

- 16 A nucleus of thorium-230 is unstable and decays to a nucleus of radium-226 by emitting an alpha particle.

The table shows the masses of the particles involved.

	Mass / u
Thorium-230 nucleus	230.0331
Radium-226 nucleus	226.0254
Alpha particle	4.0026

- (a) Determine the energy, in J, released when a nucleus of thorium-230 emits an alpha particle.

(4)

Energy released = ..... J

- (b) Determine the time taken, in years, for 90% of the thorium-230 in a sample to decay to radium-226.

half-life of thorium-230 = 75 400 years

(4)

Time taken = ..... years

(Total for Question 16 = 8 marks)