Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 6_ Radioactivity

Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Q1.

* Gamma radiation is produced by radioactive decay.

Alpha radiation and beta radiation are also produced by radioactive decay.

Compare the processes of alpha decay and beta decay.

Your answer should include what each radiation is and what effect each decay has on the original nucleus.

(6)

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(Total for question = 6 marks)

Q2.

The teacher now investigates the absorption of beta radiation by different thicknesses of aluminium.

The apparatus available is

- a source of beta radiation
- a Geiger-Müller (G-M) tube and counter
- 10 pieces of aluminium, each 0.5 mm thick
- a metre rule.

(i) Sketch a labelled diagram showing the positions of the apparatus when the measurements are being taken.

(2)

(ii) Give the independent variable in this investigation.

(1)

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(iii) Name a quantity that must be kept constant during the investigation.

(1)

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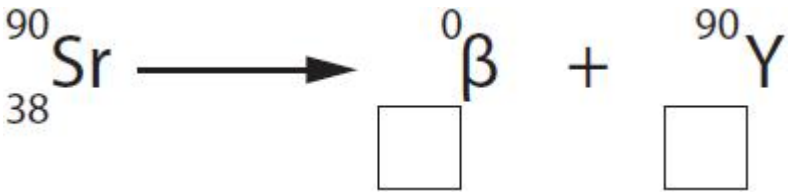
(iv) Strontium-90 is the source of beta minus radiation in this investigation.

Complete the nuclear equation for this emission of beta minus radiation.

(2)



(Total for question = 6 marks)

Q3.

Students are given the apparatus shown in Figure 8 and a protractor.

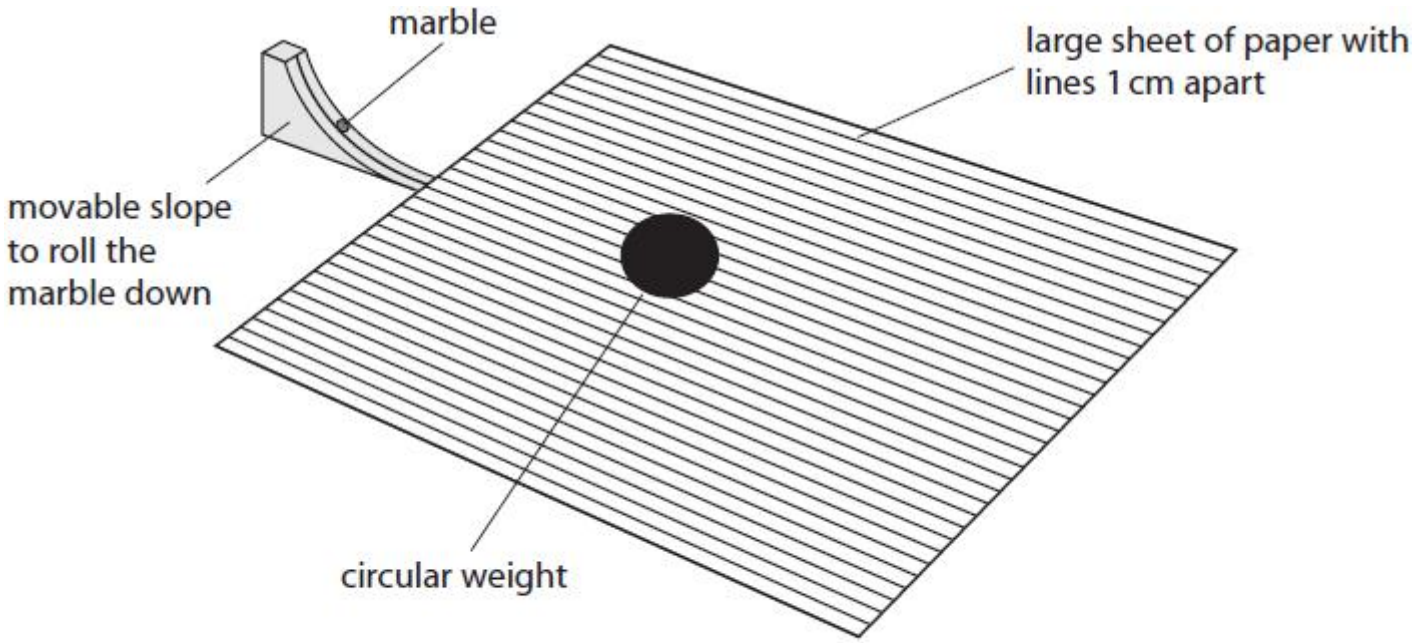


Figure 8

(i) Describe how the students could use the apparatus to model the scattering of alpha particles.

(2)

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(ii) Give **one** limitation of this model.

(1)

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(Total for question = 3 marks)

Q4.

Radium-223 is a radioactive substance.

Radium-223 is an alpha emitter.

The half-life of radium-223 is 11 days.

A radioactive source contains 1.7×10^{23} nuclei of radium-223.

Calculate the number of radium-223 nuclei remaining in the source after a time of 33 days.

(2)

number of radium-223 nuclei remaining = ...

(Total for question = 2 marks)

Q5.

Sometimes food can become contaminated with radioactive substances.

Describe the harmful effects of eating food contaminated with radioactive substances.

(2)

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(Total for question = 2 marks)