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

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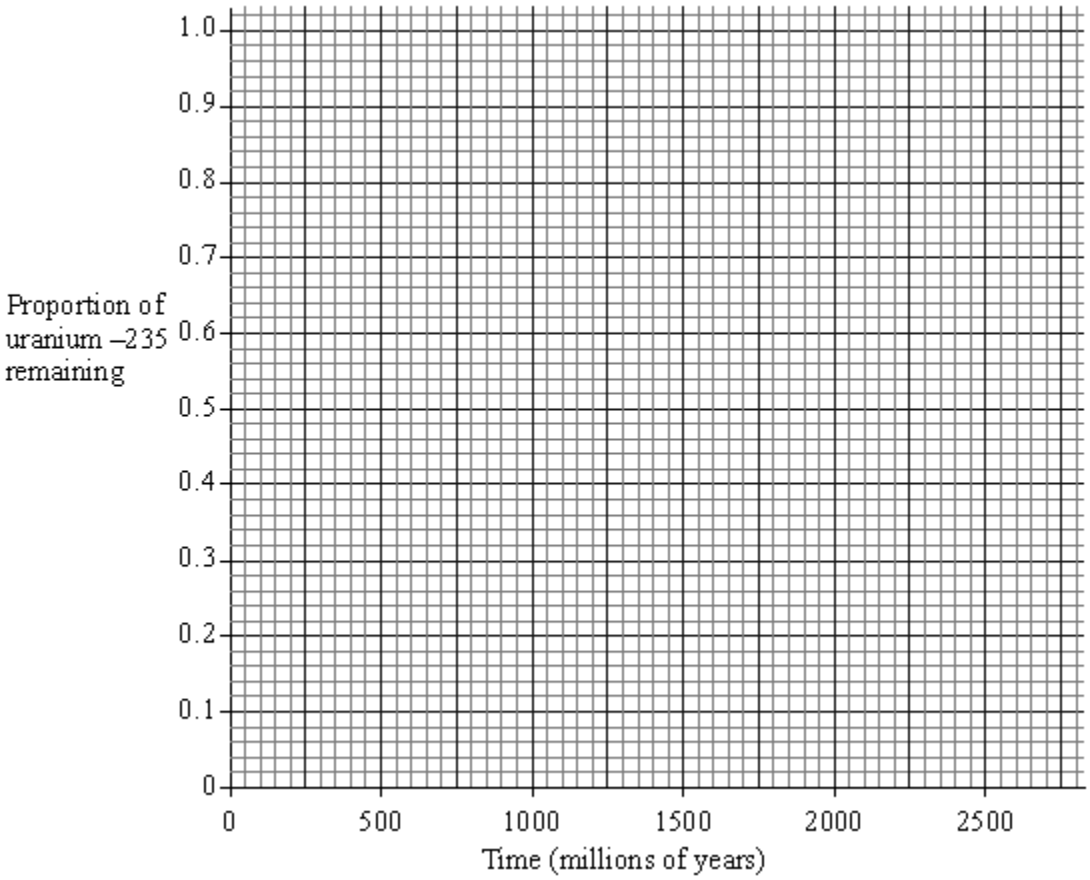
Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Q1.

Some rocks contain the radioactive isotope uranium-235 (^{235}U).

^{235}U has a half-life of 700 million years and, as it decays, lead-207 (^{207}Pb) is eventually formed.

(a) Draw a decay curve for ^{235}U on the graph below.



(4)

(b) Samples of an igneous rock gave an average ratio of 70 atoms of ^{235}U to 30 atoms of ^{207}Pb.

Use the decay curve you have drawn to estimate the age of the igneous rock.

Answer _____ million years.

(1)

(c) A sandstone rock which lies above the igneous rock contains traces of uranium-235 and of lead-207.

Why might it be unsatisfactory to use this uranium for dating the sandstone?

