Physics 2102 Final Exam– What I expect you to know

(these formulas will not be provided on the exam)

$$KE = \frac{p^2}{2m}$$

$$PE = eV_0$$

$$p = mv$$

$$c = f\lambda$$

$$E = hf = \frac{hc}{\lambda}$$

$$p = \frac{h}{\lambda}$$

$$\hbar = \frac{h}{2\pi}$$

$$k = \frac{2\pi}{\lambda}$$

$$\Delta x \Delta p_x \geq \hbar$$

$$\Delta E \Delta t \geq \hbar$$

Probability dist. fcn. $= |\psi|^2$

$$\int_{-\infty}^{\infty} |\psi|^2 \, dV = 1$$

$$P(r) = |\psi|^2 \, dV$$

$$dV = dxdydz = 4\pi r^2 dr$$

$$R = R_0 A^{1/3}$$

$$V = \frac{4}{3}\pi R^3$$

$$\Delta E = \Delta m c^2$$

$v = H_0 R$ (the Hubble Law)

$E > 0$ (open universe)

$E = 0$ (critical universe)

$E < 0$ (closed universe)