

Name of the Student: \_\_\_\_\_

Max. Marks : 22 Marks

Time : 22 Minutes

Mark Schemes

**Q1.**

- (i) radon (gas)  
*do **not** accept gas*  
1
- (ii) background  
1

[2]

**Q2.**

- (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]

**Q3.**

- (a) presence of a radioactive source  
*accept radioactivity **or** radioactive or radiation*  
*accept a named source*  
*accept a named type of radiation ignore reference to relative levels*  
*do **not** accept thermal **or** heat radiation*  
*do **not** accept nuclear waste*  
1
- (b) (i) gamma  
*accept correct symbol*  
1
- (ii) alpha

**Q4.**

- (a) all points correctly plotted

tolerance  $\pm \frac{1}{2}$  square on y axis only

allow 1 mark for 3 correctly plotted points

2

attempt made to draw a smooth curve

do **not** accept dot-to-dot line

1

- (b) (i) 3 days
- $\pm 0.2$
- 
- or any value correctly obtained using
- 
- their graph line

if no line drawn in (a), answer must be exactly 3

1

- (ii) 3 days or their (b)(i)

1

- (c) radon-222

accept radon **or** 222

accept alpha or 3.8

correct isotope required for reason to score

1

has the shortest half-lifeaccept the others have longer half-lives

1

[7]

**Q5.**

- (a) (i) cosmic rays

1

- (ii) any
- two from**
- :
- 
- rocks
- 
- cosmic rays
- 
- food
- 
- radon

2

- (b) (i) 15

1

- (ii) 450

e.c.f. 465 – (d)(i)

do **not** accept negative number

1

(iii) beta

*count (greatly) reduced by aluminium*

**or** *alpha not reach GM tube and gamma would pass  
(unaffected) through the aluminium*

*accept aluminium stops beta*

2

[7]