

Formula Sheet

For H-atom

- $L_n = \text{angular momentum in } n^{\text{th}} \text{ orbit} = \frac{nh}{2\pi}$
- $r_n = \text{radius of } n^{\text{th}} \text{ circular orbit} = (0.529 \text{ \AA}) n^2$
- $E_n = \text{Energy of electron in } n^{\text{th}} \text{ orbit} = -\frac{13.6}{n^2} \text{ eV}$
- $E_{n_2} - E_{n_1} = \text{Energy emitted when an atom make jumps from } n_2^{\text{th}} \text{ to } n_1^{\text{th}} \text{ orbit } (n_2 > n_1)$

$$\Delta E = (13.6 \text{ eV}) \left[\frac{1}{n_1^2} - \frac{1}{n_2^2} \right]$$

- $\Delta E = h\nu$ $\nu = \text{frequency of spectral line emitted.}$

$$\frac{1}{\lambda} = R (Z)^2 \left[\frac{1}{n_1^2} - \frac{1}{n_2^2} \right]$$

$$r_{nz} = \frac{\text{Bohr radius}}{Z} n^2$$