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

Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

(a) (i) alpha

1

(ii) damages them / changes DNA
accept kills them / destroys
accept causes cancer
accept causes cell mutations
*do **not** accept they ionise cells on its own*

1

(b) count is (roughly) the same

1

gamma is not affected by magnetic field
accept magnet for magnetic field

1

or

alpha and beta are deflected by a magnetic field (1)
count would go down significantly (1)

(c) time taken for number of nuclei to halve
*do **not** accept time for radioactivity to halve*

or

time taken for count rate to fall to half (its initial value)
*do **not** accept time for nuclei to halve*

1

(d) not enough time to take measurements / make observations

1

before level of radiation became insignificant

1

[7]

Q2.

(a) (i) (large) <u>nucleus</u> hit by a neutron

1

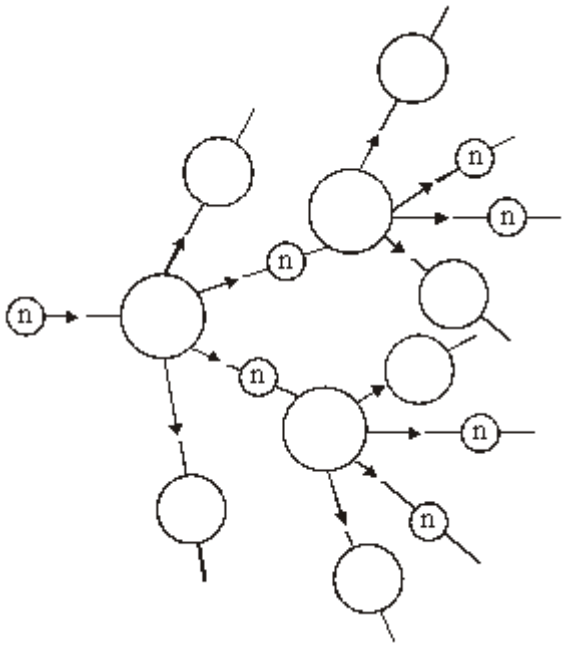
*splits into (smaller) nuclei **and** neutron(s) (+ energy)*

1

(ii) additional neutrons collide with nuclei causing further fission

allow full credit for a correct labelled diagram
accept 2 or more neutrons given out at each fission reaction

diagram shows 3 discernible sizes, with smaller nuclei and neutrons at same stage



1

*(b) cost of (building and) de-commissioning is very high **or** cost of building is higher*

accept a correct description of de-commissioning

accept high cost to keep the power station safe / secure
accept high cost of reprocessing / storage of nuclear waste

1

(c) less pollution from transport carrying the fuel

accept coal produces more pollutant gases
accept correct named gases
accept more radiation pollution from coal than nuclear
accept more waste from coal than nuclear
*do **not** accept any reference to burning uranium*
*do **not** accept answers in terms of global warming **or** acid rain unless developed*

1

[5]

Q3.

(i) nucleus / neutron

*do **not** accept shells or orbits*

1

*(ii) neutron changes to a proton **or** number of neutrons goes down 1 and the number of protons goes up by 1*

*do **not** accept becomes positive*

1

[2]

Q4.

(i) photographic film / paper

accept X-ray film

1

(ii) (when developed) the film is dark<u>er</u>

must have a comparison

1

*(iii) to prevent them receiving / being exposed to too much radiation **or** so they know how much radiation they have been exposed to*

accept if he gets too much radiation there may be something wrong with the plant

*any statement making reference to a need for preventive or corrective action gains **1** mark*

*an isolated statement of fact of the effect of radiation gains **0** marks*

1

[3]