

SAMPLE PAPER 3

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.)

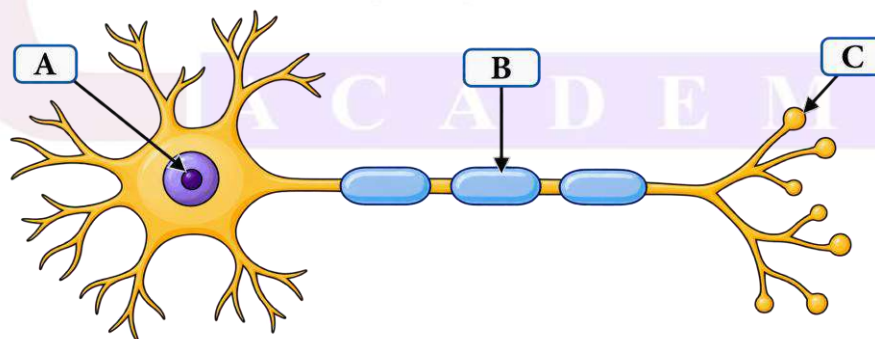
1. A scientific model of the Solar System is useful even though the sizes and distances cannot all be shown exactly. This is because a model:

- (a) replaces observation completely
- (b) represents selected important features of a system
- (c) must be identical to reality
- (d) cannot be revised

