SAMPLE PAPER 10

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.

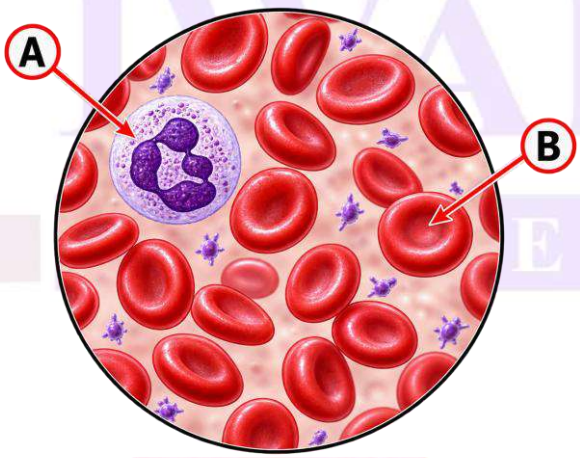
Section A (1 Mark Each)

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

1. Which statement best describes the role of evidence in science?
(a) Evidence is unnecessary if an idea sounds reasonable
(b) Evidence is used to test and improve explanations
(c) Evidence must always support the first hypothesis
(d) Evidence cannot be obtained by measurement

2. Which cell organelle modifies, packages and dispatches materials made in the cell?
(a) Golgi apparatus
(b) Cell wall
(c) Ribosome
(d) Chromosome

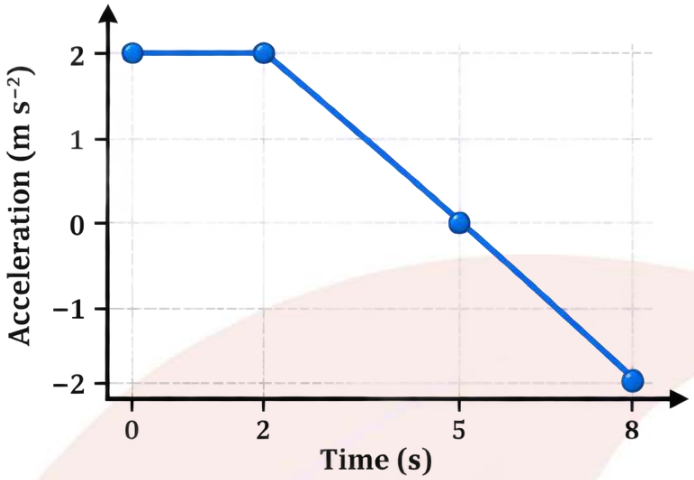
3. Study the schematic of blood tissue. Which labelled component represents a white blood cell?



Blood tissue (schematic)

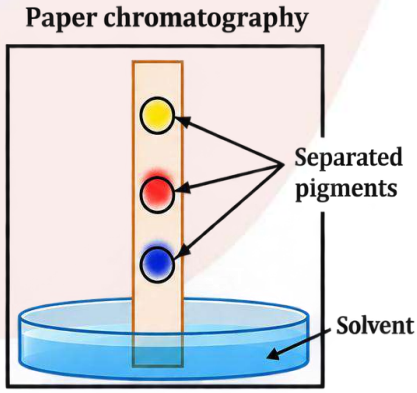
(a) A (b) B (c) Both A and B (d) Neither

