

**Answer ALL questions.**

**1** Unstable nuclei can emit particles.

(a) Which of these particles has the largest charge?

(1)

- ☐ **A** alpha particle
- ☐ **B** beta particle
- ☐ **C** neutron
- ☐ **D** proton

(b) Which of these particles has the largest mass?

(1)

- ☐ **A** alpha particle
- ☐ **B** beta particle
- ☐ **C** neutron
- ☐ **D** proton

(c) The maximum range of a beta particle in air is about

(1)

- ☐ **A** 50 mm
- ☐ **B** 50 cm
- ☐ **C** 50 m
- ☐ **D** 50 km

(d) When a nucleus emits a beta particle

(1)

- ☐ **A** the nucleon number decreases by 1
- ☐ **B** the nucleon number increases by 1
- ☐ **C** the proton number decreases by 1
- ☐ **D** the proton number increases by 1

**(Total for Question 1 = 4 marks)**

