

Answer ALL questions.

1 Carbon-14 is a radioactive isotope of carbon.

It has the symbol



(a) (i) The number of **nucleons** in a carbon-14 nucleus is

(1)

- ☐ A 6
- ☐ B 8
- ☐ C 14
- ☐ D 20

(ii) The number of **neutrons** in a carbon-14 nucleus is

(1)

- ☐ A 6
- ☐ B 8
- ☐ C 14
- ☐ D 20

(iii) The number of **electrons** in a neutral carbon-14 atom is

(1)

- ☐ A 6
- ☐ B 8
- ☐ C 14
- ☐ D 20



(b) When carbon-14 decays it emits a beta particle.

What is a **beta particle**?

(1)

- ☐ A an electron
- ☐ B a neutron
- ☐ C a nucleus
- ☐ D a proton

(c) Carbon-14 has a half-life of 5700 years.

A sample of cloth contains 6.0 g of carbon-14.

What mass of carbon-14 will remain in the cloth after 11 400 years?

(1)

- ☐ A 1.5 g
- ☐ B 2.0 g
- ☐ C 2.5 g
- ☐ D 3.0 g

(d) The carbon atoms in the cloth are mainly atoms of carbon-12, a different isotope of carbon.

What are **isotopes**?

(2)

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(Total for Question 1 = 7 marks)