_____

_____

_____

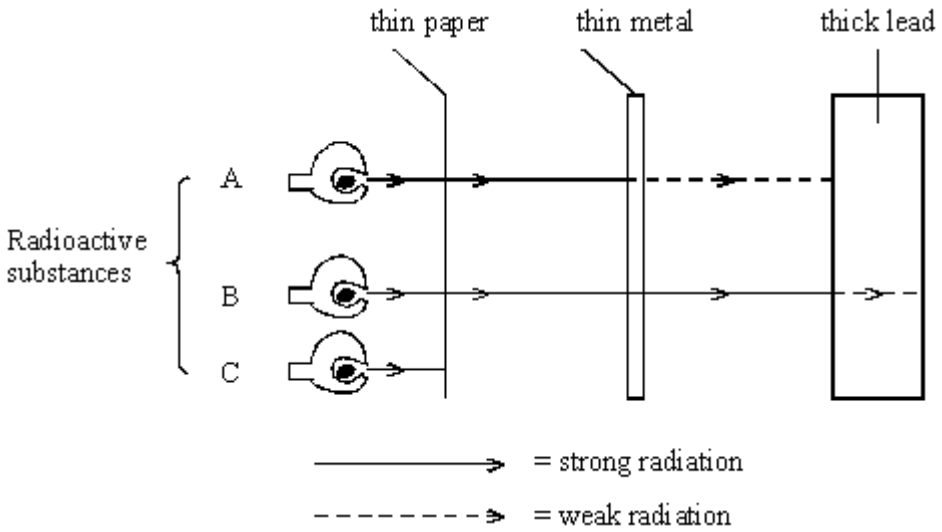
_____

(2)

(Total 7 marks)

Q2.

The diagram shows what happens to the radiation from three radioactive substances when different materials are put in the way.



Choose types of radiation from this list to complete the table below.

α (**alpha**) β (**beta**) γ (**gamma**) UV **(ultraviolet)**

RADIOACTIVE SUBSTANCE	TYPE OF RADIATION IT EMITS
A	
B	
C	

(Total 3 marks)

Q3.

Lithium batteries are used in laptops.

The batteries contain a lithium compound.
The formula of the compound is $LiCoO_2$

(a) Complete the table to show the number of atoms of each element in the formula, $LiCoO_2$

Lithium has been completed for you

Element	**Number of atoms in the formula $LiCoO_2$**
Lithium, Li	1
Cobalt, Co	
Oxygen, O	

(2)

(b) Some laptops have caught fire.

Scientists think sparks caused the fires.
The sparks caused small particles of lithium in the batteries to react with oxygen.

(i) Suggest where the oxygen reacting with the lithium came from.

_____

_____

(1)

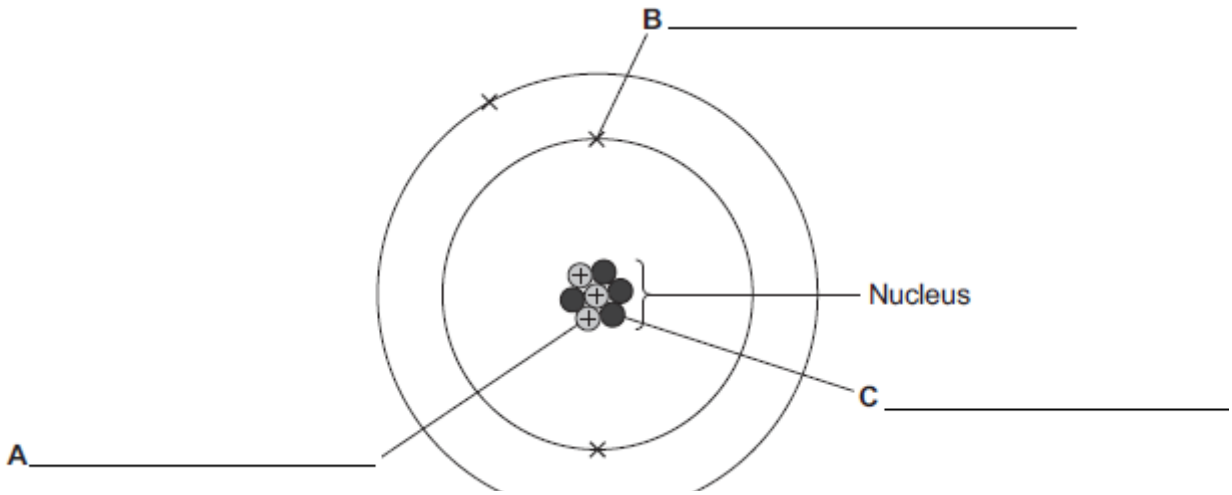
(ii) Name the product of the reaction between lithium and oxygen.

_____

(1)

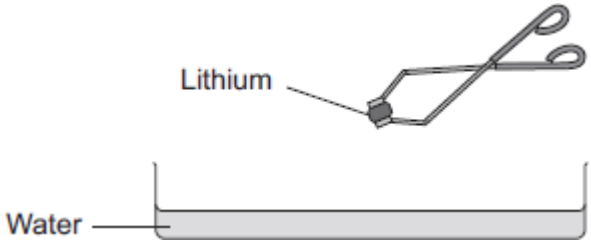
(c) The diagram below shows the structure of a lithium atom.

Name the particles labelled **A**, **B** and **C** on the diagram.



(3)

(d) Lithium hydroxide and hydrogen are produced when lithium reacts with water.



(i) Describe what you would **see** when lithium is added to water.

_____

_____

_____

_____

(2)

(ii) Complete the word equation for the reaction between lithium and water.

lithium + water ⟶ _____ + _____

(1)

(Total 10 marks)