$\frac{h}{4\pi} \Rightarrow \frac{1}{2} \times 10^{-34}$

$hc = 1240$ eV/nm. or 12400 eV/Å

Atomic structure

④ Heisenberg's uncertainty rule.

$\Delta x \cdot \Delta V \geq \frac{h}{4\pi m}$ | $\Delta x \cdot \Delta p \geq \frac{h}{4\pi}$

$\Delta E \cdot \Delta t \geq \frac{h}{4\pi}$ | $\Delta x \cdot \Delta \lambda \geq \frac{\lambda^2}{4\pi}$

⑤ Quantum no.

Orbital angular momentum: $\sqrt{l(l+1)}\,\frac{h}{2\pi}$

Spin angular momentum: $\sqrt{s(s+1)}\,\frac{h}{2\pi}$

magnetic moment: $\mu = \sqrt{n(n+2)}$ B.M

⑥ Nodes

Total nodes $(n-1)$

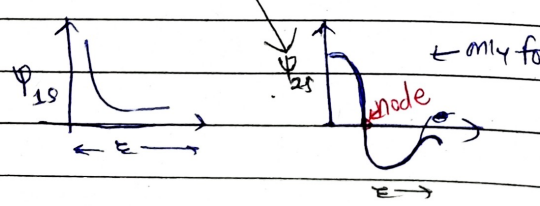
Angular nodes (l)

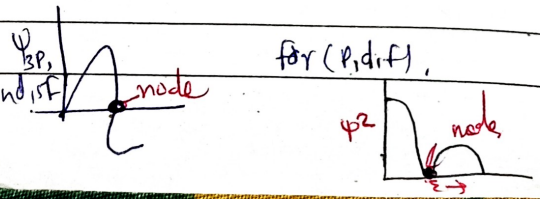
Radial nodes $(n-l-1)$

⑦ Schrondiger wave eqn

ψ = wave funct^n (Amplitude of wave).

$(n-l-1)$





① $E \Rightarrow nh\nu \Rightarrow \frac{nhc}{\lambda}$

② Bohr's theory

1) $\frac{mv^2}{r} = \frac{kze^2}{r^2}$

2) $mvr = \frac{nh}{2\pi}$ | $2\pi r_n = n\lambda$

3) Radius $\Rightarrow \frac{0.529 \times n^2}{z}$ Å

4) Velocity $\Rightarrow \frac{2.18 \times 10^6 \times z}{n}$ m/s

5) Time. pd. $\alpha \frac{n^3}{z^2}$

6) Energy $\Rightarrow$ K.E $= \frac{|U|}{2} = \frac{|P.E|}{2}$

Total. energy $= -\frac{13.6\, z^2}{n^2}$ eV.

$\Delta E = 13.6\, z^2 \left(\frac{1}{n_1^2} - \frac{1}{n_2^2}\right)$ (or) $-2.18 \times 10^{-18} \frac{z^2}{n^2}$ J.

③ De-Broglie

$\lambda = \frac{h}{p} = \frac{h}{mv} = \frac{h}{\sqrt{2mKE}} = \frac{12.26}{\sqrt{V}}$ Å

$2\pi r = n\lambda$ (n = no. of waves)

First line of Balmar series means $n_1 = 2$, $n_2 = 3$

last line or series limit $\Rightarrow$ $n_1 = 2$, $n_2 = \infty$

excited state $(n = x+1)$