

SAMPLE PAPER 7

SCIENCE - CLASS IX

Exploration | Session 2026-27

Maximum Marks: 80

Time Allowed: 3 Hours

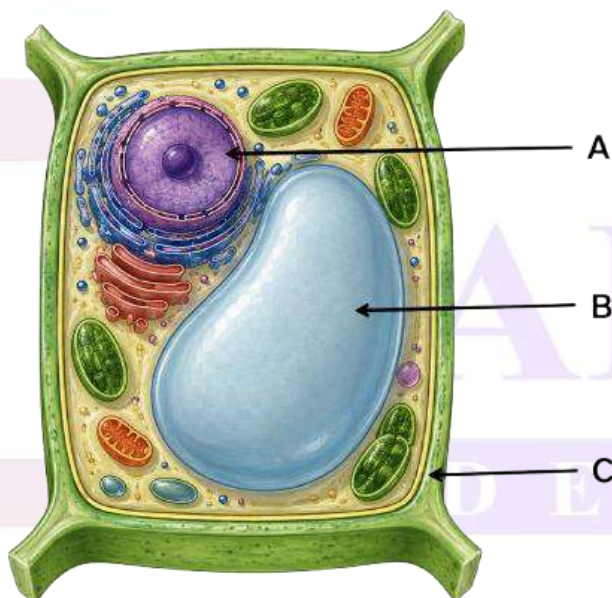
General Instructions

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)

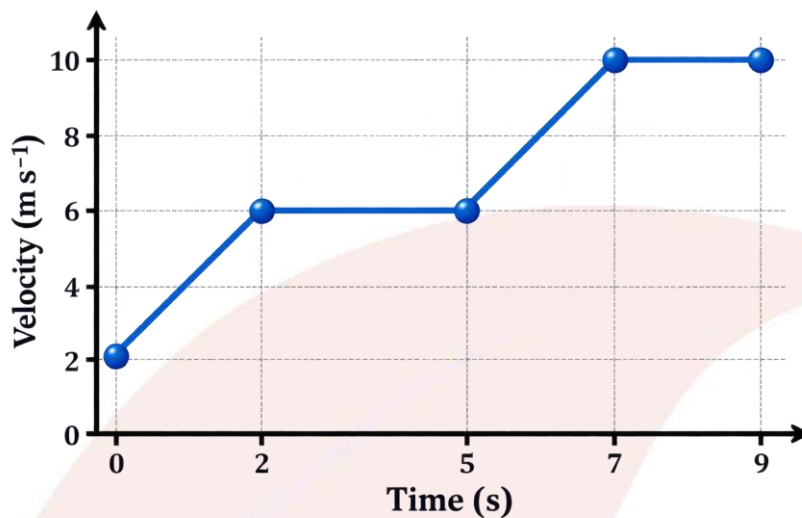
(Questions 1-16 are multiple-choice questions. Questions 17-20 are Assertion-Reason questions.)

1. Which feature makes a scientific investigation reliable?
(a) Ignoring observations that disagree with the idea
(b) Using evidence and repeatable procedures
(c) Changing results to fit a prediction
(d) Avoiding measurements
2. Study the plant cell. Which labelled part contains most of the cell's genetic material?



- (a) A (b) B (c) C (d) All three
3. Which animal tissue joins muscle to bone?
(a) Ligament (b) Tendon (c) Cartilage (d) Adipose tissue

4. Study the velocity-time graph. During which two intervals is velocity constant?



- (a) 0-2 s and 5-7 s
- (b) 2-5 s and 7-9 s
- (c) 0-5 s and 5-9 s
- (d) only 2-5 s

5. The apparatus shown is used to recover a dissolved solid from a solution mainly by:



- (a) evaporation
- (b) filtration
- (c) magnetic separation
- (d) centrifugation

6. A 12 kg object experiences a net force of 36 N. Its acceleration is:

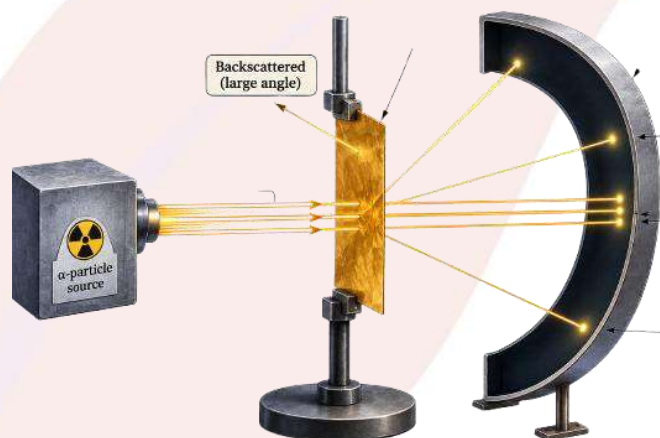
- (a) 0.33 m s^{-2}
- (b) 3 m s^{-2}
- (c) 24 m s^{-2}
- (d) 432 m s^{-2}

7. In the lever shown, which point acts as the pivot?



- (a) Load (b) Effort (c) Fulcrum (d) Entire lever

8. The experiment shown led to the conclusion that an atom contains:



- (a) a small dense positively charged nucleus
(b) no empty space
(c) only electrons
(d) uniformly distributed positive charge

