Class : IX **Max. Marks : 50**

Time : 1 hr

Instructions:

- All questions are compulsory.
- Read all the questions carefully before answering.
- Answer the questions neatly and clearly.
- Answer in one or two sentences for short answer questions.
- Draw neat diagrams wherever required.

Section A – Multiple Choice Questions (1 × 10 = 10 Marks)

1. Who discovered the electron?
   a) Rutherford b) Bohr c) J.J. Thomson d) Dalton
2. The charge on an electron is:
   a) Positive b) Negative c) Neutral d) Variable
3. The nucleus of an atom contains:
   a) Protons only b) Neutrons only c) Protons and neutrons d) Electrons only
4. The atomic number of an element is equal to the number of:
   a) Neutrons b) Protons c) Protons + neutrons d) Electrons + neutrons
5. Which sub-atomic particle has no charge?
   a) Proton b) Electron c) Neutron d) Positron
6. Rutherford's alpha-particle scattering experiment showed that:
   a) Atom is solid b) Atom is indivisible c) Atom has a small dense nucleus d) Electrons are stationary
7. The maximum number of electrons in the L-shell is:
   a) 2 b) 4 c) 8 d) 18
8. The mass number of an atom is the total number of:
   a) Electrons and protons b) Protons and neutrons c) Neutrons and electrons d) Only protons
9. Isotopes have the same:
   a) Mass number b) Atomic number c) Number of neutrons d) Atomic mass
10. Which model explained the stability of an atom?
    a) Dalton's model b) Thomson's model c) Rutherford's model d) Bohr's model

Section B – Very Short Answer Questions (2 × 5 = 10 Marks)

11. Define atomic number.
12. What is an isotope?
13. Name the three sub-atomic particles.
14. What is the charge of a proton?
15. Write the formula to calculate mass number.

Section C – Short Answer Questions (3 × 5 = 15 Marks)

16. Describe Rutherford's alpha-particle scattering experiment.
17. Write the postulates of Bohr's atomic model.
18. Explain Thomson's model of atom.
19. What are isotopes? Write two uses of isotopes.
20. Write the electronic configuration of sodium (Na).

Section D – Long Answer Questions / Numericals (5 × 3 = 15 Marks)

21. Draw a neat labeled diagram of an atom showing nucleus and shells.
22. An atom has 17 protons and 18 neutrons. Find:
    a) Atomic number
    b) Mass number
    c) Electronic configuration
23. Compare Rutherford's model and Bohr's model of the atom.