6 **(a)** Define the *decay constant* of a radioactive isotope.

.....

.....

..... [2]

(b) Strontium-90 is a radioactive isotope having a half-life of 28.0 years. Strontium-90 has a density of $2.54\,g\,cm^{-3}$.

A sample of Strontium-90 has an activity of 6.4×10^9 Bq. Calculate

(i) the decay constant λ, in s^{-1}, of Strontium-90,

λ = ... s^{-1} [2]

(ii) the mass of Strontium-90 in the sample,

mass = ... g [4]

(iii) the volume of the sample.

volume = ... cm^3 [1]

(c) By reference to your answer in **(b)(iii)**, suggest why dust that has been contaminated with Strontium-90 presents a serious health hazard.

.....

.....

..... [2]

[Turn over