

MARK SCHEME

GCSE

PHYSICS

AQA - TRIPLE SCIENCE

P4 - TEST 3

ATOMIC STRUCTURE

Beginner

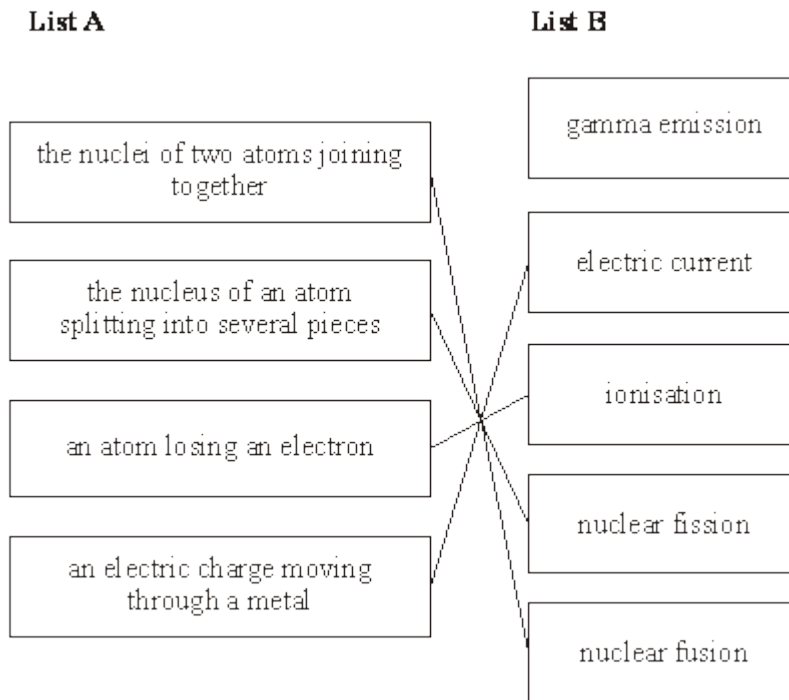
Mark schemes

1.

four lines correct

allow 1 mark for each correct line

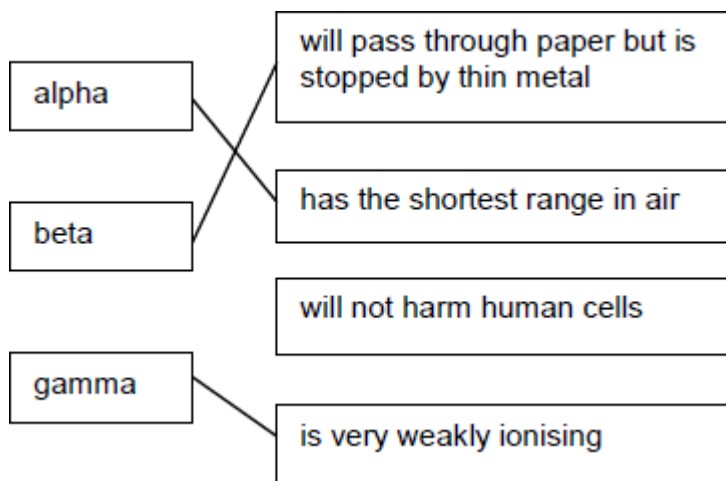
if more than 1 line is drawn from a box in List A, mark each line incorrect



[4]

2.

(a) 3 lines correct



allow 1 mark for each correct line

if more than one line is drawn from any type of radiation box then all of those lines are wrong

(b) Gamma radiation will pass through the body

3

1

(c) half

1

(d) protons

1

[6]

3.