9. An element has electronic configuration 2,8,6. Its valency is most likely:

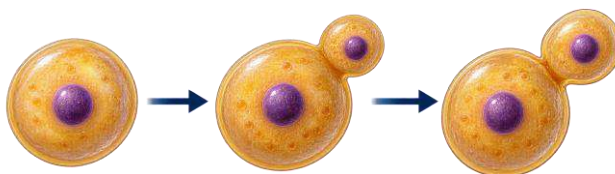
- (a) 1 (b) 2 (c) 6 (d) 8

10. If the amplitude of a sound wave is reduced while frequency remains unchanged, the sound becomes:

- (a) louder with higher pitch
(b) softer with same pitch
(c) softer with lower pitch
(d) faster

11. The diagram represents:

- (a) binary fission
(b) budding
(c) fragmentation
(d) fertilisation



12. Which organism belongs to Kingdom Protista?

- (a) Amoeba (b) Mushroom (c) Moss (d) Earthworm

13. Which process releases oxygen into the atmosphere on a large scale?

- (a) Photosynthesis (b) Respiration (c) Combustion (d) Decomposition

14. Which organelle is directly involved in manufacturing proteins?

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

15. A student walks 9 m south and then 12 m east. The magnitude of displacement is:

- (a) 3 m (b) 15 m (c) 21 m (d) 108 m

16. Which technique can separate different dyes present in black ink?

- (a) Chromatography (b) Winnowing (c) Sedimentation (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): The area under a velocity-time graph gives displacement.

Reason (R): Velocity multiplied by time gives displacement for uniform velocity.

18. Assertion (A): A lever can provide mechanical advantage.

Reason (R): The effort arm may be longer than the load arm.

19. Assertion (A): Isotopes of an element have similar chemical properties.

Reason (R): They have the same atomic number and therefore the same electronic configuration.

20. Assertion (A): Ionic compounds are generally hard solids.

Reason (R): Oppositely charged ions are held by strong electrostatic forces.

Section B (2 Marks Each)

(Questions 21-26 are Very Short Answer questions)

21. What is diffusion? Give one example of diffusion occurring in living cells.

22. A train covers 240 m in 20 s and then 360 m in 30 s. Calculate its average speed for the entire journey.

23. Why is crystallisation preferred over simple evaporation when a pure solid is required from a solution? Give one reason.

24. A 4 kg object initially at rest acquires a velocity of 10 m s^{-1} in 5 s. Calculate its acceleration and the net force acting on it.

25. A machine uses 1200 J of input energy to do 900 J of useful work. Calculate its efficiency and the energy lost.

26. An atom has 17 protons and 18 neutrons. State its atomic number, mass number and number of electrons in the neutral state.

Section C (3 Marks Each)

(Questions 27-33 are Short Answer questions)

Differentiate between tendon, ligament and cartilage in terms of what they connect or support and one important property of each.

28. A car moving at 8 m s^{-1} accelerates uniformly at 2.5 m s^{-2} for 4 s. Calculate its final velocity and distance travelled.

29. A mixture contains common salt, camphor and iron filings. Describe a suitable sequence of methods to separate all three components.

30. A 1200 kg car travelling at 15 m s^{-1} is brought to rest uniformly in 5 s. Calculate its acceleration and braking force.

31. A lever lifts a 500 N load using an effort of 125 N. Calculate its mechanical advantage. If its velocity ratio is 5, calculate its efficiency and state one cause of energy loss.

32. Element X has atomic number 12 and element Y has atomic number 9. Write their electronic configurations, state their valencies and predict the formula of the compound formed.

33. A sound wave has frequency 500 Hz and wavelength 0.68 m. Calculate its speed. How would the perceived pitch change if its frequency became 750 Hz?

Section D (5 Marks Each)

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

34.

- (a) Explain the structure and functions of parenchyma, collenchyma and sclerenchyma.
- (b) How are guard cells related to the function of stomata?

OR

- (a) Compare skeletal, smooth and cardiac muscles on the basis of structure, location and control.
- (b) State the role of nervous tissue in coordination.

35.

- (a) Describe sexual reproduction in flowering plants from pollination to formation of seed and fruit.
- (b) State the functions of stigma and ovary.

OR

- (a) Explain binary fission, budding and spore formation with one example each.
- (b) State two differences between sexual and asexual reproduction.

36.

- (a) State the important characteristics of Monera, Protista, Fungi, Plantae and Animalia.
- (b) Why are organisms assigned scientific names?

OR

- (a) Compare Amphibia, Reptilia, Aves and Mammalia using suitable distinguishing features and one example of each.
- (b) State one feature common to all chordates.

Section E (4 Marks Each)

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

37. A 10 kg trolley moving at 4 m s^{-1} is acted upon by a constant net force of 20 N in the direction of motion for 3 s.

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

38. A student observes yeast cells under suitable conditions and notices small buds developing on parent cells. In another activity, seeds are formed in a flowering plant after fertilisation.

- (a) Name the mode of reproduction in yeast.
- (b) Is only one parent required in this process?
- (c) What is fertilisation?
- (d) Which of the two modes is expected to produce greater genetic variation and why?

39. Study the simplified oxygen-cycle diagram.

- (a) Identify process A by which green plants add oxygen to the atmosphere.
- (b) Identify process B in which animals use atmospheric oxygen.
- (c) Why does combustion at C consume oxygen?
- (d) Explain how photosynthesis and respiration together help maintain the atmospheric oxygen balance.

