

The Nuclear Model of the Atom

Question Paper

Course	CIE IGCSE Physics
Section	5. Nuclear Physics
Topic	The Nuclear Model of the Atom
Difficulty	Hard

Time Allowed 10

Score /5

Percentage /100

Question 1**Extended tier only**

Nuclear reactions can release huge amounts of energy.

Which nuclear reaction takes place in the Sun and which nuclear reaction takes place in a nuclear power station?

	The Sun	A nuclear power station
A	fusion	fusion
B	fusion	fission
C	fission	fission
D	fission	fusion

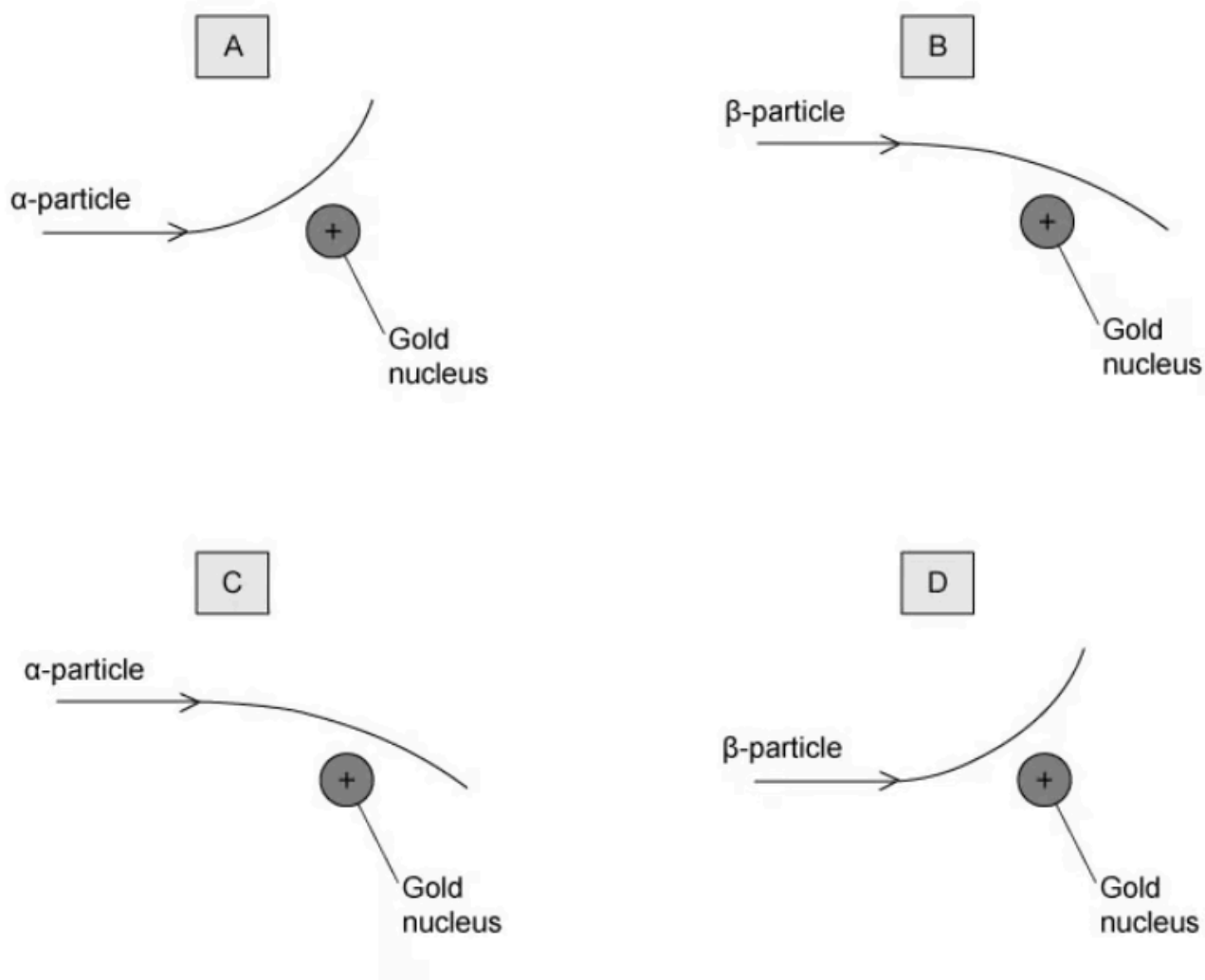
[1 mark]

Question 2

Extended tier only

In 1911 Rutherford performed an experiment that provided evidence for the nuclear atom.

