

**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)

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(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.

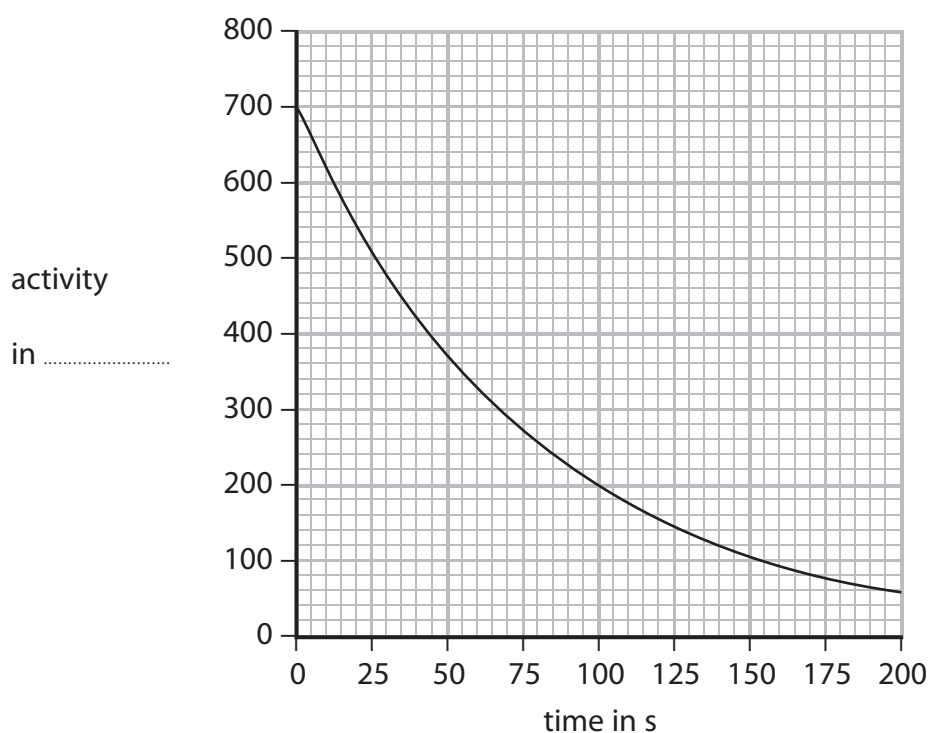
How many neutrons are there in a nucleus of radon-220?

(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)

(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)

