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

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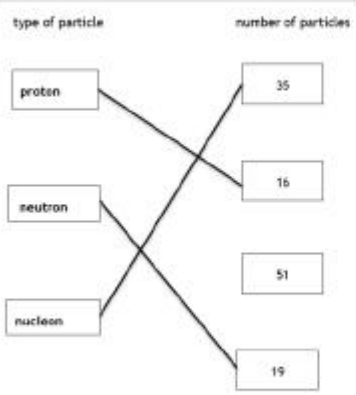
Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Mark Schemes

Q1.

	Answer	Additional guidance	Mark
		1 mark for each correct line more than one line from a box in the left column ("type of particle") box loses the mark for the box	(3) **AO2**

Q2.

		Indicative Content	Mark
QWC	*	A comparison of endoscopes with any one of the following devices: **Diagnostic devices** • CAT scanners • Fluoroscopes • Thermal imagers / IR thermometers • Pulse oximeters • PET scanners • X-ray machines • Gamma cameras**Link to electromagnetic radiation** • Endoscopes use TIR of light in optical fibres • CAT scanners X- rays and computer to generate 3D images • Fluoroscopes use X- rays and a video camera • Thermal imagers use infrared emitted by a body • IR / red LEDs used to measure oxygen levels • PET scanners detect radiation emitted by electronpositron annihilation • Gamma cameras detect gamma rays from radioactive sources**Other factors for comparison** • Safety • Ease of use • Frequency / wave length	**(6)**

		• Intensity • Penetration • Ionising / non-ionising	
Level	**0**	No rewardable content	
1	**1 - 2**	• a limited comparison between an endoscope and one device e.g. endoscopes use light and CAT scanners detect broken bones • the answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy	
2	**3 - 4**	• a simple comparison between an endoscope and one device, linking them to the electromagnetic radiation used for both and a detail of use for one of them e.g. endoscopes use visible light to examine internal organs and CAT scans use X-rays • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately • spelling, punctuation and grammar are used with some accuracy	
3	**5 - 6**	• a detailed comparison between an endoscope and one device, linking them to the electromagnetic radiation used for both and a detail of use for both of them e.g. endoscopes use visible light which is passed down optical fibres by TIR to examine internal organs. Fluoroscopes use X-rays and a video camera to show positioning of stents in arteries. • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors	

Q3.

	Answer	Acceptable answers	Mark
	A description including **two** of: • Kill/damage cells(1) • affecting DNA (1) • (causing) mutation (1) • by ionisation (1) • make cell reproduce rapidly (1) • cause cancer (1) • (radiation) burns (1) • (radiation) sickness (1)		**(2)**

Q4.

	Answer	Acceptable answers	Mark
	An explanation linking any two of the following points • heats/boils water (1) • to produce steam (1) • to run/turn/spin turbines (1) • to turn/power generators (1)	labelled diagram that indicates process (not just parts). heats boiler turns a coil in a magnet	**(2)**

Q5.

Question Number	Answer	Additional guidance	Mark
(i)	substitution (1) $\frac{845\,000}{0.0394}$ evaluation (1) 21 000 000	answers that round to 21 000 000 $2.1(45) \times 10^7$ etc. award full marks for the correct answer without working	(2) AO 2 1

Question Number	Answer	Additional guidance	Mark
(ii)	any two from: • fusion power gives (many) more times the energy output (for the same mass used) • no greenhouse gases / CO_2 emissions (produced with the fusion alternative) • does not lead to global warming • no (radioactive) waste • does not deplete / use up a finite resource (e.g. oil)	may quote numbers here accept no or less pollution / no or less harmful gases etc. sustainable reference oil is running out ignore references to costs	(2) AO 1 1

Question Number	Answer	Additional guidance	Mark
(iii)	any two from: • problem of containment (the fusion gases / isotopes at high temperatures) • (maintaining) high temperature • (maintaining) high pressure		(2) AO 2 1