

Question Number	Answer	Mark
14	Max kinetic energy read from graph (1)	5
	Use of 15.6 eV to calculate number of nitrogen molecules ionised (1)	
	Use of 250 to calculate range of β particle (1)	
	Range of β particle read from graph (1)	
	Comparison of their two ranges with conclusion (1)	
	OR	
	Max kinetic energy read from graph (1)	
	Use of 15.6 eV to calculate number of nitrogen molecules ionised (1)	
	Range of β particle read from graph (1)	
	Use of range to calculate number of molecules ionised (1)	
	Comparison of their two numbers of molecules with conclusion (1)	
	<u>Example of calculation</u>	
	Maximum $E_k = 0.52 \text{ MeV} \rightarrow 0.55 \text{ MeV}$	
	$N = \frac{5.3 \times 10^5 \text{ eV}}{15.6 \text{ eV}} = 3.40 \times 10^4$	
	$\text{Range} = \frac{3.40 \times 10^4}{250 \text{ cm}^{-1}} = 136 \text{ cm} = 1.36 \text{ m}$	
	Range of β particle = 1.2 m \rightarrow 1.4 m	
Total for question 14		5