Question Number	Answer		Mark
15(a)	Top line correct	(1)	
	Bottom line correct	(1)	2
	Example of equation $$^{137}_{55}\text{Cs} \rightarrow {}^{137}_{56}\text{Ba} + {}^{0}_{-1}\beta^- + {}^{0}_{0}\bar{\nu}_e$$		
15(b)	Use of $\lambda = \frac{\ln 2}{t_{\frac{1}{2}}}$	(1)	
	Use of $\frac{dN}{dt} = -\lambda N$	(1)	
	Use of $u = 1.66 \times 10^{-27}$ kg	(1)	
	$m = 2.3 \times 10^{-12}$ (kg)	(1)	4
	Example of calculation $$\lambda = \frac{\ln 2}{30.2 \times 3.15 \times 10^7 \text{ s}} = 7.29 \times 10^{-10} \text{ s}^{-1}$$ $$N = \frac{7400 \text{ s}^{-1}}{7.28 \times 10^{-10} \text{ s}^{-1}} = 1.02 \times 10^{13}$$ $$m = 1.02 \times 10^{13} \times 137 \times 1.66 \times 10^{-27}\text{kg} = 2.31 \times 10^{-12} \text{ kg}$$		
	Total for question 15		6