The Journey of Atomic Discovery

Chemistry · Answer Key · 20 Questions

1. What is the fundamental concept that all matter is composed of tiny building blocks called atoms supported by?

A) Magnetism
B) Diffusion
C) Combustion
D) Evaporation

2. Which ancient civilization proposed that matter consists of small, indivisible particles?

A) Romans
B) Egyptians
C) Greeks
D) Persians

3. Who formulated Dalton's Atomic Theory, stating that all matter is made of minute, indivisible particles called atoms?

A) Niels Bohr
B) John Dalton
C) Ernest Rutherford
D) J.J. Thomson

4. William Crookes investigated using vacuum tubes, leading to the discovery of what?

A) Protons
B) Neutrons
C) Electrons
D) Cathode rays

5. The Maltese Cross Tube showed that cathode rays originated from which part of the tube?

A) Anode
B) Cathode
C) Vacuum
D) Glass wall

6. The Paddle Wheel Tube demonstrated that cathode rays possess what?

A) Heat
B) Light
C) Energy
D) Sound

7. Who is credited with naming the electron?

A) J.J. Thomson
B) George Stoney
C) Robert Millikan
D) James Chadwick

8. J.J. Thomson's experiments with cathode ray tubes proved they were attracted to a positive plate, indicating they were what kind of particles?

A) Positively charged
B) Neutral
C) Negatively charged
D) Electrically neutral

9. What ratio did J.J. Thomson calculate using electric and magnetic fields for the electron?

A) Charge to mass (e/m)
B) Mass to charge (m/e)
C) Energy to mass (E/m)
D) Charge to energy (e/E)

10. J.J. Thomson proposed the Plum Pudding Model, which suggested a spherical cloud of positive charge with what embedded within it?

A) Protons
B) Neutrons
C) Electrons
D) Nuclei

11. Robert Millikan conducted the Oil Drop Experiment to determine the magnitude of the charge of a single what?

A) Proton
B) Neutron
C) Electron
D) Atom

12. Ernest Rutherford performed the alpha particle scattering experiment, also known as the gold foil experiment, leading to the discovery of what?

A) Electrons
B) Neutrons
C) Nucleus
D) Protons

13. Rutherford discovered protons by bombarding lighter elements with alpha particles, observing the release of small, positively charged particles. What were these particles?

A) Electrons
B) Neutrons
C) Alpha particles
D) Protons

14. Niels Bohr proposed an atomic model where electrons orbit the nucleus in specific energy levels, similar to planets orbiting the sun. What is this model called?

A) Plum Pudding Model
B) Dalton's Model
C) Rutherford Model
D) Bohr Model

15. James Chadwick discovered the neutron by bombarding beryllium nuclei with alpha particles, releasing small, what kind of particles?

A) Positively charged
B) Negatively charged
C) Neutral
D) Energetic

16. What are the three main subatomic particles that compose an atom?

A) Protons, Neutrons, and Electrons
B) Alpha, Beta, and Gamma particles
C) Quarks, Leptons, and Bosons
D) Nucleus, Shells, and Orbits

17. Cathode rays are streams of negatively charged particles that travel in straight lines and can be deflected by electric and magnetic fields. What are these particles?

A) Protons
B) Neutrons
C) Electrons
D) Positrons

18. According to the Law of Conservation of Mass, in any isolated system, mass is:

A) Created but not destroyed
B) Destroyed but not created
C) Neither created nor destroyed
D) Continuously changing

19. The Plum Pudding Model, proposed by J.J. Thomson, was later disproven by which experiment?

A) Oil Drop Experiment
B) Alpha particle scattering experiment
C) Vacuum tube experiment
D) Cathode ray experiment

20. What does the 'e/m' ratio calculated by J.J. Thomson represent?

A) The mass of the electron
B) The charge of the electron
C) The charge-to-mass ratio of the electron
D) The energy of the electron