

ANNUAL EXAMINATION

CLASS IX — CHEMISTRY

2019-Style Final Examination Paper

Matter • Atoms & Molecules • Structure of Atom • Chemical Concepts

Time: 3 Hours

Maximum Marks: 80

Class: IX

General Instructions

1. Read all questions carefully before answering.
2. Show calculations clearly in numerical questions.
3. Use correct chemical symbols, formulae and units.
4. Draw neat and labelled diagrams wherever required.
5. This is a newly written 2019-style practice paper, not a reproduction of an original paper.

Section A — Matter Around Us

Q1.

Define matter and state two characteristics of particles of matter.

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Q2.

Differentiate between solids, liquids and gases on the basis of shape, volume and compressibility.

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Q3.

Why does the smell of perfume spread throughout a room after some time?

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Q4.

Explain why evaporation causes cooling.

Q5.

What is the effect of increasing temperature on the kinetic energy of particles?

Q6.

Differentiate between evaporation and boiling.

Q7.

Why can gases be compressed much more easily than liquids?

Section B — Is Matter Around Us Pure?

Q8.

Differentiate between a mixture and a pure substance.

Q9.

What is a solution? Identify the solute and solvent in a salt-water solution.

Q10.

Differentiate between a suspension and a colloidal solution.

Q11.

Explain how filtration can be used to separate an insoluble solid from a liquid.

Q12.

Explain the principle behind separation by distillation.

Q13.

A mixture contains sand and common salt. Describe a suitable sequence of steps to separate the two components.

Section C — Atoms and Molecules

Q14.

State the law of conservation of mass and the law of constant proportions.

Q15.

What is an atom? What is a molecule?

Q16.

Calculate the molecular mass of H_2O , given $\text{H} = 1 \text{ u}$ and $\text{O} = 16 \text{ u}$.

Q17.

Calculate the formula unit mass of CaCO_3 , given $\text{Ca} = 40 \text{ u}$, $\text{C} = 12 \text{ u}$ and $\text{O} = 16 \text{ u}$.

Q18.

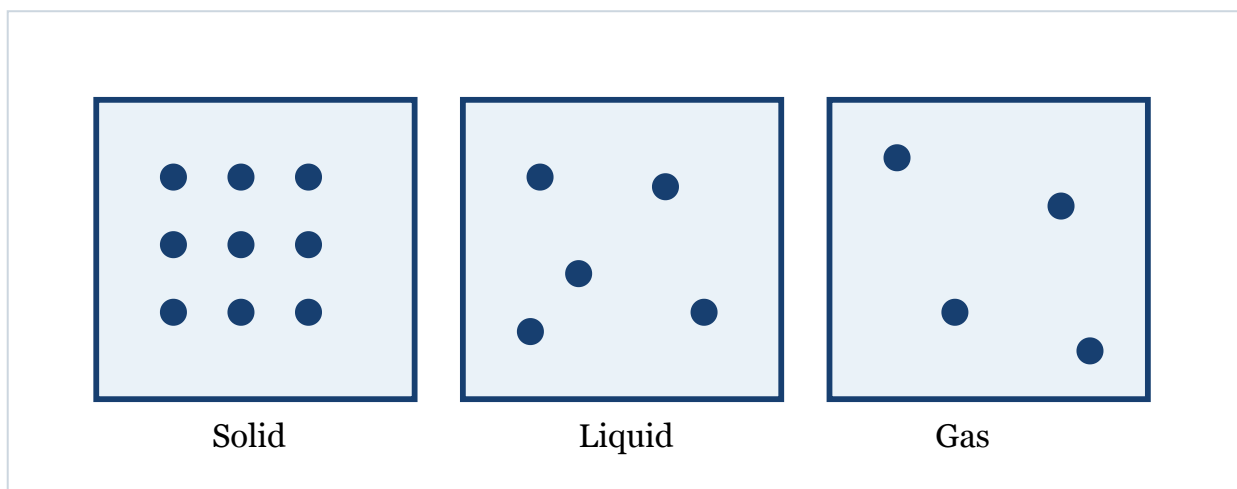
Write the chemical formulae of magnesium chloride, aluminium oxide and calcium hydroxide.

Q19.

Explain why chemical formulae must obey the valency of the combining elements.

