Question Number	Answer	Mark
12	**EITHER** Use of $E_k = \frac{p^2}{2m}$ **(1)** Use of $\lambda = \frac{h}{p}$ **(1)** $\lambda = 1.8 \times 10^{-11}$ m **(1)** **OR** Use of $E_k = \frac{1}{2}mv^2$ **and** $p = mv$ **(1)** Use of $\lambda = \frac{h}{p}$ **(1)** $\lambda = 1.8 \times 10^{-11}$ m **(1)** Example of calculation $p = \sqrt{2 \times 7.2 \times 10^{-16}\ \text{J} \times 9.11 \times 10^{-31}\ \text{kg}} = 3.62 \times 10^{-23}$ N s ($v = 4.0 \times 10^7$ m s^{-1}) $\lambda = \frac{6.63 \times 10^{-34}\ \text{J s}}{3.62 \times 10^{-23}\ \text{N s}} = 1.83 \times 10^{-11}$ m	**3**
	Total for question 12	**3**