4 Use the following information to help you answer the questions.

The gold foil experiment

Scientists used to think that electrons were spread out through a positively charged atom.

They called this the 'plum pudding' model.

To test this idea, scientists aimed alpha particles at thin gold foil. They expected the alpha particles to pass straight through.

The results showed that **almost** all the alpha particles did pass straight through, but a few did not. About 1 in every 8000 was deflected away at a very large angle.

It was these 'anomalous' results that led to a new understanding of the atom.

(a) What was the prediction in this experiment?

(1)

.....

.....

.....

(b) (i) What do scientists mean by **anomalous results**?

(1)

.....

.....

.....

(ii) How should scientists deal with anomalous results?

(1)

.....

.....

.....

(c) Explain how these anomalous results led to the idea of a positive charge at the centre of an atom.

(2)

.....

.....

.....

.....

(d) Give two reasons why it is important to carry out experiments in physics.

(2)

1 .....

.....

2 .....

.....

(Total for Question 4 = 7 marks)