



## CHEMISTRY

### CH:2 STRUCTURE OF ATOM

Class: XI

1. What are electromagnetic radiations? Give an example.
2. Explain dual nature of light and matter.
3. Explain Bohr's atom model. What are its limitations?
4. Differentiate between orbit and orbital.
5. Which of the four quantum numbers ( $n, l, m_l, m_s$ ) determine a) the energy of electron in a hydrogen atom and in a many electron atom b) size of the orbital c) shape of the orbital d) orientation of the orbital e) Spin of orbital?
6. State uncertainty principle and explain its significance.
7. What is the maximum number of electrons in a) principal shell b) s, p, d & f sub shells c) an orbital?
8. What are quantum numbers? Describe briefly about quantum numbers.
9. What are the possible values of  $n, l$  and  $m$  for a 3p orbital?
10. How many quantum numbers are required to specify an orbital?
11. What are degenerate orbitals?
12. Sketch the shapes of s, p and d orbitals.
13. Discuss the various rules on which filling of electrons in the orbitals of atoms is based. Illustrate with suitable examples.
14. Why are half filled and completely filled orbitals more stable?
15. In building up of atoms, the filling of 4s orbitals occurs before 3d orbitals. Explain.
16. Calculate the mass of a photon having wave length 1 nm.
17. Which has higher energy: a photon of red light with a wavelength of  $7500 \text{ \AA}$  or a photon of green light with a wavelength of  $5250 \text{ \AA}$ ?
18. The approximate mass of an electron is  $10^{-27} \text{ g}$ . Calculate the uncertainty in its velocity if the uncertainty in its position were of the order of  $10^{-11} \text{ m}$ .
19. Write electronic configurations of atoms of Cr (at.no. 24) and Cu (at.no. 29). Show the orientations of electron spins by arrow heads.