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

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Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Q1.

Some questions must be answered with a cross in a box(☒). If you change your mind about answer, put a line through the box(☒)and then mark your new answer with a cross(☒).

Radioactive tracers can be used when scanning a person's kidneys.
A radioactive isotope is injected into a person's blood stream.
The isotope emits radiation.
As the blood flows through the kidneys, this radiation is detected outside the body by a scanner.
(i) What type of radiation travels from the kidney to the scanner?

(1)

- ☒ **A** alpha
- ☒ **B** beta plus
- ☒ **C** beta minus
- ☒ **D** gamma

(ii) During the scan, a technician needs to take readings for about 30 minutes.
The half-life of the isotope used is about 6 hours.
1. State why an isotope with a half-life of about 6 minutes is **not** suitable.

(1)

.....

.....

2. State why an isotope with a half-life of about 6 days is **not** suitable.

(1)

.....

.....

(iii) State **two** ways of reducing the radiation risks to the technician.

(2)

1 .....

.....

2 .....

.....

(Total for question = 5 marks)

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Q2.

This question is about radioactivity.

Fluorine-19 is a stable isotope of the element fluorine.

The element fluorine also has several radioactive isotopes.

Describe **one** similarity and **one** difference between the numbers of particles in one nucleus of fluorine-19 and one nucleus of a radioactive isotope of fluorine.

(2)

similarity

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difference

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(Total for question = 2 marks)

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Q3.

Use words from the box to complete the sentences about nuclear fission of uranium-235 (U-235).

chain	chemical	fuse
neutrons	protons	split

(3)

A neutron hits a nucleus of U-235 and causes the nucleus to ..... .

Each fission releases energy, two daughter nuclei and some ..... .

In a nuclear reactor, one fission can set off a controlled ..... reaction.

(Total for question = 3 marks)

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Q4.

The half-life of strontium-90 is 29 years.

The table in Figure 9 gives some information about how the mass of a sample of strontium-90 changes with time.

mass of strontium-90 in g	time in years
1600	0
.....	29
400	.....

Figure 9

Complete the table in Figure 9.

(Total for question = 2 marks)

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Q5.

Carbon-13 and carbon-14 are isotopes of carbon.

Nuclei of carbon-13 and carbon-14 can be represented by these symbols

$$^{13}_{6}C \quad \text{and} \quad ^{14}_{6}C$$

Complete the table for an atom of carbon-13 and an atom of carbon-14.

(2)

	number of neutrons in the nucleus	number of electrons in orbit around the nucleus
carbon-13		
carbon-14		

(Total for question = 2 marks)

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Q6.

The fuel in a nuclear power station is an isotope of uranium.
Control rods are used in the nuclear reactor.

Explain how these rods stop the nuclear reaction from getting out of control.

(2)

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Q7.

This question is about radioactivity.

* Exposing people to radioactive sources can be dangerous.

Describe the dangers of exposure to radioactive sources and what can be done to protect hospital staff when they are working with radioactive sources.

(6)

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(Total for question = 6 marks)

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