

9 (a) Explain what is meant by *radioactive decay*.

.....

.....

..... [2]

(b) (i) State how the random nature of radioactive decay may be inferred from observations of the count rate.

.....

..... [1]

(ii) A radioactive source has a long half-life so that, over a period of several days, its rate of decay remains constant.  
State the effect, if any, of a rise in temperature on this decay rate.

..... [1]

(iii) Suggest why some radioactive sources are found to contain traces of helium gas.

.....

.....

..... [2]