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)
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?

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)