PHYS1231 end of year test equations

The following equations may be used without proof.

$PV = NkT = nRT$ $\quad P = \frac{1}{3}\rho\overline{v^2}$ $\quad I = e\sigma T^4$

$x' = \gamma(x - vt)$ $\quad t' = \gamma(t - vx/c^2)$ $\quad u'_x = \dfrac{u_x - v}{1 - u_x v/c^2}$ $\quad \gamma = \dfrac{1}{\sqrt{1 - v^2/c^2}}$ $\quad E^2 = p^2c^2 + m^2c^4$

$\lambda_{max}T = 2898\ \mu m.K$ $\quad \lambda - \lambda' = \dfrac{h}{m_e c}(1 - \cos\theta)$ $\quad E_n = -\dfrac{13.6\ eV}{n^2}$ $\quad p = h/\lambda$

$m_e = 9.1\ 10^{-31}\ kg$ $\quad m_p = 1.67\ 10^{-27}\ kg$ $\quad e = 1.6\ 10^{-19}\ C$ $\quad h = 6.63\ 10^{-34}\ Js$

$k = 1.38\ 10^{-23}\ JK^{-1}$ $\quad \sigma = 5.67\ 10^{-8}\ Wm^{-2}K^{-4}$ $\quad \mathbf{F}_e = \dfrac{1}{4\pi\varepsilon_o}\dfrac{q_1 q_2}{r^2}\hat{\mathbf{r}}$ $\quad \mathbf{F}_g = G\dfrac{Mm}{r^2}\hat{\mathbf{r}}$