4. Study the acceleration-time graph. During which interval is acceleration zero?



(a) 0-2 s (b) at 5 s (c) 5-8 s throughout (d) never

5. The method shown is particularly useful for separating coloured components of a mixture. It is:

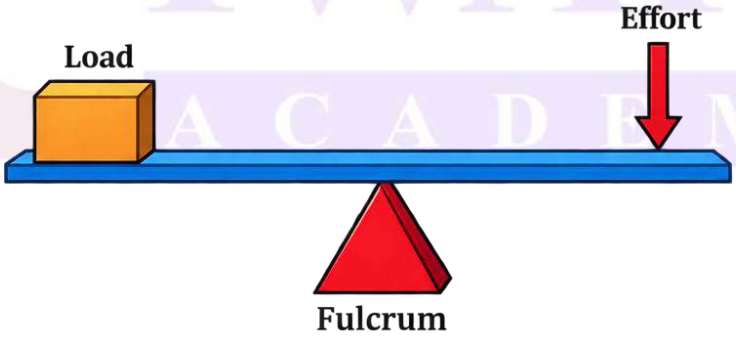


(a) chromatography (b) sublimation
(c) distillation (d) centrifugation

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

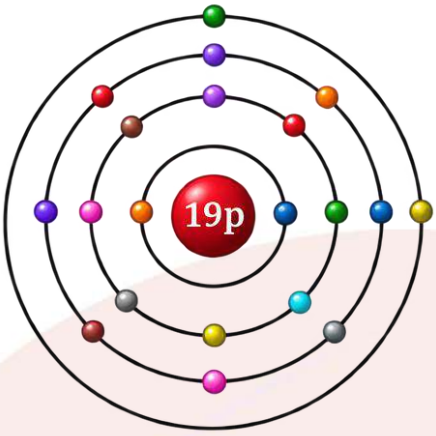
(a) 4 m s^{-2} (b) 5 m s^{-2} (c) 36 m s^{-2} (d) 405 m s^{-2}

7. In the lever shown, the fulcrum lies between load and effort. This arrangement is a:



(a) first-class lever (b) second-class lever
(c) third-class lever (d) pulley

8. The atom shown has electronic configuration 2, 8, 8, 1. Its valency is:

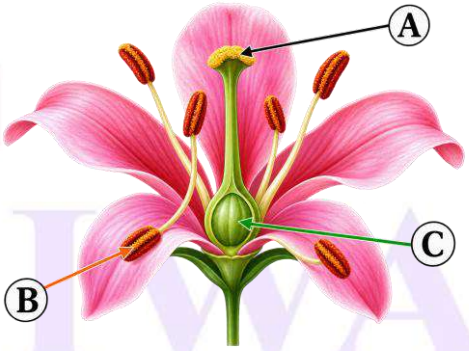


(a) 0 (b) 1 (c) 7 (d) 8

9. Which pair 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 atoms sharing electrons equally

10. A sound becomes louder without a change in pitch. Which wave property has increased?
(a) Frequency (b) Amplitude (c) Time period (d) Speed

11. In the flower diagram, which labelled part receives pollen during pollination?



(a) A (b) B (c) C (d) All of these

12. Which vertebrate group is characterised by feathers and a four-chambered heart?
(a) Pisces (b) Amphibia (c) Aves (d) Reptilia

13. Which process is responsible for conversion of water vapour into tiny liquid droplets in clouds?
(a) Evaporation (b) Condensation (c) Transpiration (d) Infiltration

14. Which cell structure regulates the entry and exit of substances?
(a) Plasma membrane (b) Cell wall only (c) Nucleolus (d) Chromatin

15. An athlete completes one round of a 400 m track and returns to the starting point. Which statement is correct?
(a) Distance = 0, displacement = 400 m (b) Distance = 400 m, displacement = 0
(c) Both are 400 m (d) Both are 0

16. Which method is suitable for separating acetone and water when their boiling points are sufficiently different?
(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 can have zero velocity at an instant and still possess acceleration.
Reason (R): Velocity and acceleration describe different aspects of motion.

18. Assertion (A): The efficiency of a machine is the ratio of useful output work to input work.
Reason (R): Some input energy may be lost because of friction.

19. Assertion (A): An atom with electronic configuration 2,8,8 is chemically stable.
Reason (R): Its outermost shell is complete.

20. Assertion (A): Covalent compounds are formed by sharing of electrons.
Reason (R): Sharing can help atoms attain stable electronic configurations.

Section B (2 Marks Each)

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

21. State two differences between a prokaryotic cell and a eukaryotic cell.

22. A runner covers 150 m in 15 s and another 250 m in 20 s. Calculate the average speed for the complete journey.

23. What is chromatography? Mention one situation in which it can be used.

24. A 10 kg object moving at 3 m s^{-1} reaches 9 m s^{-1} in 2 s. Calculate its acceleration and the net force acting on it.

