

## Chapter 02

### STRUCTURE OF ATOM

#### Bohr's atomic model:-

- Based on the previous observations, Bohr has proposed his atomic model

#### Postulates:-

- In atom electrons move around nucleus in circular orbits.
- The energy of electron remains constant as long as it is revolving in these circular orbits.
- Electron absorbs or emits energy when it moves from one energy level to another energy level.

$$\Delta E = E_2 - E_1 = h\nu$$

$$\Rightarrow \nu = \frac{\Delta E}{h} = \frac{E_2 - E_1}{h}$$

- Angular momentum of electron is also quantized.

$$mvr = \frac{nh}{2\pi}$$

Where  $n = 1, 2, 3, \dots$

Bohr has calculated

- Radius of  $n^{\text{th}}$  orbit

$$r_n = 52.9 \times \frac{n^2}{Z} \text{ pm}$$

- Energy electron  $E = -2.18 \times 10^{-18} \times \frac{Z^2}{n^2} \text{ J}$
- Velocity of electron  $v = 2.168 \times 10^6 \times \frac{Z}{n} \text{ m/sec}$

