

CBSE Class 9 Science

Annual Exam Sample Paper

1. The SI unit of acceleration is:
 - a) m/s
 - b) m/s^2
 - c) km/h
 - d) m/min^2
2. Which of the following is NOT a characteristic of particles of matter?
 - a) They have spaces between them
 - b) They are stationary
 - c) They are continuously moving
 - d) They attract each other
3. Which of the following has the highest inertia?
 - a) A rubber ball
 - b) A football
 - c) A bicycle
 - d) A truck
4. The atomic number of an element is 17. Its valency is:
 - a) 1
 - b) 3
 - c) 5
 - d) 7
5. Which of the following is a mixture?
 - a) Sodium chloride
 - b) Air
 - c) Water
 - d) Carbon dioxide
6. The chemical formula of quick lime is:
 - a) CaCO_3
 - b) Ca(OH)_2
 - c) CaO
 - d) CaCl_2
7. The non-metal which is a good conductor of electricity is:
 - a) Sulfur
 - b) Phosphorus
 - c) Carbon (Graphite)
 - d) Iodine

8. Which organelle is called the 'Powerhouse of the Cell'?
 - a) Nucleus
 - b) Mitochondria
 - c) Ribosome
 - d) Golgi apparatus
9. The force which opposes the relative motion between two surfaces in contact is:
 - a) Gravitational force
 - b) Frictional force
 - c) Electrostatic force
 - d) Magnetic force
10. What is the pH value of pure water?
 - a) 0
 - b) 7
 - c) 14
 - d) 5
11. Which state of matter has a definite shape and volume?
 - a) Solid
 - b) Liquid
 - c) Gas
 - d) Plasma
12. What is the process called when a solid changes directly to gas?
 - a) Evaporation
 - b) Sublimation
 - c) Condensation
 - d) Freezing
13. Which of the following is a compound?
 - a) Air
 - b) Water
 - c) Gold
 - d) Salt (sodium chloride)
14. The smallest particle of an element that retains its chemical properties is:
 - a) Molecule
 - b) Atom
 - c) Ion
 - d) Compound
15. The number of protons in an atom determines its:
 - a) Mass number
 - b) Atomic number

- c) Valency
 - d) Isotopes
16. The control center of the cell is the:
- a) Nucleus
 - b) Cytoplasm
 - c) Cell wall
 - d) Cell membrane
17. Which type of tissue covers the body surfaces and lines the internal organs?
- a) Epithelial tissue
 - b) Connective tissue
 - c) Muscle tissue
 - d) Nervous tissue
18. The SI unit of distance is:
- a) Metre
 - b) Kilometre
 - c) Centimetre
 - d) Millimetre
19. The force that causes a change in the state of motion of an object is:
- a) Inertia
 - b) Gravity
 - c) Friction
 - d) Applied force
20. The law that states that every action has an equal and opposite reaction is:
- a) Newton's first law
 - b) Newton's second law
 - c) Newton's third law
 - d) Law of conservation of energy
21. The force of gravity between two objects depends on their:
- a) Masses and distance between them
 - b) Volumes and density
 - c) Surface area
 - d) Temperature
22. The kinetic energy of an object is given by:
- a) mv
 - b) mgh
 - c) $(1/2)mv^2$
 - d) Fd
23. The frequency of a wave is measured in:
- a) Metres

- b) Hertz
 - c) Seconds
 - d) Decibels
24. The disease caused by the bacterium *Mycobacterium tuberculosis* is:
- a) Malaria
 - b) Tuberculosis
 - c) Cholera
 - d) Typhoid
25. The ozone layer is found in the:
- a) Troposphere
 - b) Stratosphere
 - c) Mesosphere
 - d) Exosphere
26. The process of converting atmospheric nitrogen into usable forms for plants is called:
- a) Nitrogen fixation
 - b) Denitrification
 - c) Assimilation
 - d) Ammonification
27. The five-kingdom classification includes which of the following kingdoms?
- a) Monera, Protista, Plantae, Animalia, Fungi
 - b) Bacteria, Archaea, Protista, Plantae, Animalia
 - c) Plantae, Animalia, Fungi, Protista, Virus
 - d) Monera, Protista, Plantae, Animalia, Virus
28. The process by which plants lose water through their leaves is:
- a) Transpiration
 - b) Respiration
 - c) Photosynthesis
 - d) Digestion
29. The device that converts electrical energy into mechanical energy is:
- a) Motor
 - b) Generator
 - c) Transformer
 - d) Battery
30. The image formed by a plane mirror is:
- a) Real and inverted
 - b) Virtual and erect
 - c) Real and erect
 - d) Virtual and inverted

