

SAMPLE PAPER 8

SCIENCE - CLASS IX

Exploration | Session 2026-27

Maximum Marks: 80

Time Allowed: 3 Hours

General Instructions

1. This question paper consists of 39 questions in five sections.
2. All questions are compulsory. Internal choice is provided in some questions; attempt only one alternative.
3. Section A contains 20 objective-type questions of 1 mark each.
4. Section B contains 6 Very Short Answer questions of 2 marks each.
5. Section C contains 7 Short Answer questions of 3 marks each.
6. Section D contains 3 Long Answer questions of 5 marks each.
7. Section E contains 3 case-based/data-based questions of 4 marks each.
8. Draw neat labelled diagrams wherever required and show complete working in numerical questions.

Section A (1 Mark Each)

(Questions 1-16 are multiple-choice questions. Questions 17-20 are Assertion-Reason questions)

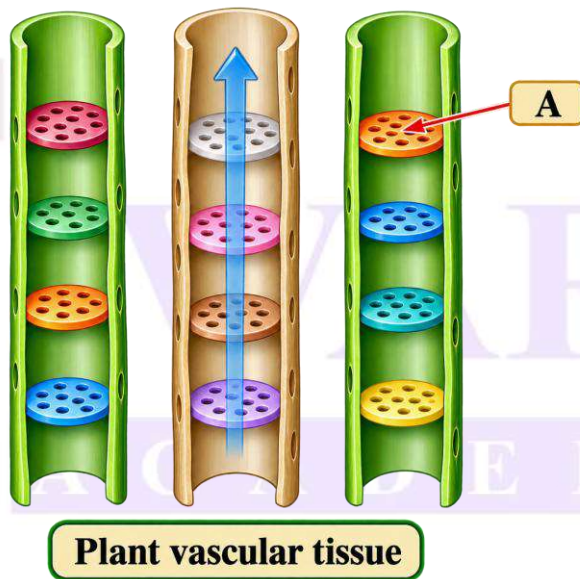
1. Which action is most important while testing a scientific explanation?

- (a) Select only supporting observations
- (b) Compare predictions with evidence
- (c) Avoid repeating experiments
- (d) Accept the first result as final

2. Which cell organelle contains chlorophyll?

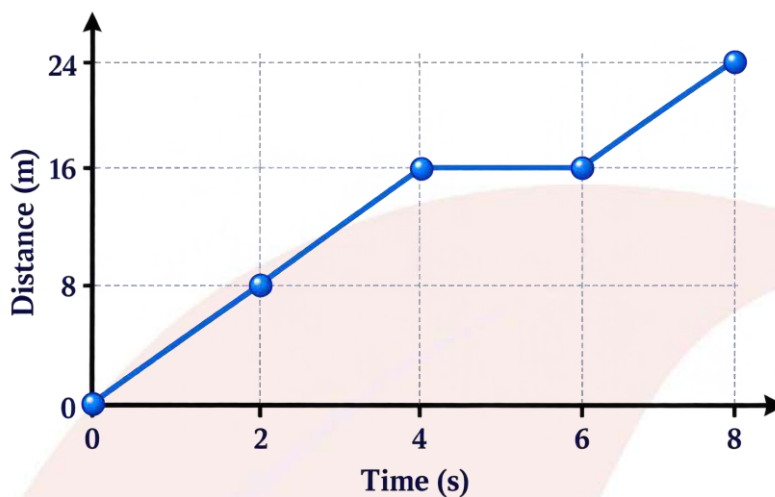
- (a) Chloroplast
- (b) Mitochondrion
- (c) Golgi apparatus
- (d) Lysosome