Q20. Diagram Question

Draw a simple particle-level diagram showing how particles are arranged in a solid, liquid and gas. Label all three states.



Section D — Structure of the Atom

Q21.

Describe the basic structure of an atom in terms of electrons, protons and neutrons.

Q22.

Compare the Thomson, Rutherford and Bohr models of the atom in brief.

Q23.

What are atomic number and mass number? Explain their relationship with protons and neutrons.

Q24.

An atom has atomic number 17 and mass number 35. Find the number of protons, electrons and neutrons in the neutral atom.

Q25.

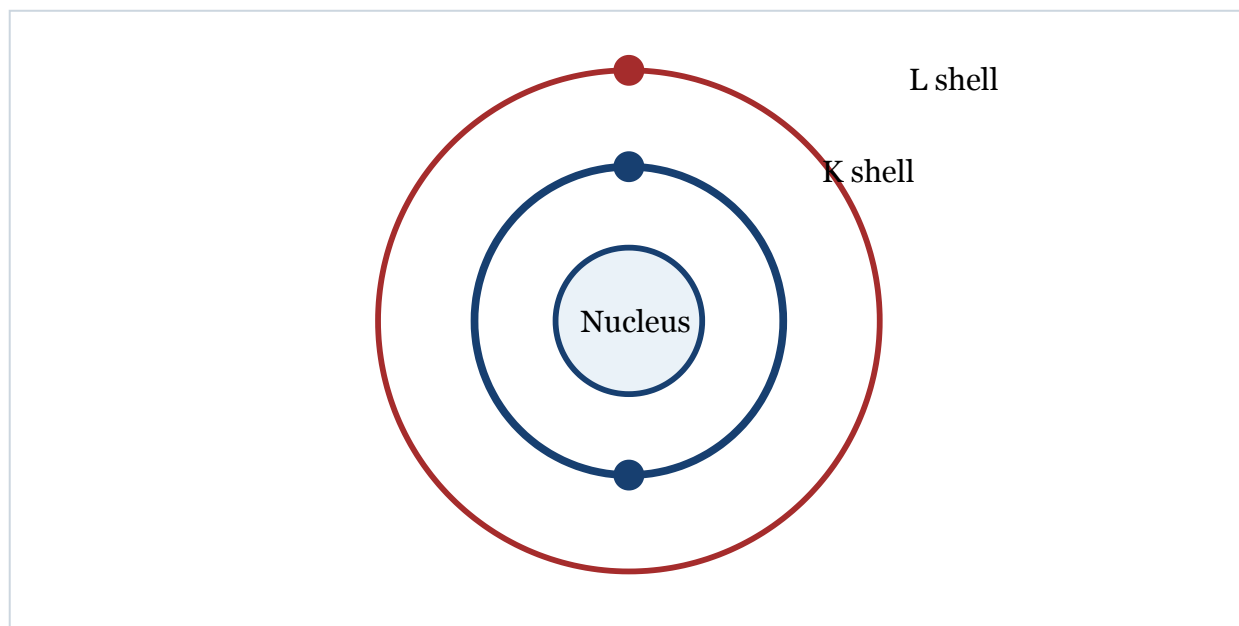
What are isotopes? Give one example and mention one useful application of isotopes.

Q26.

Explain why atoms are electrically neutral under normal conditions.

Q27. Diagram Question

Draw a labelled Bohr-style representation of an atom with two electrons in the first shell and one electron in the second shell. Indicate the nucleus and shells.



Section E — Higher Order / Application Questions

Q28.

Wet clothes dry faster on a hot, windy day. Explain the factors responsible for this observation.

Q29.

A student adds more salt to a fixed amount of water until some salt remains undissolved. Explain what has happened to the solution.

Q30.

Why can a mixture be separated by physical methods while a compound generally requires a chemical method for decomposition?

Q31.

An atom contains 11 protons and 12 neutrons. Determine its atomic number and mass number and state the number of electrons in its neutral form.

Q32.

Explain how the arrangement of electrons in shells helps determine the chemical behaviour of an element.

Q33.

Two substances have the same elements but different proportions. Explain why their properties may be different using the idea of composition.

Q34.

A student is given a mixture of iron filings, sand and salt. Design a step-by-step method to separate all three components.

Q35.

Explain why scientific models of the atom changed as new experimental evidence became available. Give examples from atomic models studied in Class 9.
