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

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Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

(a) *electron*
accept e
1

(b) *5400 – 7000*

horizontal line drawn corresponding to their halving
1

or

a cross in the correct position on the line
1

(c) *count rate converted to 14.5/min for 1g mass*
accept 14.5 clearly marked on graph
1

decay time taken as 750 years ± 100 years
accept 750 years clearly marked on graph
1

refer their answer to 837 years (or approximately 800 ***or*** *a value 837 - 937 years)*

no the shirt was made after he died (if numbers justify)

or

yes it could have been his shirt (if numbers justify)
allow an alternative answer working backwards from 837 years
1

[6]

Q2.

(a) (i) *a helium nucleus*
accept $^{4}_{2}He$
accept 2 protons + 2 neutrons
do ***not*** *accept He*
do ***not*** *accept helium atom*
1

(ii) *nucleus*

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only answer, no alternative

1

(b) (i) *each axis given a linear scale*

time axis must go up to 12 days

y-axis must go up to 40 000

1

curve concave to axis drawn

1

<u>curve</u> shows correct half-life of four days

*do **not** accept a straight line must show one half-life*

check first two plotted points correct to ± half square

*a curve drawn dot-to-dot scores a maximum of **1**mark*

1

(ii) *38 750*

no tolerance

*allow **1** mark for 5 half-lives*

*allow **1** mark for showing that 1 250 are undecayed*

3

(c) (i) *more radon enters shaft (through cracks in the rock face)*

accept radon emitted from surroundings

1

(ii) *(alpha) radiation will damage cell structure or ionise cells*

accept kill cells

1

causing cancerous growth

*an answer in terms of the daughter product polonium being a solid **or** lodging in the throat and also emitting alpha gains full credit*

1

[11]

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