3. The diagram shows a plant vascular tissue. What is the principal function of the tissue shown?



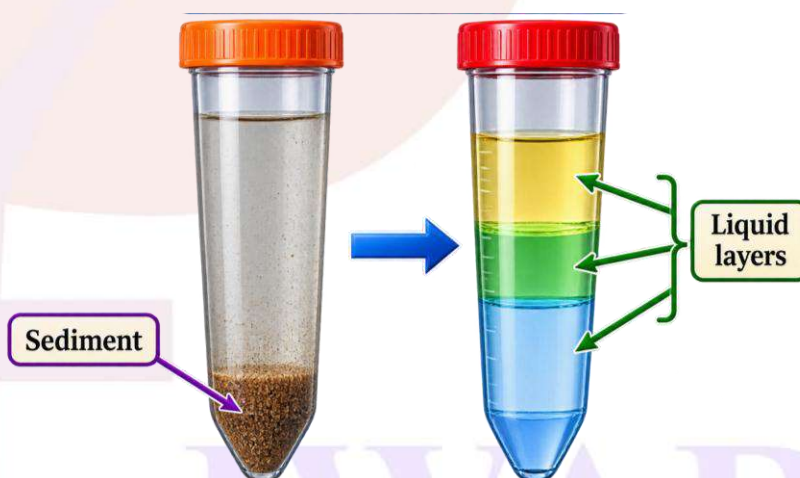
- (a) Transport of water and minerals
- (b) Transport of food only
- (c) Storage of fat
- (d) Transmission of nerve impulses

4. Study the distance-time graph. During which interval does the object remain at the same distance from the starting point?



- (a) 0-2 s
(b) 2-4 s
(c) 4-6 s
(d) 6-8 s

5. The diagram shows the result of a separation technique. Which technique is represented?



- (a) Centrifugation
(b) Sublimation
(c) Chromatography
(d) Distillation

6. A net force of 45 N acts on a 9 kg body. Its acceleration is:

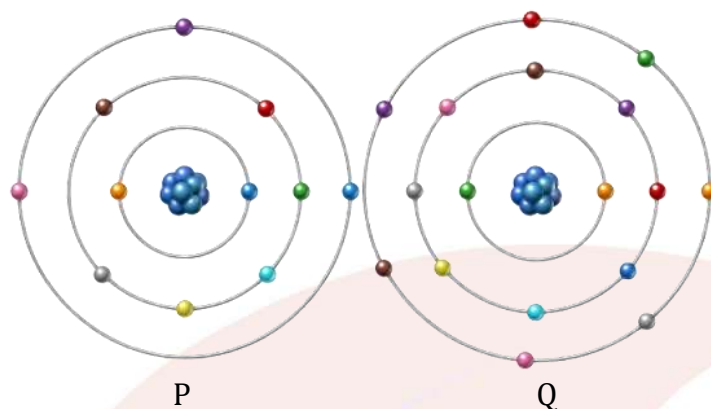
- (a) 4 m s^{-2}
(b) 5 m s^{-2}
(c) 9 m s^{-2}
(d) 405 m s^{-2}

7. The simple machine shown is an example of:

- (a) movable pulley
(b) fixed pulley
(c) lever
(d) wheel and axle



8. Atoms P and Q have outer-shell electrons as shown. Which statement is most likely correct?



- (a) P tends to lose one electron and Q tends to gain one electron
- (b) Both tend to gain two electrons
- (c) P is inert
- (d) Q tends to lose seven electrons

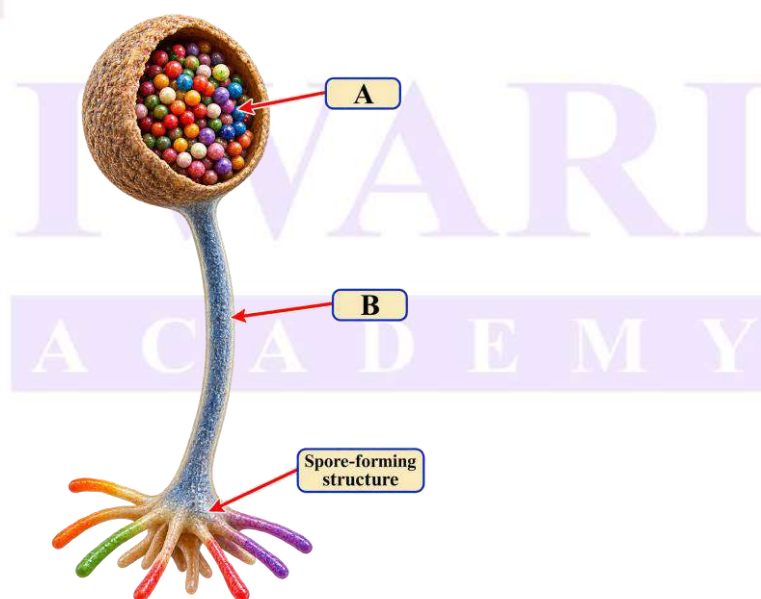
9. Which pair of elements is most likely to form an ionic compound?