2. A cell is unable to produce enough ATP for its activities. Which organelle is most directly affected?

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

3. The diagram shows a neuron. Which labelled part carries the nerve impulse away from the cell body?



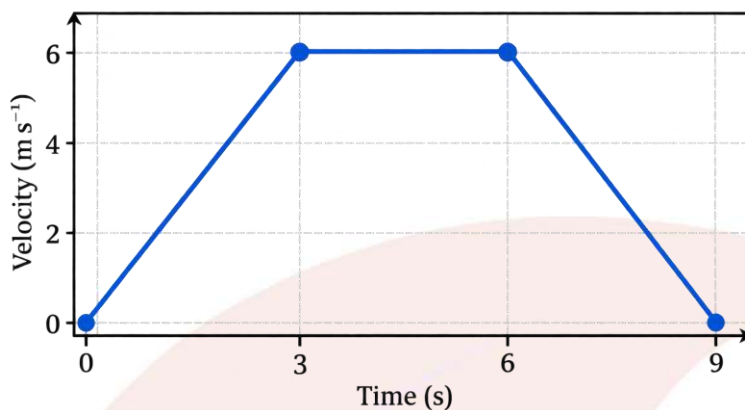
(a) A

(b) B

(c) C

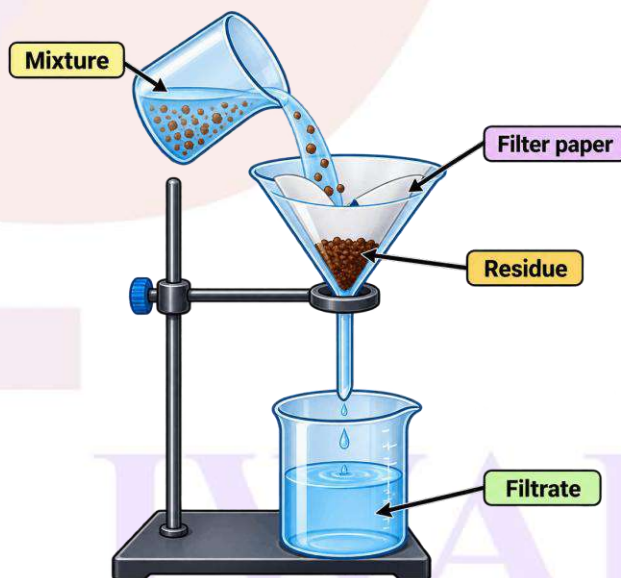
(d) Both A and C

4. Study the velocity-time graph. During which interval is the object moving with constant velocity?



- (a) 0-3 s
- (b) 3-6 s
- (c) 6-9 s
- (d) It is never constant

5. The apparatus shown is being used to separate an insoluble solid from a liquid. Which method is represented?

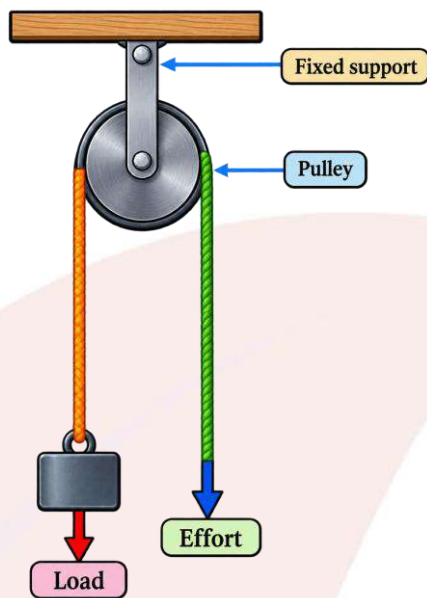


- (a) Distillation
- (b) Filtration
- (c) Sublimation
- (d) Chromatography

6. A force of 30 N produces an acceleration of 5 m s^{-2} in an object. The mass of the object is:

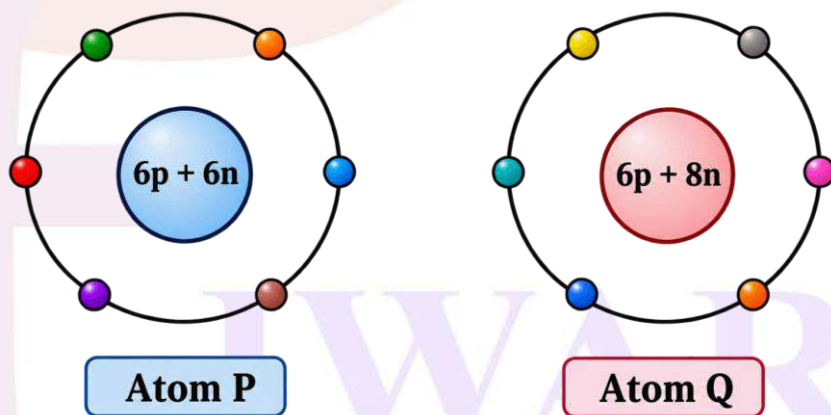
- (a) 6 kg
- (b) 25 kg
- (c) 150 kg
- (d) 0.17 kg

7. The simple machine shown changes the direction of effort. It is a:



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

8. The diagram shows two atoms. What is the correct relationship between P and Q?



- (a) They are isobars
- (b) They are isotopes
- (c) They are ions
- (d) They are different elements with different atomic numbers

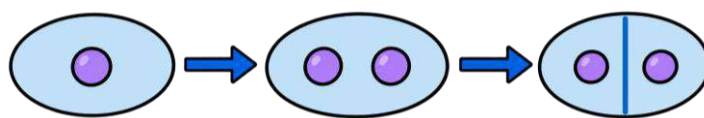
9. Which substance is most likely to contain covalent bonds?

- (a) NaCl
- (b) MgO
- (c) H₂O
- (d) CaCl₂

10. If the frequency of a sound wave increases while its speed remains constant, its wavelength:

- (a) increases
- (b) decreases
- (c) remains unchanged
- (d) becomes zero

11. The sequence shown represents:



Sequence of Cell Division

- (a) budding (b) binary fission (c) spore formation (d) fertilization

12. Which characteristic is typical of fungi?

- (a) They contain chlorophyll and make their own food
(b) They are heterotrophic and usually have cell walls
(c) They are all prokaryotic
(d) They are all unicellular

13. Which surface generally has the highest albedo?

- (a) Fresh snow (b) Black soil (c) Asphalt road (d) Ocean water

14. Which structure is present in plant cells but absent in animal cells?

- (a) Cell membrane (b) Cytoplasm (c) Cell wall (d) Ribosome

15. A body moves 5 m north and then 12 m east. Its displacement is:

- (a) 7 m (b) 13 m (c) 17 m (d) 60 m

16. Which mixture can be separated using a separating funnel?

- (a) Salt and water (b) Sand and water (c) Oil and water (d) Sugar and water

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 moving with uniform velocity has zero acceleration.

Reason (R): Acceleration is the rate of change of velocity.

18. Assertion (A): A machine may have a mechanical advantage greater than 1.

Reason (R): Such a machine can multiply the applied force.

19. Assertion (A): An atom is electrically neutral when the number of protons equals the number of electrons.

Reason (R): Protons and electrons carry equal and opposite charges.

20. Assertion (A): Ionic compounds conduct electricity in molten state.

Reason (R): Their ions become free to move in the molten state.

Section B (2 Marks Each)

(Questions 21-26 are Very Short Answer questions.)

21. Why does the cell membrane allow some substances to pass more easily than others? State one importance of this property.
22. A scooter increases its velocity from 8 m s^{-1} to 20 m s^{-1} in 4 s. Calculate its acceleration. What type of motion does this indicate?
23. A student has a mixture of ammonium chloride and common salt. Name a suitable separation method and state the property on which it is based.
24. A passenger standing in a bus tends to fall backward when the bus suddenly starts. Name the law involved and explain the observation.
25. A machine does 1200 J of useful work when 1500 J of energy is supplied to it. Calculate its efficiency.
26. An atom contains 15 protons and 16 neutrons. Write its atomic number, mass number and number of electrons in the neutral atom.

