

**PHYS212- FORMULA SHEET – MAJOR 1**  
**Term122**

$$\frac{e}{m} = \frac{v\theta}{B^2 l d}$$

$$m_e v r = n \hbar$$

$$r_n = \frac{n^2 a_0}{Z}$$

$$E_n = -\frac{13.6 Z^2}{n^2}$$

$$\Delta n = \frac{k^2 Z^2 e^4 N n A}{4 R^2 K \sin^4(\frac{\phi}{2})}$$

$$E = n h f$$

***Constants:***

$$e = 1.6 \times 10^{-19} \text{ C}$$

$$m_e = 9.1 \times 10^{-31} \text{ kg}$$

$$\hbar = 1.05 \times 10^{-34} \text{ J} \cdot \text{s}$$

$$m_p = 1.67 \times 10^{-27} \text{ kg}$$

$$c = 3 \times 10^8 \text{ m / s}$$

$$1u = 1.66 \times 10^{-27} \text{ kg}$$

$$k_B = 1.38 \times 10^{-23} \text{ J / K}$$

$$k = 9 \times 10^9 \text{ N} \cdot \text{m}^2 \text{C}^2$$

$$m_e c^2 = 0.511 \text{ MeV}$$

$$m_p c^2 = 938 \text{ MeV}$$

$$hc = 12400 \text{ eV} \cdot \text{\AA}$$

$$\lambda_c = 0.00243 \text{ nm}$$

$$\sigma = 5.67 \times 10^{-8} \text{ W} \cdot \text{m}^{-2} \text{ K}^{-4} \quad R = 1.0973 \times 10^7 \text{ m}^{-1} \quad a_o = 0.053 \text{ nm}$$