

Class 9 Science Question Paper 2019 - Practice PDF

Subject	Board / Medium	Time	Maximum Marks
Science	CBSE + State Board adaptable	3 Hours	80

Important authenticity note: This is an original Education Adda practice resource created in a 2019-style school annual-exam format. It is **not** an official 2019 board paper. Class 9 paper formats, prescribed chapters and language texts vary by school, board, medium and academic session. Students should verify the exact syllabus and exam pattern with their school or board.

General Instructions

1. Attempt all questions. Internal choice may be provided in selected long answers.
2. Write formula, substitution and unit in numerical answers.
3. Draw neat labelled diagrams wherever required.
4. Use current school syllabus to omit any topic not prescribed for you.

Coverage focus: Matter, atoms and molecules, structure of atom, cell, tissues, diversity, motion, force, gravitation, work and energy, sound, health, natural resources and food production.

Section A - Objective and Very Short Answer

1. Which state of matter has a definite volume but no definite shape? [1 mark]
(A) Solid (B) Liquid
(C) Gas (D) Plasma
2. Name the process in which a solid changes directly into vapour. [1 mark]
3. What is the valency of oxygen in most common compounds? [1 mark]
4. Which cell organelle is known as the powerhouse of the cell? [1 mark]
5. Name the tissue that transports water in plants. [1 mark]
6. Write the SI unit of speed. [1 mark]
7. State Newton's first law in one sentence. [1 mark]
8. Write the SI unit of force. [1 mark]
9. What is the value of acceleration due to gravity near Earth's surface approximately? [1 mark]
10. Name the form of energy possessed by a moving body. [1 mark]
11. Sound cannot travel through which type of medium? [1 mark]
12. Name one communicable disease. [1 mark]

Section A: 12 marks

Section B - Short Answer I

13. Differentiate between evaporation and boiling using any two points. [2 marks]
14. Calculate the molecular mass of CO₂. Use C=12, O=16. [2 marks]
15. Why is the plasma membrane called selectively permeable? [2 marks]
16. Give two differences between parenchyma and sclerenchyma. [2 marks]
17. A car travels 150 km in 3 hours. Calculate its average speed in km/h. [2 marks]
18. A force of 20 N acts on a mass of 5 kg. Find the acceleration. [2 marks]
19. Why does an object weigh less on the Moon than on Earth? [2 marks]
20. State the law of conservation of energy with one everyday example. [2 marks]
21. What determines the pitch and loudness of a sound? [2 marks]
22. Distinguish between acute and chronic diseases. [2 marks]

Section B: 20 marks

Section C - Short Answer II

23. Explain any three factors that increase the rate of evaporation. [3 marks]
24. Write the electronic configurations of sodium (11) and chlorine (17). Explain why they readily form an ionic compound. [3 marks]
25. Draw a labelled plant cell and label: cell wall, cell membrane, nucleus, vacuole and chloroplast. [3 marks]
26. Explain the functions of xylem and phloem. [3 marks]
27. A cyclist starts from rest and reaches 12 m/s in 6 s. Find acceleration and distance travelled assuming uniform acceleration. [3 marks]
28. A 2 kg object moving at 4 m/s is brought to rest. Calculate its initial kinetic energy and state the work done on it. [3 marks]
29. Explain how frequency, amplitude and speed are different properties of a sound wave. [3 marks]
30. Write three practices that help prevent infectious diseases at community level. [3 marks]

Section C: 24 marks

Section D - Long Answer / Application

31. A student heats ice in a beaker and records temperature while it changes to water and then steam. Explain the temperature behaviour during melting and boiling, including the role of latent heat. [5 marks]
32. Describe Rutherford's alpha-particle scattering experiment. Write three observations and the main conclusions about atomic structure. [5 marks]
33. Explain Newton's three laws of motion. Give one practical example for each law. [5 marks]
34. A stone of mass 2 kg is raised vertically through 10 m. Calculate its gain in potential energy using $g=9.8 \text{ m/s}^2$. If it falls freely, explain the energy conversion just before it reaches the ground. [5 marks]
35. Case study: A village pond receives detergent-rich wastewater and excessive fertiliser runoff. After several weeks, algae increase and fish begin to die. Explain four likely scientific reasons/processes involved and suggest two corrective measures. [4 marks]

36. Explain why crop variety improvement, nutrient management, irrigation and pest control must be planned together for sustainable food production. [5 marks]

Section D: 24 marks | Total: 80

Science Answer Key & Marking Hints

Diagrams should be credited for correct structure and labels. Numerical answers require method as well as final value.

1. B - Liquid.
2. Sublimation.
3. 2.
4. Mitochondrion / mitochondria.
5. Xylem.
6. m/s.
7. A body remains at rest or in uniform straight-line motion unless acted upon by an unbalanced external force.
8. newton (N).
9. Approximately 9.8 m/s².
10. Kinetic energy.
11. Vacuum.
12. Any valid example, e.g., influenza, measles, tuberculosis.
13. Evaporation occurs at the surface and at many temperatures; boiling occurs throughout the liquid at a fixed boiling point for given pressure.
14. $12 + 2(16) = 44$ u.
15. It allows some substances to pass while restricting others.
16. Parenchyma: living, thin-walled; sclerenchyma: dead at maturity, thick lignified walls; functions differ.
17. 50 km/h.
18. $a = F/m = 20/5 = 4$ m/s².
19. Moon's gravitational acceleration is much lower, so $W = mg$ is lower although mass stays same.
20. Energy changes form but total energy remains constant; accept suitable example.
21. Pitch depends mainly on frequency; loudness mainly on amplitude.
22. Acute: short duration; chronic: long duration and often prolonged effects.
23. Any three with explanation: higher temperature, greater surface area, lower humidity, higher wind speed.
24. Na: 2,8,1; Cl: 2,8,7. Na loses one electron and Cl gains one, forming oppositely charged ions.
25. Plant cell with five requested labels placed correctly.

26. Xylem transports water/minerals mainly upward; phloem transports prepared food to various plant parts.
27. $a = (12-0)/6 = 2 \text{ m/s}^2$; $s = ut + \frac{1}{2} at^2 = 36 \text{ m}$.
28. $KE = \frac{1}{2} mv^2 = 16 \text{ J}$. Work done to stop it = -16 J (work on object, sign convention).
29. Frequency: oscillations per second; amplitude: maximum displacement; speed: distance travelled by wave per unit time.
30. Any three: safe water, sanitation, vaccination, vector control, hygiene, isolation where appropriate.
31. Temperature remains nearly constant during phase change because supplied heat is used as latent heat to change state; explain melting and boiling separately.
32. Most particles pass straight; some deflect; very few rebound. Conclude atom mostly empty space, positive charge/mass concentrated in tiny nucleus.
33. Correct statements + one practical example each for inertia, $F=ma$ /change of momentum, and action-reaction.
34. $PE = mgh = 2 \times 9.8 \times 10 = 196 \text{ J}$. During fall PE converts mainly to KE; ignoring air resistance total mechanical energy remains constant.
35. Runoff adds nutrients $\rightarrow$ algal bloom; reduced light; decomposition consumes dissolved oxygen; fish suffocate; detergents may add pollution. Measures: treat wastewater, reduce fertiliser runoff, buffer strips/aeration as suitable.
36. High yield requires suitable genetics plus nutrients/water; pests can destroy gains; overuse can damage soil/water. Integrated management improves productivity and sustainability.

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