Answer all the questions below then check your answers.

1. Describe three main or key points in John Dalton's atomic theory. How did they contribute to the understanding of chemical reactions?

2. Describe the key points in the experiment that led to the development of J.J. Thomson's plum pudding model

3. Discuss one piece of experimental evidence that supported J.J. Thomson's plum pudding model of the atom.

4 Describe the key experiment that led to the development of J.J. Thomson's plum pudding model of the atom.

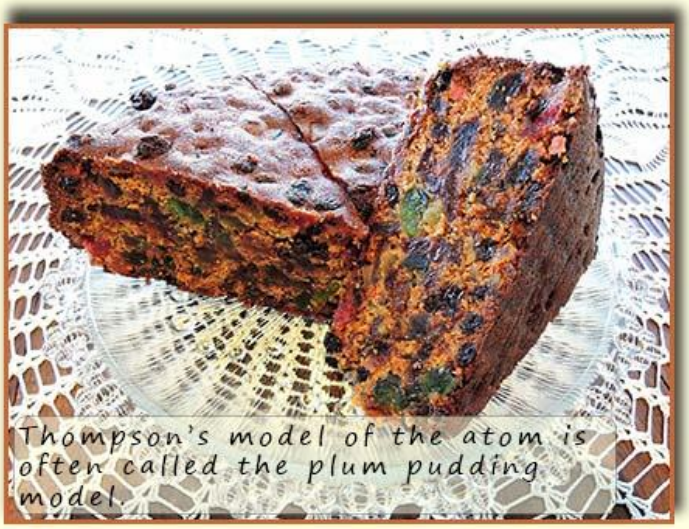
5. Explain the role of electrons in J.J. Thomson's plum pudding model. How did this model differ from Dalton's atomic theory?

6. Discuss one piece of experimental evidence that supported J.J. Thomson's plum pudding model of the atom.

7. Explain the role of electrons in J.J. Thomson's plum pudding model. How did this model differ from Dalton's atomic theory?

8. Which scientist is given credit for the discovery of the electron?

9. What did atoms look like according to early scientist like Dalton?

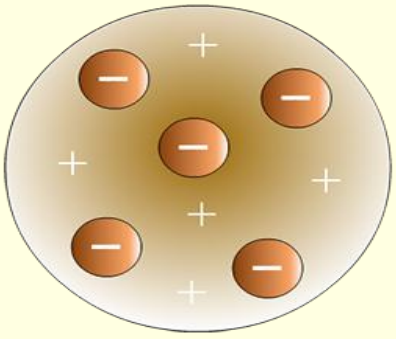

Thompson's model of the atom is often called the plum pudding model.

10. What was J.J.Thomson's Plum pudding model of the atom and how was it different from the earlier ideas about what an atom looked like?

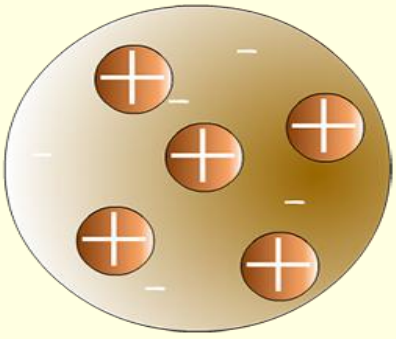
11. What were Thompson's cathode rays composed of?

12. Which of the 2 models shown below is an accurate description of Thompson's plum pudding model of the atom? Explain your choice.

Model A



Model B



Plum Pudding Model of the atom

Answers

1. Describe three main or key points in John Dalton's atomic theory. How did they contribute to the understanding of chemical reactions?

You could have included any of the following three points:

- Atoms are indivisible and indestructible.
- All atoms of a given element are identical in mass and chemical properties.
- Compounds are formed by a combination of atoms in simple whole-number ratios.

How did they contribute to the understanding of chemical reactions?

- Dalton's model helped explain the law of conservation of mass in chemical reactions. It also explained that atoms were fundamentally unchanged during chemical reactions, they simply rearranged themselves in going from the reactants to the products.

