



ATOMIC STRUCTURE

THE PLUM PUDDING MODEL

Answer all the questions below then check your answers.

- Which of the following was one of John Dalton's main points in his atomic theory?
 - Atoms can be created and destroyed.
 - Atoms of different elements are identical.
 - Atoms of the same element are identical.
 - Atoms are divisible into smaller particles.
- Who proposed the idea that matter is composed of small, indivisible particles called atoms?
 - Democritus
 - Aristotle
 - Dalton
 - Thomson
- What did J.J. Thomson discover through his experiments with cathode rays?
 - Neutrons
 - Protons
 - Electrons
 - Nucleus

4. In the plum pudding model of the atom, what are the "plums"?

- a) Protons b) Neutrons
c) Electrons d) Nuclei

5. Fill in the gaps to complete the sentences below:

The ancient Greek philosopher _____ is credited with the idea that matter is made up of small, indivisible particles called atoms.

According to John Dalton's atomic theory, atoms of different elements combine in simple, whole-number _____ to form compounds.

6. State the four main points of John Dalton's atomic theory.

7. Describe the plum pudding model of the atom proposed by J.J. Thomson.

8. Explain the significance of J.J. Thomson's cathode ray experiments. (4 marks)

Answers

1. Which of the following was one of John Dalton's main points in his atomic theory?

- a) Atoms can be created and destroyed.
- b) Atoms of different elements are identical.
- c) Atoms of the same element are identical.
- d) Atoms are divisible into smaller particles.

Answer: c) Atoms of the same element are identical.

2. Who proposed the idea that matter is composed of small, indivisible particles called atoms?

- a) Democritus
- b) Aristotle
- c) Dalton
- d) Thomson

Answer: a) Democritus

3. What did J.J. Thomson discover through his experiments with cathode rays?

- a) Neutrons
- b) Protons
- c) Electrons
- d) Nucleus

Answer: c) Electrons

4. In the plum pudding model of the atom, what are the "plums"?

- a) Protons b) Neutrons
c) Electrons d) Nuclei

Answer: c) Electrons

5. Fill in the gaps to complete the sentences below:

The ancient Greek philosopher _____ is credited with the idea that matter is made up of small, indivisible particles called atoms.

According to John Dalton's atomic theory, atoms of different elements combine in simple, whole-number _____ to form compounds.

Answers:

The ancient Greek philosopher Democritus is credited with the idea that matter is made up of small, indivisible particles called atoms.

According to John Dalton's atomic theory, atoms of different elements combine in simple, whole-number ratios to form compounds.

6. State the four main points of John Dalton's atomic theory.

Answer:

All matter is composed of small, indivisible particles called atoms.

Atoms of the same element are identical in mass and properties.

Atoms of different elements have different masses and properties.

Atoms combine in simple, whole-number ratios to form compounds.

7. Describe the plum pudding model of the atom proposed by J.J. Thomson.

Answer:

The plum pudding model proposed by J.J. Thomson described the atom as a positively charged sphere with negatively charged electrons embedded within it, like plums in a pudding. This model suggested that the positive and negative charges were distributed evenly throughout the atom.

8. Explain the significance of J.J. Thomson's cathode ray experiments. (4 marks)

Answer:

J.J. Thomson's cathode ray experiments were significant because they led to the discovery of the electron, a negatively charged subatomic particle. His experiments showed that cathode rays were composed of particles much smaller than atoms, which could be deflected by electric and magnetic fields. This finding challenged the notion that atoms were indivisible and led to the development of the plum pudding model of the atom, where electrons were embedded in a positively charged sphere.