• Balance the following nuclear reactions by identifying the missing nuclide.

Marks 3

$$^{55}_{26}$$
Fe +  $^{0}_{-1}$ e  $\rightarrow$ 

$$^{232}_{90}$$
Th  $\rightarrow$   $^{4}_{2}\alpha$  +

$$^{218}_{84}$$
Po  $\rightarrow$   $^{0}_{-1}$ e +

• Over 50 years, the activity of a sample of strontium-90 decreases from 1000 Bq to 303 Bq. Calculate the half-life of strontium-90 (in years) to the nearest year.

2

Answer:

• Identify three desirable properties of an unstable isotope to be used in medical imaging.

3