PHYSQ 208, Aide-mémoire, examen final du lundi 19 décembre 2022

Retournez l'aide-mémoire avec votre examen. Vous pouvez compléter le recto et le verso. Vous perdrez 10/40 si vous y avez inclus des solutions ou si vous ne retournez pas l'aide-mémoire avec votre examen. Libre à vous d'ajouter les valeurs de diverses constantes.

$$\beta = \frac{v}{c} \qquad E = \gamma mc^2 = \frac{mc^2}{\sqrt{1 - v^2/c^2}} = K + mc^2 \qquad E^2 = p^2c^2 + m^2c^4$$

$$qE = mg \qquad K_{max} = eV_0 = hf - \phi \qquad f_{cut} = \frac{\phi}{h} \qquad hf_{\max} = \frac{hc}{\lambda_{min}} = eV_0$$

$$hf = E_f - E_i \qquad hf_{max} = \frac{hc}{\lambda_{min}} = eV_0 \qquad \Delta\lambda = \lambda' - \lambda = \frac{h}{mc}(1 - \cos\theta) \qquad E = hf \qquad p = \frac{h}{\lambda}$$

$$v_n = \sqrt{\frac{Zke^2}{mr_n}} \qquad L_n = mvr = n\hbar \qquad E_n = -\frac{Zke^2}{2r_n} = -\frac{Z^2}{n^2}E_R = -\frac{13.6Z^2}{n^2} \qquad r_n = \frac{n^2}{Z}\overbrace{\frac{\hbar^2}{ke^2m}}^{a_B}$$

$$hf = E_n - E_{n'} = Z^2\overbrace{\frac{m(ke^2)^2}{2\hbar^2}}^{E_R}\left(\frac{1}{n'^2} - \frac{1}{n^2}\right) \qquad \frac{1}{\lambda_{n'n}} = Z^2R\left(\frac{1}{n'^2} - \frac{1}{n^2}\right) \qquad R = 1.096776 \times 10^{-2}\ \text{nm}^{-1}$$

$$Z \to Z - \delta \qquad \omega = 2\pi f = \frac{2\pi}{T} \qquad k = \frac{2\pi}{\lambda} \qquad v = \lambda f = \frac{\omega}{k} \qquad \Delta p\Delta x \geq \frac{\hbar}{2} \qquad \Delta E\Delta t \geq \frac{\hbar}{2}$$

$$E = \hbar\omega \qquad p = \hbar k \qquad -\frac{\hbar^2}{2m}\frac{d^2\psi(x)}{dx^2} + V(x)\psi(x) = E\psi(x) \qquad P(x) = |\psi(x)|^2 = \psi^*(x)\psi(x)$$

$$ka = n\pi \qquad \psi_n(x) = \sqrt{\frac{2}{a}}\sin\frac{n\pi x}{a} \qquad p_n = \frac{n\pi\hbar}{a} \qquad E_n = n^2\frac{\hbar^2\pi^2}{2ma^2} = \frac{n^2\,(hc)^2}{8mc^2a^2}$$

$$E_{n_x,n_y} = \frac{\hbar^2\pi^2}{2m}\left(\frac{n_x^2}{a^2} + \frac{n_y^2}{b^2}\right) \qquad E_{n_x,n_y,n_z} = \frac{\hbar^2\pi^2}{2m}\left(\frac{n_x^2}{a^2} + \frac{n_y^2}{b^2} + \frac{n_z^2}{c^2}\right) \qquad E_n = \left(n + \frac{1}{2}\right)\hbar\omega, \omega^2 = k/m$$

$$E_n = -\frac{E_0}{n^2},\ n = 1, 2, \ldots \quad L = \sqrt{\ell(\ell+1)}\hbar,\ \ell = 0, 1, \ldots, n-1 \quad L_z = m_\ell\hbar,\ m_\ell = -\ell, -\ell+1, \ldots, \ell-1, \ell$$

$$N = N_0\exp(-\lambda t) \qquad \lambda = \frac{\ln 2}{T_{1/2}} \qquad \text{Act} = \left|\frac{dN}{dt}\right| \qquad Q = M_xc^2 + M_Xc^2 - \left(M_yc^2 + M_Yc^2\right) = K_y + K_Y - K_x$$