

1. State the main postulates of Dalton's atomic theory. How does the modern atomic theory contradict and correlate with Dalton's atomic theory.
2. State in brief the drawbacks of Rutherford's atomic model correlating them with the postulates of Bohr's atomic model.
3. What are energy levels? Explain the arrangement and distribution of electrons in the various shells with reference to an atom in general and to an atom of potassium  ${}^{39}_{19}\text{K}$  with special reference to the  $2n^2$  rule.
4. Explain in brief the experimental proofs which led to the discovery of –
  - (a) Electrons
  - (b) Protons
  - (c) Atomic nucleus
  - (d) Neutrons
5. Explain with the help of atomic orbit structure diagram the formation of CaO.
6. Draw the geometric structure of each of the following atoms showing the number of electrons, protons and neutrons in each of them:  ${}^{31}_{15}\text{P}$ ,  ${}^{40}_{20}\text{Ca}$
7. Represent each of the following:
  - (a) A proton 'p'
  - (b) An electron 'e'
  - (c) A neutron 'n' in terms of its symbols showing the subscript and superscript values.
8. An element 'A' has mass number 23 and atomic number 11. State the,
  - (a) no. of neutrons in its shell
  - (b) Electronic configuration of the element 'A'
9. The following elements U to Z are given:  ${}_{3}\text{U}$ ,  ${}_{6}\text{V}$ ,  ${}_{9}\text{W}$ ,  ${}_{14}\text{X}$ ,  ${}_{18}\text{Y}$ ,  ${}_{20}\text{Z}$   
State the electronic configuration of each and state whether they are metals, non-metals or inert gases.
10. Draw the geometric structure of each of the following atoms showing the number of electrons, protons and neutrons in each of them:  ${}^{12}_{6}\text{C}$ ,  ${}^{23}_{11}\text{Na}$
11. Define an isotope. Give reason why isotopes have same chemical but different physical properties.
12. Draw the geometric atomic structure of the three isotopes of hydrogen and the two isotopes of chlorine.
13. What are noble gases? Give a reason why noble gases have stable electronic configuration.
14. Explain the reason for chemical activity of an atom with reference to its electronic configuration.
15. Differentiate between Duplet and octet rule.
16. Explain the octet rule for formation of sodium chloride from a sodium atom and a chlorine atom.