31. **Assertion (A):** The molecular mass of water is 18 amu.

Reason (R): Water is composed of two hydrogen atoms and one oxygen atom, with atomic masses 1 amu and 16 amu respectively.

- (a) Both A and R are true, and R is the correct explanation of A.
- (b) Both A and R are true, but R is not the correct explanation of A.
- (c) A is true, but R is false.
- (d) A is false, but R is true.

32. **Assertion:** The atomic number of an element is equal to the number of protons in its nucleus.

Reason: The number of protons is always equal to the number of neutrons in an atom.

- A) Both Assertion and Reason are true, and Reason is the correct explanation of Assertion.
- B) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
- C) Assertion is true, but Reason is false
- D) Assertion is false, but Reason is true.

33. **Assertion:** Crop rotation is beneficial for soil fertility.

Reason: Different crops require different nutrients, and crop rotation prevents depletion of specific nutrients in the soil.

- A) Both Assertion and Reason are true, and Reason is the correct explanation of Assertion.
- B) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
- C) Assertion is true, but Reason is false
- D) Assertion is false, but Reason is true.

34. **Assertion:** A convex lens always forms a virtual, erect, and diminished image.

Reason: A convex lens converges parallel rays of light to a single point.

- A) Both Assertion and Reason are true, and Reason is the correct explanation of Assertion.

B) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

C) Assertion is true, but Reason is false

D) Assertion is false, but Reason is true.

. SECTION B – Short Answer Questions (10 × 3 = 30 Marks)

1. **State Newton's three laws of motion** with an example of each.
2. Differentiate between **distance and displacement** with an example.
3. Define **work** and write its SI unit. Calculate the work done when a force of 5 N displaces an object by 2 m in the direction of force.
4. Write three **differences between a compound and a mixture** with examples.
5. Explain the **structure of an atom** with the help of **Bohr's model**.
6. Why is **plasma** considered the fourth state of matter? Write two applications of plasma.
7. What are the **functions of the nucleus in a cell**?
8. Define **buoyancy** and explain why objects float or sink in water.
9. **Write the chemical equations** for the following reactions:
 - a) Magnesium + Hydrochloric acid → Magnesium chloride + Hydrogen
 - b) Zinc + Sulfuric acid → Zinc sulfate + Hydrogen
 - c) Copper oxide + Hydrogen → Copper + Water
10. Define **Biodiversity**. Why is biodiversity important for ecosystem stability?

SECTION C – Long Answer Questions (6 × 5 = 30 Marks)

11. a) Derive the equation of motion: **$v = u + at$** .
b) A car starts from rest and accelerates at 5 m/s² for 10 seconds. Find its final velocity.
12. a) Explain **kinetic energy** with a formula and example.
b) A ball of mass 2 kg is moving with a speed of 3 m/s. Calculate its kinetic energy.
13. a) State **the law of conservation of mass** with an example.
b) Calculate the **molar mass** of the following:
 1. H₂SO₄
 2. NaOH

14. **(Sound & Light)**

- a) What is **echo**? Write two conditions required for the production of echo.
- b) Differentiate between **concave and convex lenses** with diagrams.

15. **(Improvement in Food Resources & Natural Resources)**

- a) Write three differences between **manure and fertilizers**.
- b) What are the **methods of soil conservation**?

16. **(Gravitation & Fluids)**

- a) State **Archimedes' Principle** and its applications.
- b) An object weighs 100 N in air and 80 N when immersed in water. Find the **buoyant force acting on the object**.