- (a) Two non-metals
- (b) A metal and a non-metal
- (c) Two noble gases
- (d) Two identical atoms only

10. A sound has frequency 200 Hz. This means the source makes:

- (a) 200 vibrations each second
- (b) 200 vibrations each minute
- (c) one vibration in 200 s
- (d) 400 vibrations each second

11. The labelled structure A in the diagram contains many tiny reproductive units. These units are:



- (a) spores
- (b) gametes only
- (c) seeds
- (d) buds

12. Which group contains plants with seeds enclosed within fruits?

- (a) Bryophytes (b) Pteridophytes
(c) Gymnosperms (d) Angiosperms

13. Which process is most directly responsible for replenishing groundwater after rainfall?

- (a) Infiltration (b) Combustion
(c) Respiration (d) Condensation in clouds only

14. Which organelle is often called the control centre of the cell?

- (a) Nucleus (b) Ribosome (c) Vacuole (d) Cell wall

15. A person walks 15 m north and then 9 m south. The displacement is:

- (a) 24 m north (b) 6 m north (c) 6 m south (d) 24 m south

16. Which method is most suitable for separating two miscible liquids having sufficiently different boiling points?

- (a) Distillation (b) Filtration (c) Decantation (d) Handpicking

For Questions 17-20, choose:

- (a) Both A and R are true and R correctly explains A;
(b) Both A and R are true but R does not explain A;
(c) A is true but R is false;
(d) A is false but R is true.

17. Assertion (A): An object may have zero acceleration while it is moving.

Reason (R): An object moving with constant velocity has zero acceleration.

18. Assertion (A): A movable pulley can reduce the effort needed to lift a load.

Reason (R): The load can be supported by more than one segment of the rope.

19. Assertion (A): Isotopes have different mass numbers.

Reason (R): Isotopes of an element have different numbers of neutrons.

20. Assertion (A): Ionic compounds conduct electricity when dissolved in water.

Reason (R): Their ions can move through the solution.

Section B (2 Marks Each)

(Questions 21-26 are Very Short Answer questions)

21. What happens to an animal cell placed in a highly concentrated salt solution? Name the movement of water responsible for the change.

22. A bus travels 180 m in 15 s and then 220 m in 20 s. Calculate its average speed for the whole journey.

23. State two differences between a homogeneous mixture and a heterogeneous mixture, with one example of each.

24. A 6 kg object changes its velocity from 2 m s^{-1} to 8 m s^{-1} in 3 s. Calculate its acceleration and the net force acting on it.

25. A machine performs 1500 J of useful work in 10 s. Calculate its useful power output. Write the SI unit of power.

26. An atom has atomic number 14 and mass number 29. Find the number of protons, electrons and neutrons in the neutral atom.

Section C (3 Marks Each)

(Questions 27-33 are Short Answer questions)

27. Explain the functions of xylem, phloem and epidermis in plants. Mention one structural feature of xylem that helps it perform its function.

28. A motorcycle moving at 12 m s^{-1} accelerates uniformly at 3 m s^{-2} for 4 s. Calculate its final velocity and displacement during this interval.

29. A mixture contains iron filings, ammonium chloride and common salt. Describe a suitable sequence of methods for separating the three components.

30. A 5 kg body moving at 14 m s^{-1} is brought to rest uniformly in 7 s. Calculate its acceleration and the force responsible for stopping it.

31. A machine lifts a 720 N load with an effort of 180 N. Calculate its mechanical advantage. If its velocity ratio is 5, calculate efficiency and state why the value is below 100%.