25. A motor does 3600 J of work in 12 s. Calculate its power. How much work will it do in 5 s at the same power?

26. An atom contains 18 electrons and 22 neutrons and is electrically neutral. Find its atomic number and mass number.

Section C (3 Marks Each)

(Questions 27-33 are Short Answer questions.)

27. Differentiate between blood, bone and cartilage as connective tissues. State one major function of each.

28. A train moving at 20 m s^{-1} slows uniformly at 2 m s^{-2} for 6 s. Calculate its final velocity and the distance travelled during this interval.

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

30. A 3 kg object moving at 8 m s^{-1} is acted upon by a force of 6 N opposite to its motion for 2 s. Calculate its acceleration and final velocity.

31. A machine raises a 900 N load by applying an effort of 300 N. Its effort moves 2.4 m while the load rises 0.6 m. Calculate mechanical advantage, velocity ratio and efficiency.

32. Element P has atomic number 20 and element Q has atomic number 9. Write their electronic configurations, valencies and the formula of the compound they are likely to form.

33. A sound wave travels 510 m in 1.5 s. If its frequency is 680 Hz, calculate its speed and wavelength. State the wave property responsible for loudness.

Section D (5 Marks Each)

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

34.

(a) Explain the structure and functions of blood, bone and cartilage.

(b) Why is blood considered a connective tissue?

OR

(a) Compare parenchyma, collenchyma and sclerenchyma.

(b) Explain how xylem and phloem contribute to transport in plants.

35.

(a) Describe the parts of a flower involved in sexual reproduction and explain pollination and fertilisation.

(b) What changes occur in the ovule and ovary after fertilisation?

OR

(a) Explain asexual reproduction by fragmentation, budding and vegetative propagation with examples.

(b) State two advantages of vegetative propagation.

36.

(a) Compare Pisces, Amphibia, Reptilia, Aves and Mammalia on the basis of habitat/body covering, respiration and reproduction.

(b) Give one example of each.

OR

(a) Explain the main features of Monera, Protista, Fungi, Plantae and Animalia.

(b) State two advantages of classifying living organisms.

Section E (4 Marks Each)

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

37. A 25 kg trolley is initially moving at 2 m s^{-1}. A constant net force of 50 N acts on it in the direction of motion for 3 s.

(a) Calculate the acceleration.

(b) Calculate its final velocity.

(c) Calculate its initial momentum.

(d) Calculate its final momentum.

38. A student observes a flowering plant and follows the sequence from transfer of pollen to formation of a seed.

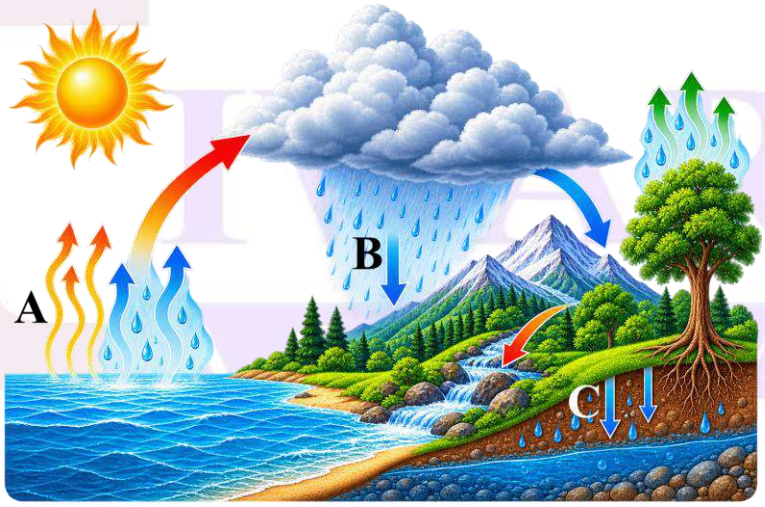
(a) Name the process by which pollen reaches the stigma.

(b) What is fertilisation?

(c) Which structure develops into a seed after fertilisation?

(d) Which structure generally develops into a fruit?

39. Study the simplified water-cycle diagram.



(a) Identify process A in which liquid water changes into water vapour.

(b) Identify process B by which water returns from clouds towards the Earth's surface.

(c) What may process C represent when water reaches land?

(d) Explain one way in which plants participate in the water cycle.