(a) B

reason only scores if B is chosen

1

americium has an atomic number of 95

allow proton number for atomic number

allow B has a different atomic number

allow B has an atomic number of 94

1

(b) 430 (years)

allow an answer between 420 and 440 (years)

1

(c) 430 (years)

or

their answer to part **(b)**

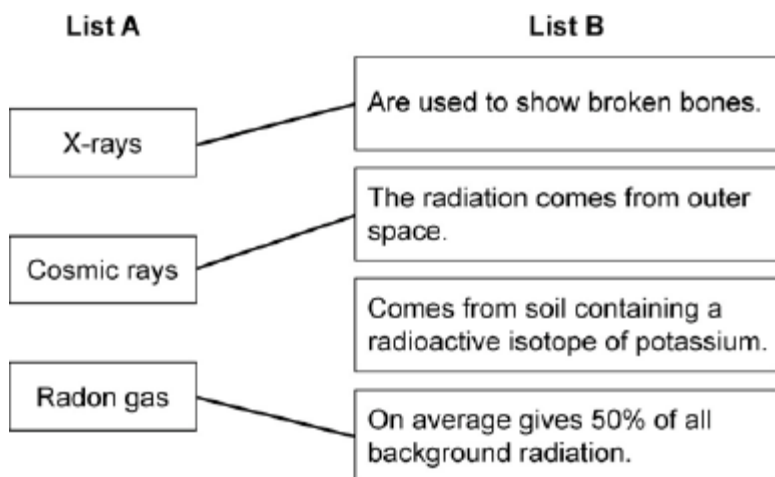
allow an answer between 420 and 440 (years)

1

[4]

4.

(a) 1 mark for each correct line



if more than 1 line has been drawn from a box in List A then all those lines are marked incorrect

3

(b) higher in village B

1

by 6 units

allow 1 mark for correctly obtaining a height difference of 180 (m) / 4 times higher – this refers to height not radiation levels

accept for 3 marks in village A it is 2 units (extra) and in village B it is 8 units (extra) allow 1 mark for a correct radiation calculation based on incorrect height readings

2

[6]

5.

(a) bigger

accept any word which means bigger

1

(b) Z

if Z is not given, the reason does not score

1

alpha will not pass through aluminium or lead

accept alpha cannot go through metals / dense material

accept there is nothing to stop the radiation

accept alpha will not pass through aluminium

do not accept alpha will not pass through lead

do not accept alpha stopped by air

1

[3]

6.

Quality of written communication

correct use of **three** scientific terms e.g. radiation / α **or** β **or** γ / cells / ionisation / mutation (not cells or body) / chromosomes / DNA / genes / cancer

1

any **three** from:

(materials emit) radiation

named type of radiation (α **or** β **or** γ)

damage / harm / kill

dangerous is neutral

cells / chromosomes / DNA / genes

cancer

mutations

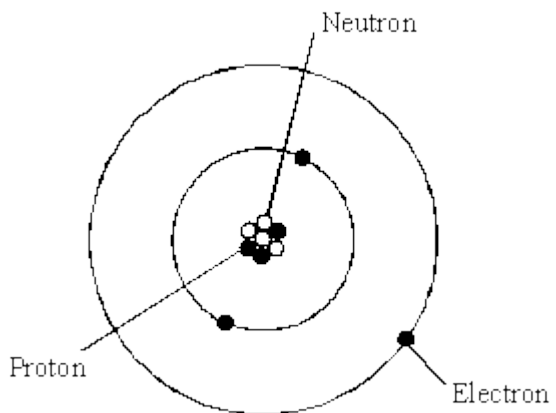
ionisation

gloves or glass absorb radiation / prevent radiation reaching body or cells

3

[4]

7. (i) each correct label scores 1 mark



3

(ii) neutron

1

(iii) 7

1

number of protons and neutrons **or** number of nucleons or number of particles in the nucleus

accept number of particles in the centre only if first answer = 7

1

[6]

8. (a) electron(s)

1

(b) 3rd box ticked

The model cannot explain the results from a new experiment

1

(c) all three correct

Particle
Proton
Electron
Neutron

allow 1 mark for 1 correct

2

[4]

9. (a) (i) L

1

(ii) **M**

1

(b) To make a smoke detector work.

1

(c) **40**

no tolerance

1

[4]