



**UNIT- 2 – QUANTUM MECHANICAL MODEL OF ATOM**

**I. Answer in brief (2/3 marks)**

1. How many orbitals are possible for  $n = 4$ ?
2. How many radial nodes for 2s, 4p, 5d and 4f orbitals exhibit? How many angular nodes?
3. Which quantum number reveal information about the shape, energy, orientation and size of orbitals?
4. The stabilisation of a half filled d - orbital is more pronounced than that of the p-orbital why?
5. State and explain Pauli Exclusion Principle.
6. Define orbital? What are the  $n$  and  $l$  values for  $3p_x$  and  $4d_{x^2-y^2}$  electron?
7. Give the electronic configuration of  $Mn^{2+}$  and  $Cr^{3+}$
8. Describe the Aufbau principle.

**II. Answer in a paragraph (5 marks)**

1. Explain briefly the time independent schrodinger wave equation?
2. Calculate the uncertainty in position of an electron, if  $\Delta v = 0.1\%$  and  $v = 2.2 \times 10^6 \text{ ms}^{-1}$ .
3. Explain Bohr atom model.
4. Explain the limitation of Bohr's atom model.
5. Explain four types of quantum numbers.