Name: A-Level Physics: **w25 11**

38 The diagram shows a sequence of radioactive decays involving three α-particles and a β^- particle.

$$^{237}_{93}\text{Np} \xrightarrow{\alpha} \text{Q} \xrightarrow{\beta^-} \text{R} \xrightarrow{\alpha} \text{S} \xrightarrow{\alpha} \text{T}$$

What is nuclide T?

A $^{225}_{88}\text{Ra}$ **B** $^{231}_{88}\text{Ra}$ **C** $^{225}_{90}\text{Th}$ **D** $^{229}_{90}\text{Th}$

A-Level Physics: **w25 14**

38 What is the correct equation for β^+ decay?

A neutron $\rightarrow$ proton + electron + electron antineutrino

B neutron $\rightarrow$ proton + electron + electron neutrino

C proton $\rightarrow$ neutron + positron + electron antineutrino

D proton $\rightarrow$ neutron + positron + electron neutrino

39 A nucleus of polonium, $^{214}_{84}\text{Po}$, decays by emitting an α-particle to become a nucleus of lead.

The nucleus of lead is also unstable and decays by emitting a β^- particle to form a nucleus of bismuth which then decays by emitting a β^- particle to produce a nucleus X.

What is the number of neutrons in nucleus X?

A 126 **B** 128 **C** 130 **D** 210

A-Level Physics: **s25 14**

37 A uranium atom with a charge of +2*e* has a nucleon number of 235 and a proton number of 92.

e is the elementary charge.

What is the total number of protons, neutrons and electrons in this charged atom?

A 235 **B** 325 **C** 327 **D** 329