Which of the diagrams below best represents this experiment?



[1 mark]

Question 3

Extended tier only

Fusion is a type of nuclear reaction.

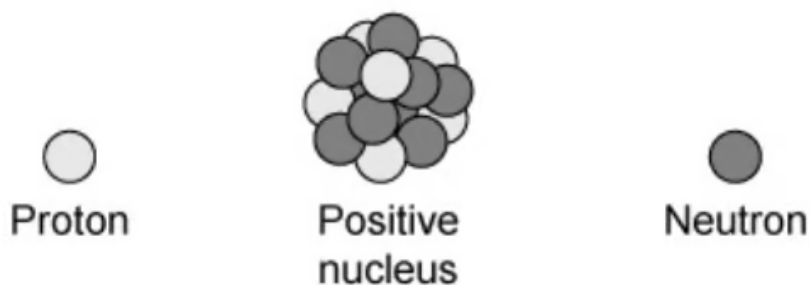
Which term below is a **correct** statement about nuclear fusion?

- A. It occurs in nuclear power stations.
- B. It involves a larger nucleus decaying into two (or more) smaller nuclides.
- C. Uranium is a type of fuel for nuclear fusion.
- D. Light nuclei (such as hydrogen and helium) fuse together, releasing energy in the process.

[1 mark]

Question 4**Extended tier only**

A neutron and a proton are near to a positive nucleus.



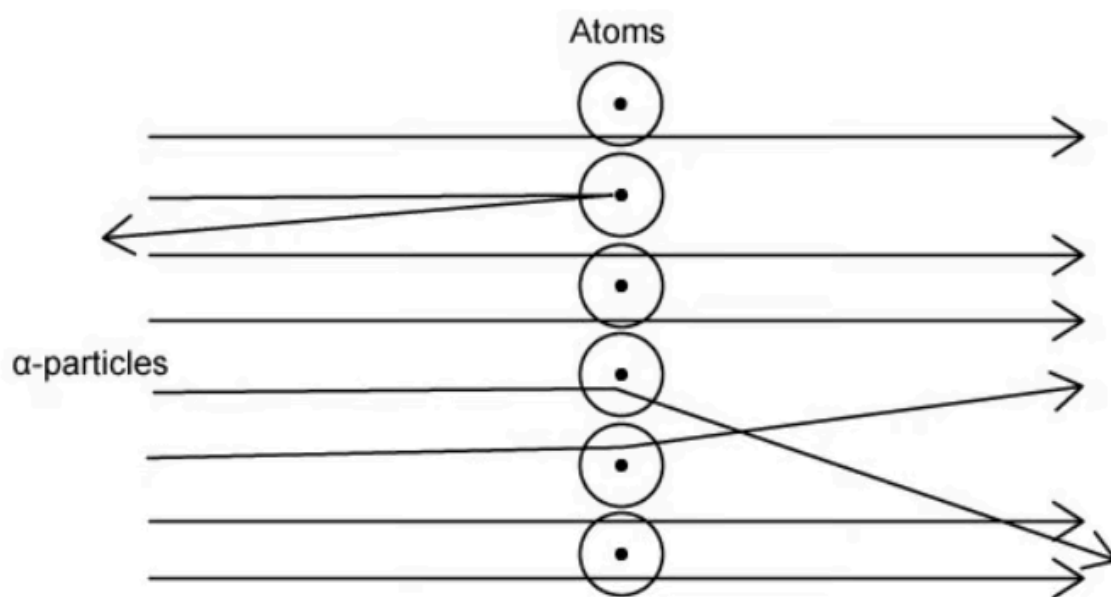
If anything, what would happen to the proton and the neutron due to the charge on the nucleus?

- A.** The neutron is repelled; the proton is attracted.
- B.** The proton is not affected; the neutron is attracted.
- C.** The proton is repelled; the neutron is attracted.
- D.** The proton is repelled; the neutron is not affected.

[1 mark]

Question 5**Extended tier only**

In Rutherford's experiment, α -particles were fired at a thin metal foil. This is shown in the image below.



Why are α -particles used rather than neutrons?

- A. They are positively charged, which causes them to repel when they pass close to a nucleus.
- B. They are very small in diameter, and so are less likely to interact with a nucleus.
- C. They travel more slowly.
- D. They are heavier.

[1 mark]