32. Elements A and B have electronic configurations 2,8,2 and 2,8,7 respectively. State their valencies and explain the formation and formula of the compound between them.

33. A sound wave travels at 360 m s^{-1} with a frequency of 450 Hz. Calculate its wavelength. What happens to pitch if the frequency is decreased?

Section D (5 Marks each)

(Questions 34-36 are Long Answer questions. Internal choice is provided)

34.

- (a) Describe the structure and functions of xylem and phloem.
- (b) Compare tendon and ligament.

OR

- (a) Compare parenchyma, collenchyma and sclerenchyma on the basis of cell structure and function.
- (b) Explain why epithelial tissue is suitable for protection and lining.

35.

- (a) Explain asexual reproduction by spore formation, budding and vegetative propagation with one example each.
- (b) State two advantages of vegetative propagation.

OR

- (a) Describe pollination and fertilisation in flowering plants.
- (b) Explain the changes in ovule and ovary after fertilisation.

35.

- (a) Give the main characteristics of Bryophyta, Pteridophyta, Gymnosperms and Angiosperms, with one example of each.
- (b) Why is classification useful?

OR

- (a) State the major characteristics of Porifera, Annelida, Arthropoda and Chordata with one example each.
- (b) Explain the purpose of binomial nomenclature.

Section E (4 Marks Each)

(Questions 37-39 are case-based/data-based questions with sub-parts.)

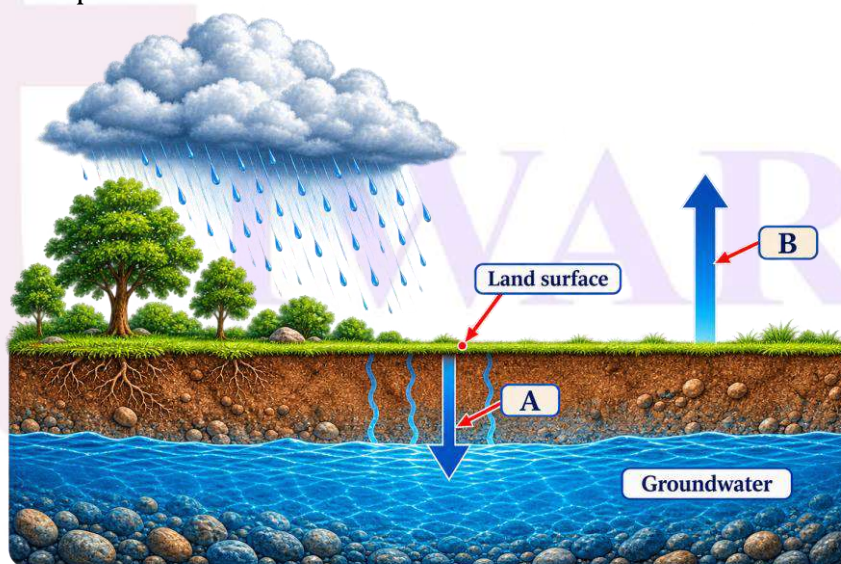
37. A 15 kg cart initially moving at 2 m s^{-1} is acted upon by a constant net force of 30 N in the direction of motion for 4 s.

- (a) Calculate its acceleration.
- (b) Calculate its final velocity.
- (c) Calculate its initial momentum.
- (d) Calculate its final momentum.

38. A bread mould develops spore-bearing structures, while a flowering plant produces seeds after fertilisation. A student compares these two reproductive strategies.

- (a) Name the asexual reproductive method used by bread mould.
- (b) What is one advantage of producing many spores?
- (c) What is fertilisation?
- (d) Which of the two reproductive strategies generally produces greater variation, and why?

39. Study the simplified diagram showing rainfall and movement of water between the surface, groundwater and atmosphere.



- (a) Identify process A by which surface water enters the soil and moves downward.
- (b) What process is represented by B when water returns from the surface to the atmosphere?
- (c) State one importance of groundwater recharge.
- (d) Explain one way excessive paving of land can affect groundwater recharge.