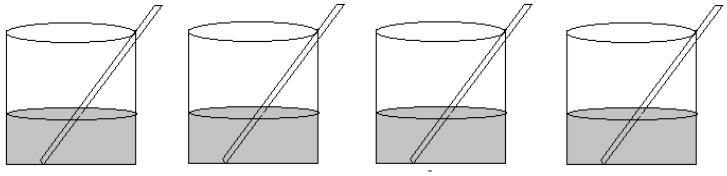


   (A) Particles of iron move towards the magnet.
   (B) Particles of iron sulphide move towards the magnet.
   (C) Particles of sulphur move towards the magnet.
   (D) No effect on Iron sulphide.

3. Which one of the following is not the property of a mixture? (1)
   (A) It is a heterogeneous.
   (B) It is a system of variable composition.
   (C) It is a system of constant composition.
   (D) Its components can be separated by physical methods.

4. A student set up an apparatus to find the melting point of ice. When half of the ice had melted, the temperature shown by the thermometer would be _____. (1)
   (A) more than 0°C (B) less than 0°C (C) 0°C (D) 100°C

5. Four students A, B, C and D are asked to prepare colloidal solutions. The following diagrams show the preparation done by them. Name the student/s, who will be able to prepare colloidal solutions. (1)



A **Starch powder** | **B** **Salt** | **C** **Sugar** | **D** **Egg albumin**

(A) Student A only (B) Student B
(C) Student A and D both (D) Student B and C both

6. During evaporation, the particles of a liquid evaporate from _____. (1)
(A) the surface (B) the bulk
(C) both surface and bulk (D) neither from surface nor from the bulk

7. The density of water is maximum at _____. (1)
(A) 0°C (B) 277K (C) 100°C (D) 283°C

8. The fundamental nuclear region of prokaryotes is also known as ____. (1)
(A) nucleus (B) nucleolus (C) nucleic acid (D) nucleoid

9. The organelle other than nucleus, containing DNA is ____. (1)
(A) Endoplasmic reticulum (B) Golgi body (C) Mitochondria (D) Lysosome

10. New cells arise from pre-existing cells by division was stated by ____ . (1)
(A) Haeckel (B) Virchow (C) Robert Hooke (D) Schleiden

11. The plant tissue with thickened corners found in petiole is ___ . (1)
(A) parenchyma tissue (B) collenchyma tissue (C) sclerencyma (D) cambium

12. The living cells present in xylem is ____ . (1)
(A) tracheid (B) xylem parenchyma (C) vessels (D) sclereids

13. Which of the following tissue makes husk of coconut? (1)
(A) Sclerenchyma (B) Phloem fibre (C) Xylem (D) Collenchyma

14. Choose the substance present on the wall of the cork cells that make them impervious to water and minerals, from the options given below: (1)
(A) lignin (B) suberin (C) cellulose (D) mucopolysaccharide

15. The rate of change of displacement is called _____. (1)
(A) speed (B) velocity (C) retardation (D) acceleration

16. The slope of the velocity-time graph is called _____. (1)
(A) acceleration (B) average speed (C) average velocity (D) displacement

For question numbers 17 to 20, Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below.
(A) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(B) Both Assertion and Reason are true but Reason is NOT the correct explanation of Assertion.
(C) Assertion is true but Reason is false.
(D) Assertion is false and Reason is also false.

17. Assertion: When a plastic ball and glass ball of the same size are rolled with the same speed. Glass ball experiences greater momentum. (1)
Reason: Mass is the measure of inertia.

18. Assertion: Particles of chalk powder in water ranges in-between 1 nm to 100 nm. (1)
Reason: Mixture of chalk powder in water is an example of colloids.

19. Assertion: Meiosis is reduction division. (1)
Reason: It halves the chromosome number in the daughter cells.

20. Assertion: The narrow band of meristematic tissue present between xylem and phloem is called cambium. (1)
Reason: In dicotyledonous stem, a part of procambium becomes meristematic and increases the girth of the stem.

SECTION B

21. (a) What do you mean by uniform circular motion? (2)
(b) Why the motion of the "second hand" of a clock is not considered to be a uniformly accelerated motion?

22. Vasu takes 10 minutes to go from her house to school and 20 minutes from the return journey. If the distance between her school and her house is 3 km, find out the following: (2)
(a) average speed in km/min?
(b) average velocity in km/min?

OR

A train starting from rest moves with a uniform acceleration of 0.2 m/s^2 for 5 minutes. Calculate the speed acquired and the distance travelled in this time.

23. Give reason: (2)
(a) Droplets of water come out when a wet cloth is jerked.
(b) Karate player is able to break a block of ice easily.

24. (a) What is tincture of iodine? (2)
(b) Identify the solute and solvent in it.

25. Write any two points of differences between phagocytosis and exocytosis? (2)

26. Identify the given plant tissue. Mention its functions. (2)

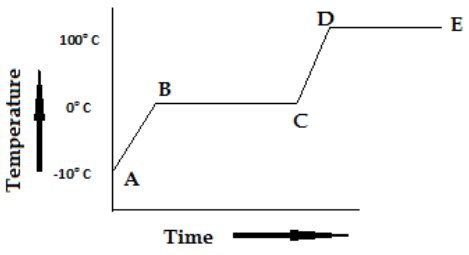
SECTION C

27. (a) Convert 574 K to the Celsius scale. (3)
(b) State one property of solid, which liquid does not possess. State one property of liquid, which solid does not possess.

