Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic: GCSE Triple Science Atomic Structure (Standard Demand Questions)

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Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Q1.

Scientists sometimes replace one scientific model with a different model.

For example, in the early 20th Century the plum pudding model of the atom was replaced by the nuclear model of the atom.

Explain what led to the plum pudding model of the atom being replaced by the nuclear model of the atom.

_____

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_____

(Total 6 marks)

Q2.

Alpha particles, beta particles and gamma rays are types of nuclear radiation.

(a) Describe the structure of an alpha particle.

_____

_____

(1)

(b) Nuclear radiation can change atoms into ions by the process of ionisation.

(i) Which type of nuclear radiation is the least ionising?

Tick (✔) **one** box.

alpha particles ☐

beta particles ☐

gamma rays ☐

(1)

(ii) What happens to the structure of an atom when the atom is ionised?

_____

_____

(1)

(c) People working with sources of nuclear radiation risk damaging their health.

State **one** precaution these people should take to reduce the risk to their health.

_____

_____

(1)

(Total 4 marks)

Q3.

(a) Radioactive sources that emit alpha, beta or gamma radiation can be dangerous.

What is a possible risk to health caused by using a radioactive source?

_____

_____

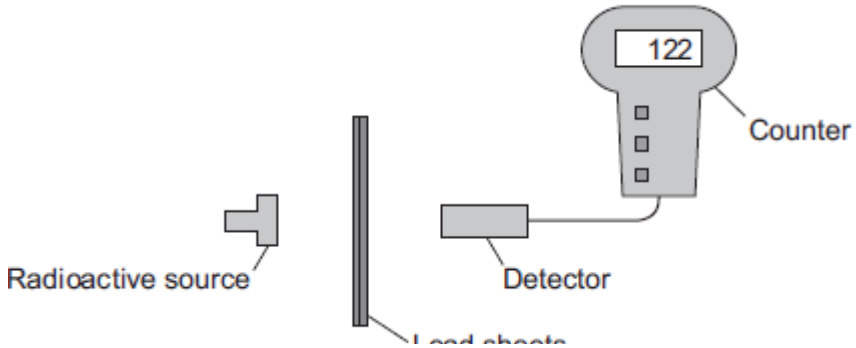
(1)

(b) In an experiment, a teacher put a 2 mm thick lead sheet in front of a radioactive source. She used a detector and counter to measure the radiation passing through the lead sheet in one minute.

She then put different numbers of lead sheets, each 2 mm thick, in front of the radioactive source and measured the radiation passing through in one minute.

The apparatus the teacher used is shown in **Figure 1**.

Figure 1



(i) When using a radioactive source in an experiment, how could the teacher reduce the risk to her health?

Suggest **one** way.

_____

_____

(1)

(ii) The number recorded on the counter is actually higher than the amount of radiation detected from the source.

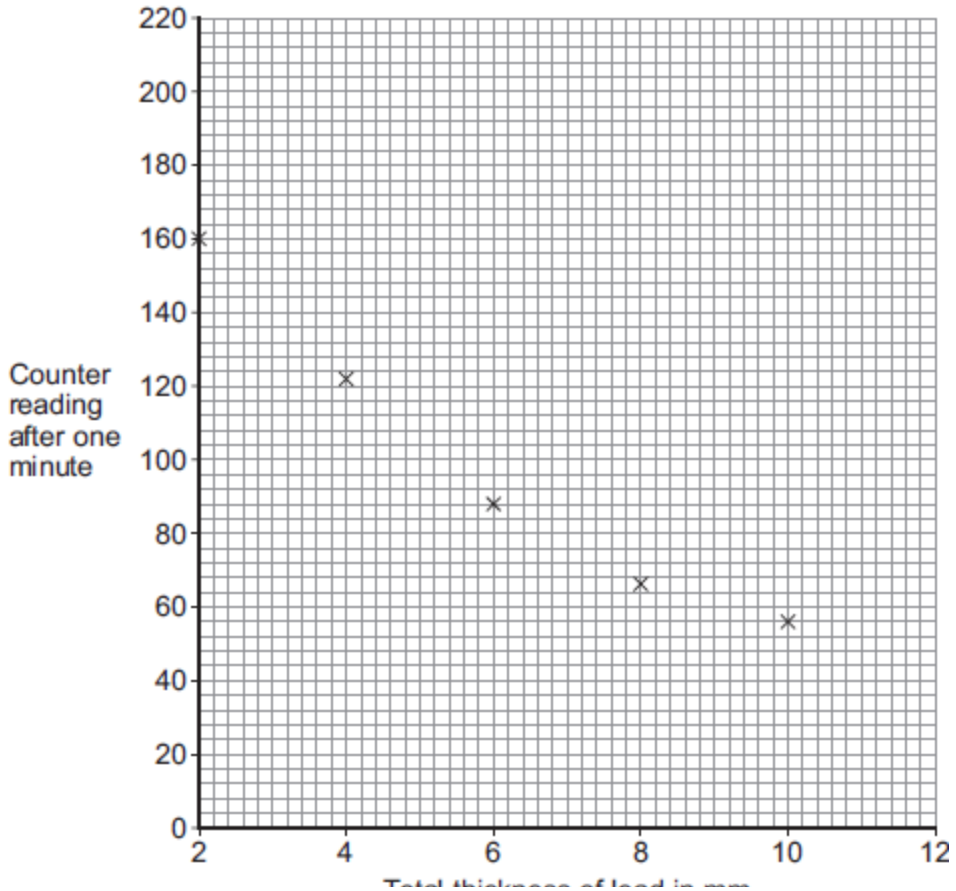
Complete the following word equation.

The number recorded on the counter	=	The amount of radiation detected from the source	+	_____ radiation

(1)

(c) The readings taken by the teacher are plotted in **Figure 2**.

Figure 2



(i) Draw a line of best fit to complete **Figure 2**.

(1)

(ii) How does the amount of radiation **absorbed** by the lead change as the total thickness of the lead is increased?

_____

_____

(1)

(iii) Use **Figure 2** to estimate the reading on the counter when the total thickness of the lead is increased to 12 mm.

Estimated counter reading = _____

(1)

(d) What type of radiation was emitted from the radioactive source?
Draw a ring around the correct answer.

alpha **beta** **gamma**

Give a reason for your answer.

_____

_____

(2)

(Total 8 marks)