

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

Max. Marks : 17 Marks

Time : 17 Minutes

Mark Schemes

**Q1.**

- (a) two half lives

*gains 1 mark*

**but**

20 minutes

*gains 2 marks*

2

- (b) alphas will be stopped by skin / air **or** do not penetrate betas and gammas  
can reach / damage organs / cells

*for 1 mark each*

2

[4]

**Q2.**

- (a) 90

*for one mark*

1

- (b) (i) neutron

*for one mark*

1

- (ii) nucleus

*for one mark*

1

- (iii) electron

*for one mark*

1

- (c) (i) 100

*for one mark*

1

- (ii) 157

*for one mark*

1

[6]

**Q3.**

(a) (i) B

*for one mark*

2

(ii) has a different number of electrons (protons)

*for one mark*

(b) (i) A and C

*for one mark*

1

(ii) same number of protons / electrons, same nuclear charge  
different number of neutrons / nuclear masses different

*for 1 mark each*

2

[5]

**Q4.**

beta

1

alpha absorbed by paper

*allow beta and alpha*

*second mark is linked to first*

1

**or** beta absorbed by aluminium allow beta can penetrate paper

**or** gamma would affect all of film

*i.e. cannot obtain second mark unless first mark is correct*

[2]