4A9 Answers 2014

1. (c) $\tau = \dfrac{\tau_0}{(1+2Kn)}$, $\dot{m} = \dfrac{\rho UL}{2}$

2. (a) $f = 5$

   (b) $A = \dfrac{fR}{2}\dfrac{\rho \bar{C}\lambda}{2}$, $B = \dfrac{\rho \bar{C}\lambda}{2}u_1(0)$

3. (a) (i) 6 (ii) $A = (M + K - 1)$; $B = M$; $C = (K - 1)$

   (b) (ii) $c_v = 3R$

4. (b) (i) 1.81×10^{23} molecules (ii) 1.66×10^{28} states

   (c) $g(C) = \dfrac{4\pi V m^3 C^2}{h^3}$