28. (a) Both smoke and fog are aerosols. In what way they are different? (3)
(b) While conducting the experiment to determine the melting point of ice, students observed that the thermometer reading decreased for some time and then became constant. What could be the possible reason for this? Explain briefly.

OR

(a) How do sol and gel differ from each other? Give one example of each.
(b) Study the temperature-time graph given. This graph shows heating of ice from -10°C to water at 100°C. Identify the part of graph which represents the change of state on heating. During change of state where does the absorbed heat energy go?



29. Name the type of motion of the objects that are described in the following statements. Also draw v-t graph for each motion. (3)
(a) Engine of a train standing at a platform applies force on its compartments and starts moving uniformly, increasing speed with time.
(b) Engine of a moving train applies brakes so as to stop the train at the next railway station, uniformly, decreasing speed with time.
(c) Acceleration of a freely falling body.

30. (a) Under what conditions can a body travel a certain distance and yet its resultant displacement be zero? Explain its distance and displacement with a diagram. (3)
(b) Classify them into vector and scalar quantities.

31. (a) Define momentum. Write its SI unit. (3)
(b) Find the momentum of an object moving with a speed of 5 cm/s. The mass of the object is 2 kg.

32. Name the tissues showing the following features: (3)
(a) Living cells with thick wall and provides mechanical support to plants.
(b) Dead cells with thick walls and provides mechanical support to plants.
(c) Living cells with chlorophyll and intercellular spaces.

33. What are meristematic tissues? Write their locations and functions. (3)

SECTION D

34. (a) In the following examples, state which factor is responsible for the change in rate of evaporation? (5)
(i) Wet clothes dry faster on spreading them.
(ii) Clothes take a longer time to dry on a rainy day.
(b) If 110 g of salt is present in 550 g solution, calculate the mass-by-mass concentration of this solution.
(c) Define: Condensation

OR

(a) A solution contains 50 ml of alcohol mixed with 150 ml of water. Calculate the volume-by-volume percentage concentration of this solution?
(b) Few iodine crystals are kept in a conical flask, it is stopped and kept undisturbed for a long time. A few crystals are seen near the mouth and side of flask. Explain the phenomenon responsible for this observation.
(c) Classify the following as pure substances or mixtures. (i) Gasoline (ii) Graphite

35. (a) State Newton's II law of motion. (5)
(b) Express force in terms of momentum.
(c) An object of mass 10 kg travelling with a velocity of 8 m/s is decelerated to 3 m/s. The force acting on the object is 25 N. Find for how long the force is applied.
(d) According to III law of motion, the action and reaction are equal and opposite. Why do they not cancel each other?

OR

(a) State Galileo's law of inertia.
(b) What is it also called as?
(c) Explain Galileo's thought experiment on inertia along with the three appropriate diagrams.

36. Explain the components, characteristics, distribution and functions of complex tissues in plants. (5)

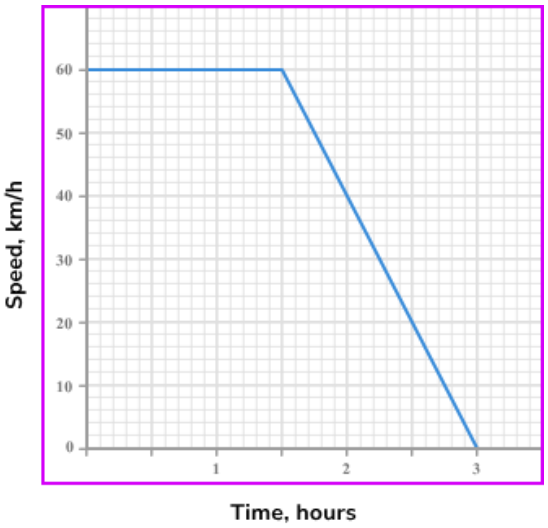
OR

Describe the general characteristics, distribution and functions of parenchyma and collenchyma.

SECTION E

Questions 37 to 39 are Source-based/Case study-based questions of 4 marks with sub-parts.

37. Zainab was driving her car from her office to home. Observe the speed - time graph of the car driven by Zainab and answer the following questions:



(i) Overall, what type of motion does Zainab's car perform? (1)
(ii) What is the speed of Zainab's car at 1 hour and at 2.5 hours? (1)
(iii) Calculate the total distance covered by Zainab's car. (2)

OR

(iii) Calculate the acceleration from 0 to 1.5 hours and from 1.5 hours to 3 hours.

38. The molecules of a gas are free to move about in any direction. Because of large intermolecular spaces, the gases are easily compressible. The kinetic energy of the molecules of gases is maximum and they move about randomly at a high speed. The randomly moving high speed molecules hit against the sides of containing vessel. The pressure exerted by any gas is due to the force exerted by its molecules on the sides of containing vessel.

(i) Justify: A gas fills all the space in a container in which it is kept. (1)
(ii) Arrange the following substances in to increasing order of kinetic energy the particles of matter possess: Oxygen, Sugar and Water (1)
(iii) "Solids are generally very heavy while gases are light". Explain. (2)

OR

(iii) Suggest a method to liquefy atmospheric gases.

39. All cells take up materials and send out materials through cell membrane. The plasma membrane acts as a physical barrier between the cell organelles and the cytoplasm. The cell membranes are of various types such as selectively permeable, semi-permeable and impermeable. The processes involved are active transport, passive transport and bulk transport.

Based on the understanding of the above paragraph, answer the following questions.

(i) Which type of cell membrane is required for the process of osmosis? (1)
(ii) What do you mean by active transport of materials through cell membrane? (1)
(iii) Define 'osmosis'. (2)

OR

(iii) Define 'diffusion'.