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

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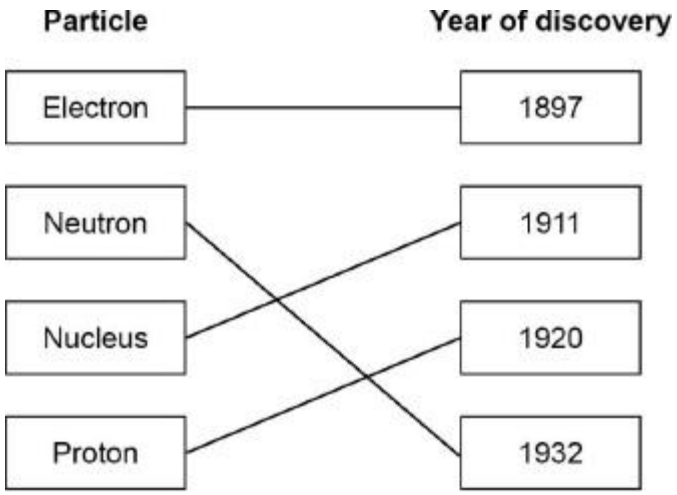
Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Mark Schemes

Q1.

(a)



4 correct for 2 marks

2 or 3 correct for 1 mark

additional line from a box on the left negates the mark for that box

2

(b) both the alpha particles and the (gold) nucleus have positive / same charge

*'it' is alpha particle **A***

allow alpha particles and protons have positive / same charge

1

so the alpha particle and the gold nucleus repel each other

allow like charges repel

ignore deflection (this refers to the path taken not the force)

1

(c) particle **B** passes closer to the nucleus

*'it' is particle **B***

1

so experiences a stronger (repulsive) force
or
so experiences a stronger electric field

*any mention of particle **B** colliding with the nucleus scores zero*

1

(d) the atom is mostly empty space

1

(e) in the Bohr model the electrons orbit (the nucleus) at specific distances
(whereas in the nuclear model the electrons can orbit at a continuous range of distances)

allow energy levels or shells for specific distances

1

(f) to move to a higher energy level an electron absorbs energy from electromagnetic radiation

allow absorbs energy by collision with another electron
allow EM radiation for electromagnetic radiation

1

to move to a lower energy level an electron emits energy in the form of electromagnetic radiation

1

if no other mark scored allow 1 mark for an electron changes energy level by emitting or absorbing electromagnetic radiation

[10]

Q2.

(a) two protons and two neutrons

allow helium nucleus
ignore symbols

1

(b) 85

1

37

1

this order only

(c) alpha radiation has a low penetrating ability

1

(so externally) alpha radiation is stopped by skin (so is low risk)

allow absorbed for stopped
ignore reference to range of alpha particles through other materials

1

internally, alpha radiation is absorbed by living tissue / organs

allow (internal) contamination will increase the radiation dose

1

(as) alpha radiation is highly ionising

1

(internal) contamination will cause greater (risk of) harm to cells / tissues / organs / DNA / genes

allow contamination causes greater chance of developing cancer
allow greater chance of mutations

1

[8]