

Name of the Student: _____

Max. Marks : 17 Marks

Time : 17 Minutes

Mark Schemes

Q1.

- (a) (i) cannot penetrate aluminium
allow can only pass through air / paper too weak is neutral
 1
- (ii) gamma rays not affected (by aluminium)
allow all / most (gamma rays) to pass through
too strong is neutral
danger is neutral
 1
- (b) (i) (nuclei) unstable
 1
- (ii) causes harm / damage to body / cells
allow radiation sickness
 1
- detail e.g., causes mutations / causes cancer / damages DNA /
 damages chromosomes
allow two effects for 2 marks
 1

[5]**Q2.**

- (a) protons
 1
- protons
accept electrons
 1
- neutrons
 1
- (b) protons
reject mass
 1

[4]**Q3.**

2 weeks

Q4.

- (a) (i) alpha particles cannot penetrate covering
do not credit any answer not relating to film badge or its case 1
- (ii) film gets fogged **or** blackened
accept film gets exposed
*do not credit film changes colour **or** goes white **or** blotchy* 1
- (b) (i) any **one** from
may cause cancer may damage cells **or** cell nucleii causes mutations
changes DNA
*accept (causes) burns **or** kills cells* 1
- (ii) any **two** from
treating cancers
tracers in body
sterilising instruments **or** bandages
*accept two descriptions of named treatments, eg thyroid check and
circulation monitoring*
*accept is a source of X-rays, eg for dentistry **or** taking X-rays of bones* 2
- (c) calculation that 1000 is 3 half lives on
8000 → 4000 → 2000 → 1000 1
- time elapsed is $3 \times \text{half life} = 31.8 \text{ hr}$
award both marks for 31.8 hr or 1 day 7.8 hr with no working shown 1