Name _____ **Date** _____

Radioactivity: Exam-style questions

The answers to these GCSE-level questions can be found around www.darvill.clara.net/nucrad

1. Alpha particles consist of ___? protons and 2 _____?.
   An Alpha particle has a charge of +2 and a mass of ____? atomic mass units.
   Alpha particles have a **strong/weak** ? ionising ability
   and a **high/low** ? penetrating power. *(Total 5 marks)*

2. Alpha particles can be stopped by _____?
   Beta particles can be stopped by _____? or _____?
   Gamma rays can be stopped by _____? or _____?
   (Total 5 marks)

3. Arrange these in order of increasing mass:
   Alpha particle, Beta particle, Gamma ray
   _____? _____? _____? *(3 marks)*

4. Isotopes of an element have the same number of _____? in their nucleus,
   but different numbers of _____? *(2 marks)*

5. What is background radioactivity? _____?
   (2 marks)

   List three sources of background radioactivity
   _____? _____? _____?
   (3 marks)

6. Describe two uses of radioactivity.
   For each one, state which type of radioactivity (alpha, beta or gamma) is used and why.
   1. _____
      _____
      _____

   2. _____
      _____
      _____
   (total 6 marks)

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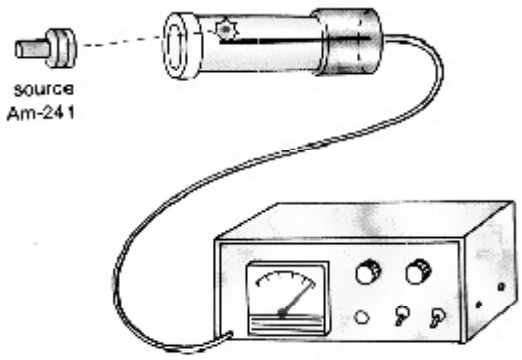
7. The diagram shows a device for detecting radioactivity.



Name the device
_____? *(1 mark)*

Is this device most suited to detecting alpha, beta or gamma radiation?
_____? *(1 mark)*

Explain your answer
_____
_____?
(2 marks)

8. Who would wear a "film badge", and why?
_____?
(2 marks)

9. What is a "radioactive tracer"? Explain how one might be used.
_____
_____?
(3 marks)

10. Explain the meaning of the term "half-life"
_____
_____?
(2 marks)

11. Carbon-14 has a half-life of 5,700 years. If an archaeologist discovers that an object has one eighth of the radioactivity due to Carbon-14 that it originally had, how old is the object?

_____?
(2 marks)

(Total 39 marks)