

Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Mark Schemes

Q1.

(a) (i) 2.5 1

(ii) The radiation dose from natural sources is much greater than from artificial sources. 1

(b) (i) other factors may be involved
accept a specific suggestion
eg they may be exposed to other types of radiation
accept cannot be sure (in many cases) that the cause of death is radon (poisoning) 1

(ii) any **one** from:
 • different concentrations in different rooms
 • to average out daily fluctuations
accept to find an average
accept to make the result (more) reliable / valid
*do **not** accept to make more accurate on its own* 1

(iii) average level (much) higher (in **C** and **D**)
accept converse 1

some homes have very high level (in **C** and **D**)
*accept maximum level in **A** and **B** is low*
or
 maximum level in some homes (in **C** and **D**) is very high
*accept higher radiation levels (in **C** and **D**) for 1 mark* 1

[6]**Q2.**

(a)

Particle	Relative Mass	Relative charge
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Proton	1	
Neutron		0

*accept one, accept +1
do **not** accept –1*

1

*accept zero
do **not** accept no charge/ nothing/neutral unless given with 0*

1

(b) equal numbers/amounts of protons and electrons

1

protons and electrons have equal but opposite charge

accept protons charge +1 and electron charge –1

accept (charge) on proton

cancels/balances (charge) on electron

accept positive (charges) cancel out the negative(charges)

neutrons have no charge is neutral

*do **not** accept total charge of protons, electrons (and neutrons) is 0
unless qualified*

1

(c) (i) (3) fewer neutrons

accept lower/ smaller mass number

*do **not** accept different numbers of neutrons*

any mention of fewer/more protons/electrons negates mark

*accept answers in terms of U-238 providing U-238 is specifically stated
i.e. U-238 has (3) more neutrons*

1

(ii) neutron

1

(iii) (nuclear) fission

accept fision

*do **not** accept any spelling that may be taken as fusion*

1

[7]

Q3.

(a) (i) **P**

1

(ii) **Q**

1

(b) 3 lines correct

aluminium cardboard lead

allow 1 mark for 1 correct line

two lines drawn from any source or box – both incorrect

2

(c) (i) K

1

(ii) 56

accept 50 – 60 inclusive

1

(iii) K

1

(iv) to inject... tracer

1

[8]