Section C (3 Marks Marks)

(Questions 27-33 are Short Answer questions.)

27. Differentiate between meristematic tissue and permanent tissue. State one location and one function of each.
28. A body starts from rest and accelerates uniformly at 3 m s^{-2} for 6 s. Calculate its final velocity and distance travelled. Write the equation of motion used in each calculation.
29. Explain how you would obtain pure crystals of copper sulphate from an impure sample dissolved in water. Name the separation/purification process involved.
30. A 10 kg object moving at 4 m s^{-1} is brought to rest in 2 s. Calculate its acceleration and the force acting on it. What does the negative sign of acceleration indicate?
31. A 3 kg object is moving at 4 m s^{-1} . Calculate its kinetic energy. If its speed becomes twice, by what factor does its kinetic energy change?
32. Atoms A and B have electronic configurations 2,8,1 and 2,8,8 respectively. Compare their valencies and chemical reactivities. Which one is more likely to form an ion?
33. A person standing 170 m from a cliff claps once. Take the speed of sound as 340 m s^{-1} . Calculate the time after which the echo is heard. Explain why an echo is not heard distinctly if the reflecting surface is too close.

Section D (5 Marks Each)

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

34.

- (a) Explain the structure and functions of xylem and phloem.
- (b) Why are sclerenchyma cells well suited for mechanical support?

OR

- (a) Describe the structure and functions of epithelial, muscular and nervous tissues.
- (b) Distinguish between tendon and ligament.

35.

- (a) Explain sexual reproduction in flowering plants from pollination up to seed and fruit formation.
- (b) Differentiate between self-pollination and cross-pollination.

OR

- (a) Explain the role of testes, ovaries, sperm and ovum in human reproduction.
- (b) Why is meiosis important for maintaining the chromosome number of a species?

36.

- (a) State the main features of Bryophyta, Pteridophyta and Gymnosperms and give one example of each.
- (b) What is binomial nomenclature?

OR

- (a) Compare Porifera, Annelida and Arthropoda on the basis of body organisation and give one example of each.
- (b) State two features that distinguish chordates from non-chordates.

Section E (4 Marks Each)

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

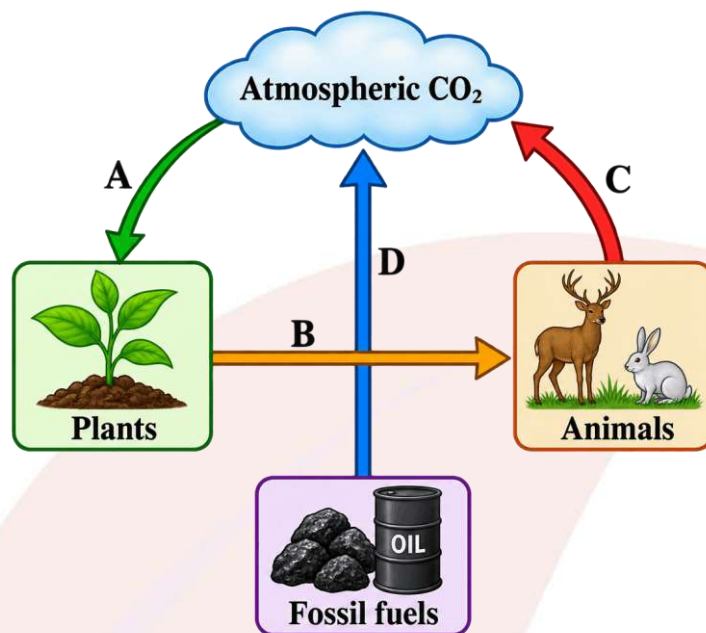
37. A student pushes a 5 kg trolley on a smooth horizontal floor. Its velocity increases from 2 m s^{-1} to 8 m s^{-1} in 3 s.

- (a) Calculate the acceleration of the trolley.
- (b) Calculate the net force acting on it.
- (c) Calculate its initial momentum.
- (d) Calculate its final momentum.

38. A student observes two forms of reproduction. In one, a potato plant grows from an 'eye' of a tuber. In another, male and female gametes fuse to form a zygote.

- (a) Name the type of reproduction shown by the potato.
- (b) State one advantage of this method for farmers.
- (c) What is the fusion of male and female gametes called?
- (d) State one important difference between offspring produced by these two modes of reproduction.

39. Study the simplified carbon-cycle diagram.



- (a) Identify process A by which atmospheric carbon enters plants.
- (b) What transfer is represented by B?
- (c) Identify process C by which carbon returns from animals to the atmosphere.
- (d) Process D represents rapid release of stored carbon from fossil fuels. Name this process and state one environmental consequence of its increase.