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 : 17 Marks **Time : 17 Minutes**

Q1.

(a) A radioactive isotope has a half-life of 10 minutes.
At the start of an experiment, the activity of a sample of this isotope was 800 counts per second after allowing for background radiation.

Calculate how long it would be before the activity fell from 800 counts per second to 200 counts per second.

_____

_____

Time _____ min.

(2)

(b) A physicist investigates a solid radioactive material. It emits alpha particles, beta particles and gamma rays.
The physicist does not touch the material.

Explain why the alpha particles are less dangerous than the beta particles and gamma rays.

_____

_____

_____

_____

(2)
(Total 4 marks)

Q2.

Use the Data Sheet to help you answer this question.
This question is about elements and atoms.

(a) About how many different elements are found on Earth?
Draw a **ring** around the correct number.

40 **50** **60** **70** **80** **90**

(1)

(b) The following are parts of an atom:

electron **neutron** **nucleus** **proton**

Choose from the list the one which:

(i) has no electrical charge; _____

(ii) contains two of the other particles; _____

(iii) has very little (negligible) mass. _____

(3)

(c) Scientists have been able to make new elements in nuclear reactors. One of these new elements is fermium. An atom of fermium is represented by the symbol below.

$$^{257}_{100}\mathrm{Fm}$$

(i) How many protons does this atom contain? _____

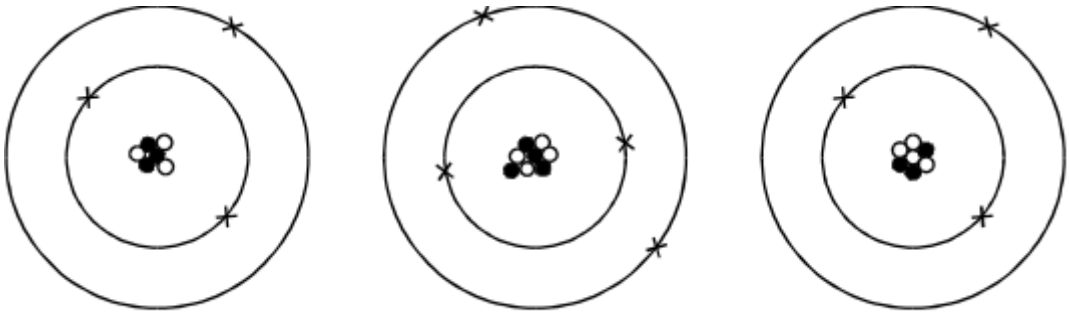
(ii) How many neutrons does this atom contain? _____

(2)

(Total 6 marks)

Q3.

The diagrams below represent three atoms, **A**, **B** and **C**.



(a) Two of the atoms are from the **same** element.

(i) Which of **A**, **B** and **C** is an atom of a different element? _____

(ii) Give **one** reason for your answer.

_____

_____

_____

(2)

(b) Two of these atoms are isotopes of the same element.

(i) Which **two** are isotopes of the same element? _____ and _____

(ii) Explain your answer.

_____

_____

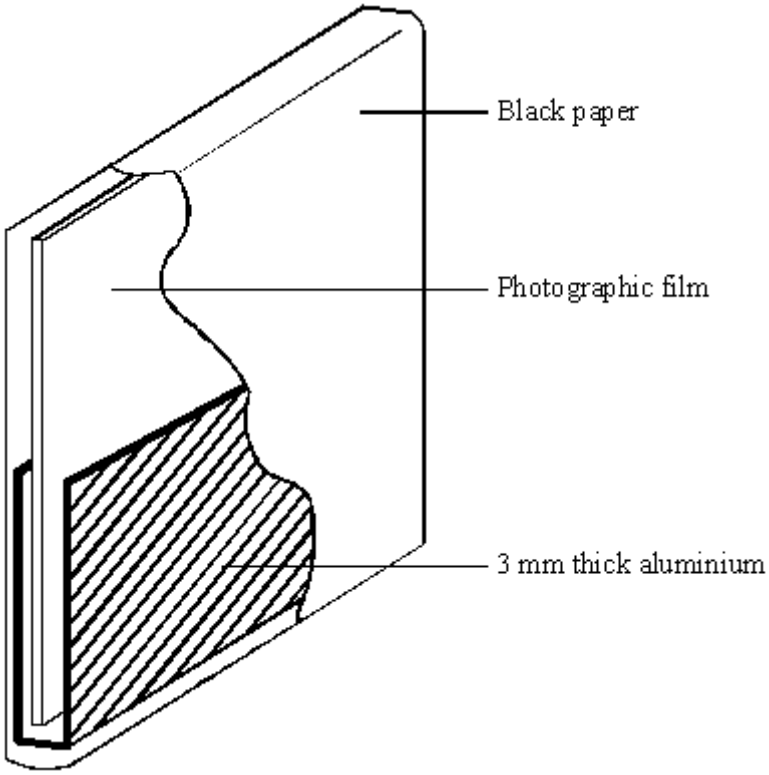
(3)

(Total 5 marks)

Q4.

The diagram shows a badge worn by a worker at a nuclear power station.

Part of the outer black paper has been removed so that you can see the inside of the badge.



Scientists examined the worker's badge at the end of a day's work.

They found that the top part of the badge had been affected by radiation, but the bottom half had not.

What type of radiation had the worker been exposed to? Explain the reasons for your answer.

(Total 2 marks)