8 Radon is a gas produced by some types of rocks.

(a) Radon is a natural source of radioactivity.

What is the name for this radioactivity?

(1)

- ☒ **A** background radiation
- ☒ **B** chain reaction
- ☒ **C** radioactive dating
- ☒ **D** radiotherapy

(b) There are two sources of alpha radiation in some houses:

- radon gas in the air
- solid americium in a smoke alarm

The alpha particles from radon are a greater risk to health than the alpha particles from americium.

Explain why.

(2)

(c) Radon-222 and radon-220 are both isotopes of radon.

(i) A nucleus of radon-222 has 86 protons.

How many protons are there in a nucleus of radon-220?

(1)

☒ **A** 86

☒ **B** less than 86

☒ **C** more than 86

☒ **D** none

(ii) A nucleus of radon-222 has 136 neutrons.

How many neutrons are there in a nucleus of radon-220?

(1)

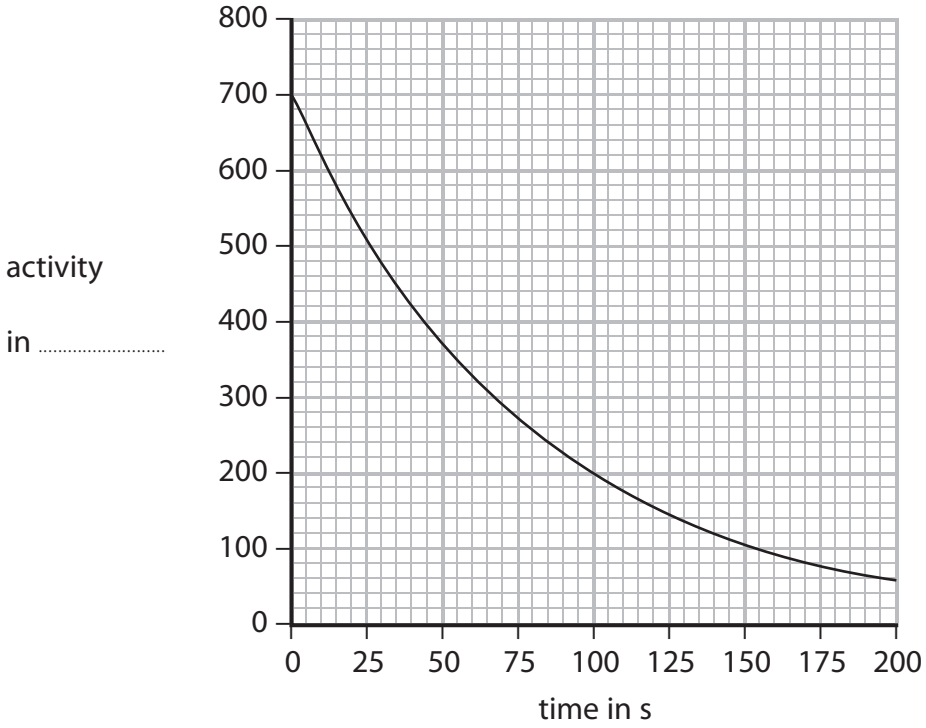
☒ **A** 86

☒ **B** 134

☒ **C** 136

☒ **D** 220

(d) The graph shows how the activity of a sample of radon-220 changes with time.



(i) Complete the graph by adding the missing unit for activity.

(1)

(ii) Explain what is meant by the term **half-life**.

(2)

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(iii) Use the graph to find a value for the half-life of radon-220.

(2)

Half-life = ... s

(Total for Question 8 = 10 marks)