

Name of the Student: _____

Max. Marks : 21 Marks

Time : 21 Minutes

Mark Schemes

Q1.

(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]**Q2.**

(a) nucleus

1

neutron

1

gamma rays

1

*in this order only*25 000 0002 400 000

(b)

1

11

an answer of 10.4 with no working scores 1 mark

1

an answer of 11 scores 2 marks(c) any **two** from:

- waste is radioactive
allow nuclear waste
- waste has a long half-life
allow waste remains dangerous for a long time
- waste is toxic
- waste needs to be buried
allow waste is difficult to dispose of
- risk of catastrophic accidents
allow named accident e.g. Fukushima, Chernobyl, Three Mile Island
- fuel is non-renewable

2

(d) **similarity:**

(carbon dioxide concentration and global temperature have) both increased
allow they both show a positive correlation

1

difference:

the carbon dioxide (concentration) continues to increase whereas temperature (increase) levels off

allow carbon dioxide (concentration) increases more quickly than temperature (increase)

1

[9]

Q3.

(a) 7

1

(b) 3

1

number of protons

reason only scores if 3 chosen

1

(c) levels

1

(d) ${}^4_2\text{He}$

correct order only

1

1

${}^0_{-1}\text{e}$

(e) shorter half-life (than the other sources)

1

1

exposure time to radiation is shorter

1

[9]