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

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Name of the Student:_____
Max. Marks : 21 Marks **Time : 21 Minutes**

Mark Schemes

Q1.

Question number	Answer	Additional guidance	Mark
(i) CS2	An explanation to include; there is no aluminium to absorb β particles (1) (therefore) more β particles reach the G-M tube (1)	 aluminium absorbs/stops/blocks beta particles accept reverse arguments accept radiation for beta particles	(2) AO2

Question number	Answer	Additional guidance	Mark
(ii) CS2	(idea of) background radiation	a named source of background radiation	(1) AO3

Question number	Answer	Additional guidance	Mark
(iii) CS2	becquerel	accept Bq accept close spelling	(1) AO1

Q2.

Question number	Answer	Mark
	one from • same atomic number (1) • same number of protons (1) • same element (1) and one from • different numbers of neutrons (1) • different mass numbers (1)	**(2)**

Q3.

	Answer	Mark
(i)	C $^{245}_{95}$Am **A, B** and **D** are incorrect as these are not isotopes of americium.	(1) AO1

	Answer	Mark
(ii)	[x] B 5 cm **A, C** and **D** are incorrect as these are not the correct range of an alpha particle in air.	(1) AO1

	Answer	Additional guidance	Mark
(iii)	4 2 α (1) 237 Np (1) 93 Np (1)	both correct for the mark ecf from mp1 ecf from mp1	(3) AO2

Q4.

Question number	Answer	Mark
	C a helium nucleus	**(1)**

Q5.

Question number	Answer	Mark
	B 10^{-10} m	**(1)**

Q6.

Question	Answer	Mark
	D +2 A , B and C do not apply to an alpha particle	**1** **AO1.1**

Q7.

Question	Answer	Mark
	D it requires high temperature and pressure **A** no emission of daughter nuclei **B** not a chain reaction **C** does not produce radioactive waste	**1** **AO1.1**

Q8.

Question Number:	Answer	Mark
(i)	□ C a neutron **The only correct answer is C (neutron causes U-235 fission)** **A** is not correct – incorrect particle **B** is not correct – incorrect particle **D** is not correct – incorrect particle	(1)

Question Number	Answer	Additional guidance	Mark
(ii)	recall and substitution (1) $1.2 \times 10^{-11} = ½ \times 1.4 \times 10^{-25} \times v^2$ rearrangement (1) $v^2 = \frac{2 \times 1.2 \times 10^{-11}}{1.4 \times 10^{-25}}$ evaluation (1) (v=) 1.3×10^7 (m/s)	accept rearrangement and substitution in either order ignore POT until evaluation $v^2 = 1.71 \times 10^{14}$ allow numbers that round to 1.3×10^7 (m/s) 1.3 to any other power of ten scores 2 marks award full marks for the correct answer without working	(3)

Q9.

Question number	Answer	Mark
	☒ C beta plus Options A, B and D are not represented by Figure 9.	(1)

Q10.

Question number	Answer	Mark
	A same atomic number different number of neutrons Options B, C and D have wrong combinations	**(1)**