2. Describe the key points in the experiment that led to the development of J.J. Thomson's plum pudding model

1. Thomson's cathode ray tube experiment involved passing electric currents through a low-pressure gas.
2. He observed that cathode rays (electrons) were attracted to the positive plate, indicating negatively charged particles.
3. This led to the development of the plum pudding model where electrons are embedded in a positively charged "pudding."

3. Discuss one piece of experimental evidence that supported J.J. Thomson's plum pudding model of the atom.

• The cathode ray tube experiment supported the plum pudding model by showing that cathode rays (electrons) were attracted to the positive plate or anode, indicating the presence of negatively charged particles.

4. Describe the key experiment that led to the development of J.J. Thomson's plum pudding model. (4 marks)

• Thomson's cathode ray tube experiment involved passing electric currents through a low-pressure gas.
• He observed that cathode rays (electrons) were attracted to the positive plate, indicating negatively charged particles.
• This led to the development of the plum pudding model where electrons are embedded in a positively charged "pudding."

5. Explain the role of electrons in J.J. Thomson's plum pudding model. How did this model differ from Dalton's atomic theory?

- In Thomson's model, electrons are negatively charged particles embedded in a positively charged "pudding" or matrix.
- This differs from Dalton's theory, which considered atoms as indivisible and lacking subatomic particles.

6. Discuss one piece of experimental evidence that supported J.J. Thomson's plum pudding model. (3 marks)

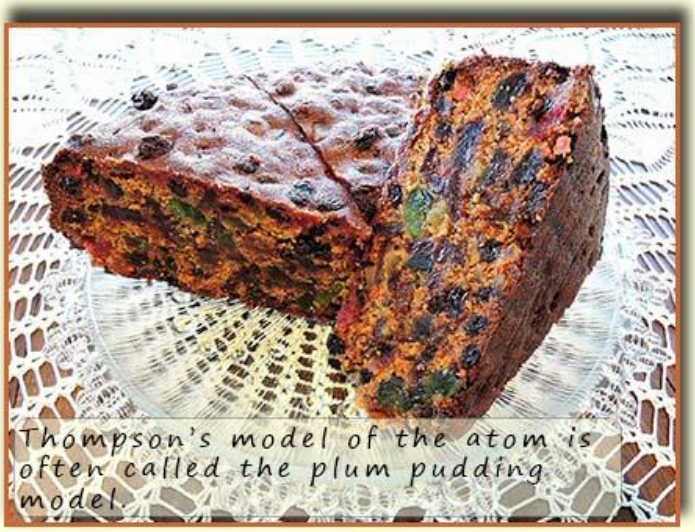
• The cathode ray tube experiment supported the plum pudding model by showing that cathode rays (electrons) were attracted to the positive plate, indicating the presence of negatively charged particles.

7. Explain the role of electrons in J.J. Thomson's plum pudding model. How did this model differ from Dalton's atomic theory?

- In Thomson's model, electrons are negatively charged particles embedded in a positively charged "pudding" or matrix.
- This differs from Dalton's theory, which considered atoms as indivisible and lacking subatomic particles.

8. Which scientist is given credit for the discovery of the electron? J.J. Thompson

9. What did atoms look like according to early scientist like Dalton? Solid balls or spheres that could not be split


Thompson's model of the atom is often called the plum pudding model.

10. What was J.J.Thomson's Plum pudding model of the atom and how was it different from the earlier ideas about what an atom looked like?

Thompson's experiments, mainly with cathode rays had suggested to him that atoms were not solid spheres but were in fact made up of smaller particles. His plum pudding of the atom was that atoms consist of a ball or sphere of positive charge into which was embedded negatively charged electrons- just like the currants in a plum pudding or the chocolate chips in a cookie.

11. What were Thompson's cathode rays composed of?

The cathode rays were composed of electrons

12. Which of the 2 models shown below is an accurate description of Thompson's plum pudding model of the atom? Explain your choice

Model A is an accurate description, Thompson imaged the atom as a sphere of + charge with the negative electrons stuck in it. Model B has the charges the wrong way round.