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

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

Mark Schemes

Q1.

(a) **B E G**

all 3 required and no other
any order

1

same number of / 88 protons (and different numbers of neutrons)

same number of electrons is insufficient

1

(b) (i) 222

1

86

1

(ii) 4800

*allow **1** mark for obtaining 3 half-lives*

2

(c) ethical

1

deceived / lied to (about safety of working conditions)

accept (women) not warned of the dangers
given no protection is insufficient

or

value own / scientists' lives more than women

or

did not treat women humanely

1

(d) accept any sensible suggestion
eg
too many interests in continued use of radium

evidence may cause public unrest

*do **not** accept not enough evidence*

doctors not want to be blamed for illnesses (caused by radium)

accept doctors not wanting to be sued (for harm caused by using radium)

doctors thought (possible) benefits outweighed (possible) risks

*do **not** accept did not know radium could be harmful*

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believe radium could treat illnesses is insufficient

1

[9]

Q2.

(a) has an equal amount of positive charge

accept pudding/it is positive

1

(b) (experimental) results could not be explained using 'plum pudding' model

or

(experimental) results did not support plum pudding model

accept (experimental) results disproved plum pudding model

1

(c) (i) **A** – most of atom is empty space**or**most of atom concentrated at the centre

1

B – nucleus is positive (so repels alpha particles)

accept nucleus has the same charge as alpha

1

C – nucleus is very small

accept nucleus is positive if not scored for B

or

nucleus is a concentrated mass

accept nucleus has a very concentrated charge

1

(ii) (if predictions correct, this) supports the new model

answers should be in terms of the nuclear model

accept supports his/new/nuclear theory

accept proves for supports

accept shows predictions/ Rutherford was correct

1

[6]

Q3.

(a) (i) (total) number of protons plus neutrons

accept number of nucleons

accept amount for number

do not accept number of particles in the nucleus

1

(ii) number of neutrons decreases by one

1

number of protons increases by one

accept for both marks a neutron changes into a proton

1

(b) (i) $^{208}_{81}Th$

1

correct order only

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1

(ii) the number of protons determines the element

accept atomic number for number of protons

1

alpha and beta decay produce different changes to the number of protons

there must be a comparison between alpha and beta which is more than a description of alpha and beta decay alone

or

alpha and beta decay produce different atomic numbers

ignore correct reference to mass number

1

[7]

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