

**29** Today, the activity of a sample of caesium-137 is  $4.0 \times 10^5$  Bq. The half-life of caesium-137 is 33 years.

What is the best estimate of the number of caesium-137 nuclei that will decay in the next two days?

A  $5.0 \times 10^8$

B  $1.2 \times 10^9$

C  $6.9 \times 10^{10}$

D  $9.5 \times 10^{12}$

**30** A nucleus X decays into a nucleus Y by emitting an alpha particle followed by two beta