Radioactivity

Specification reference	Checklist questions	
6.4.3 a	Can you define radioactive decay?	☐
6.4.3 a	Can you describe the spontaneous and random nature of decay?	☐
6.4.3 b i	Can you define α-particles, β-particles and γ-rays?	☐
6.4.3 b ii	Can you describe the nature, penetration and range of these radiations, and the techniques used to investigate their absorption?	☐
6.4.3 c	Can you demonstrate the nuclear decay equations for alpha, beta-minus and beta-plus decays?	☐
6.4.3 c	Can you demonstrate balancing nuclear transformation equations?	☐
6.4.3 d	Can you define activity of a source?	☐
6.4.3 d	Can you calculate the decay constant λ of an isotope, $A = \lambda N$?	☐
6.4.3 e i	Can you calculate the half-life of an isotope, $\lambda t_{\frac{1}{2}} = \ln(2)$?	☐
6.4.3 e ii	Can you describe the techniques used to determine the half-life of an isotope?	☐
6.4.3 f i	Can you explain the equations $A = A_0 e^{-\lambda t}$ and $N = N_0 e^{-\lambda t}$?	☐
6.4.3 f ii	Can you understand a simulation of radioactive decay?	☐
6.4.3 g	Can you demonstrate the graphical methods and spreadsheet modelling of the equation $\frac{\Delta N}{\Delta t} = -\lambda N$ for radioactive decay?	☐

25 Radioactivity Checklist

Specification reference	Checklist questions	
6.4.3 h	Can you define radioactive dating, such as carbon-dating?	☐