

Name of the Student: _____

Max. Marks : 17 Marks

Time : 17 Minutes

Q1.

(a) Which **one** of these statements about alpha radiation is correct?

Put a cross (X) in the box next to your answer.

(1)

- ☐ A Alpha radiation has no charge.
- ☐ B Alpha radiation is very ionising.
- ☐ C Alpha radiation travels very far in air.
- ☐ D Alpha radiation is an electromagnetic wave.

(b) When an atom emits an alpha particle its nucleus changes.

Which describes the changes in the nucleus?

Put a cross (X) in the box next to your answer.

(1)

| | proton number | mass number |
|----------------------------|----------------|----------------|
| <input type="checkbox"/> A | decreases by 2 | decreases by 4 |
| <input type="checkbox"/> B | increases by 2 | decreases by 4 |
| <input type="checkbox"/> C | decreases by 2 | increases by 4 |
| <input type="checkbox"/> D | increases by 2 | increases by 4 |

Q2.

A teacher sets up an experiment to show some students how far beta particles travel in air. Figure 10 shows some of the equipment she uses.



(Source: www.einstein.yu.edu)

Figure 10

(i) State the scientific name for the radioactivity detector shown in Figure 10.

(1)

.....

The teacher also has:

- a radioactive source that emits only beta particles
 - a metre rule.
- (ii) State **two** precautions the teacher must take to protect herself from the effects of radioactivity.

(2)

1

.....

2

.....

(iii) Describe how the teacher could show how far beta particles travel in air.

(4)

.....

.....

.....

.....

.....

.....

.....

.....

(Total for question = 7 marks)

Q3.

An isotope of krypton, krypton-89, is produced in a nuclear reactor.
A nucleus of this isotope can be represented as



Describe the structure of a nucleus of krypton-89.

(4)

.....

.....

.....

.....

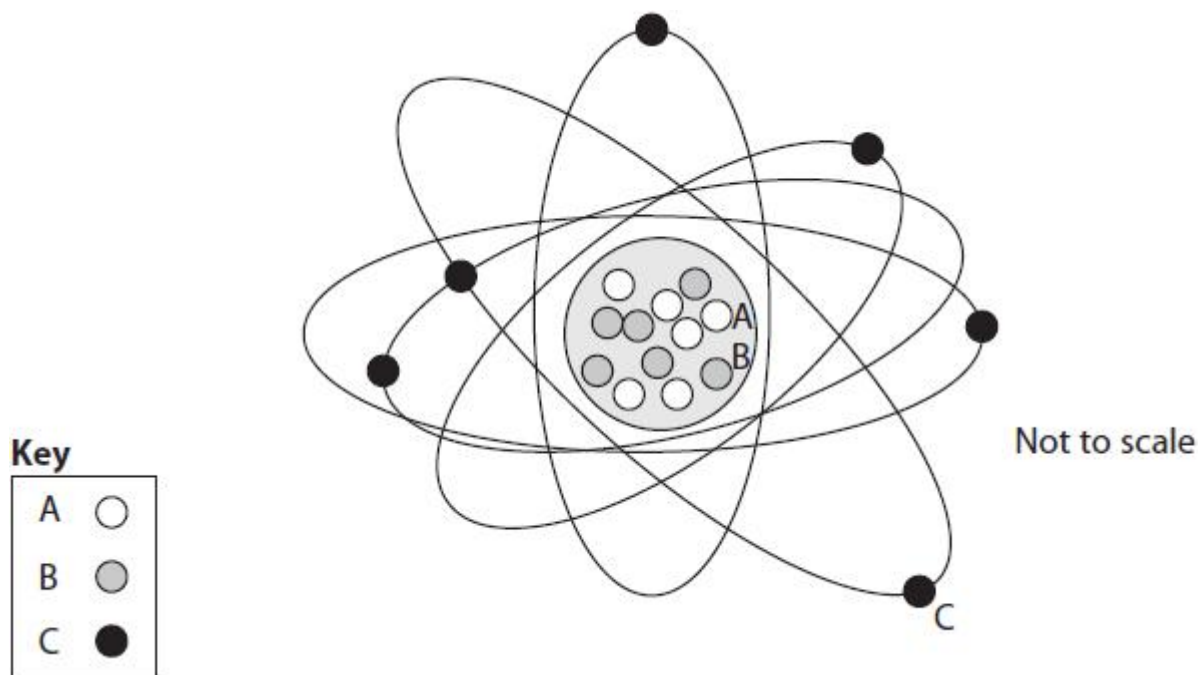
.....

.....

Q4.

The diagram shows an atom of carbon.

A, B and C are three different particles.



(i) Name the three different particles shown.

(3)

A =

B =

C =

(ii) What is the mass (nucleon) number of this carbon atom?

(1)

.....