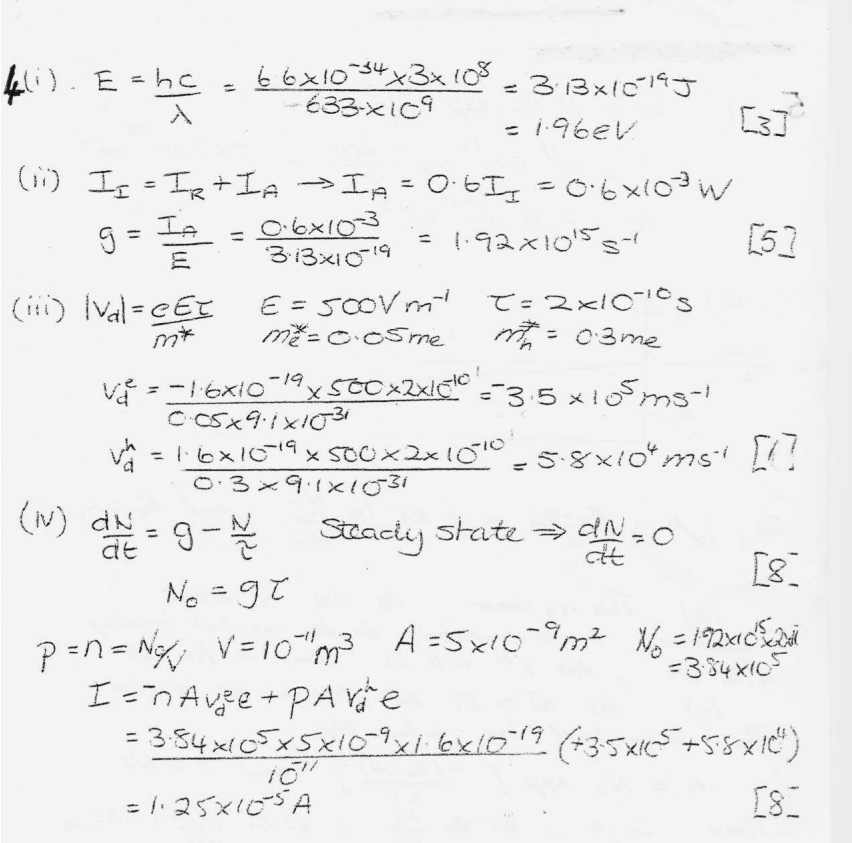
**TASK 15.2**




**TASK 15.3**

The collision time, $\tau_c$, is obtained from:

$$\tau_c = \frac{\mu_e m_e^*}{e} = \frac{0.39 \times 0.55 \times 9.1 \times 10^{-31}}{1.6 \times 10^{-19}} = 1.2 \text{ ps}$$

The mean free path, *l*, equals:

$$l = v\tau_c = 10^7 \times 10^{-2} \times 1.2 \times 10^{-12} = 120 \text{ nm}$$

**TASK 15.4**

The resistivity of the silicon equals:

$$\rho = \frac{1}{qn\mu_e} = \frac{1}{1.6 \times 10^{-19} \times 10^{15} \times 1350} = 4.6\ \Omega \text{ cm}$$

The resistance then equals:

$$R = \rho \frac{L}{Wt} = 4.6 \times 10^{-2} \times \frac{75 \times 10^{-3}}{8 \times 10^{-3} \times 0.8 \times 10^{-3}} = 540\ \Omega$$