Chemistry

Atomic Theory Deep Understanding review

For questions 1-11, match the scientist with their contribution.

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| 1 Discovered electric charges, positive and negative.  2 Proposed ancient theory of *atomos* particles.  3 Discovered the electron with cathode ray experiment.  4 Discovered charged particles, called ions.  5 Proposed ancient theory of five elements.  6 Discovered the neutron using paraffin wax experiment.  7 Gold foil experiment proved existence of the nucleus.  8 Carried out ancient element theory; influenced science for centuries.  9 Calculated the electron’s fundamental charge using charged oil drops.  10 Gave first comprehensive atomic theory of elements and compounds.  11 Proposed the plum pudding model of atoms. | [A] Empodocles  [B] Aristotle  [C] Democritus  [D] John Dalton  [E] J.J. Thomson  [AB] Ernest Rutherford  [AC] Robert Millikan  [AD] James Chadwick  [AE] Michael Faraday  [BC] Svante Arrhenius |

12 Positive charged ions are called

[A] anions [B] cations [C] electrons [D] electrodes

13 The word *atom* comes from the Greek *atomos*, meaning

[A] not cuttable [B] invisible [C] small [D] sandy

14 Dalton’s atomic theory stressed that elements of different size and mass must be

[A] different elements [B] the same element [C] atoms [D] compounds

15 Experiments to discover the proton and neutron used Becquerel’s heavy, positive charged,

radioactive particle called the:

[A] neutron [B] nucleus [C] cathode ray [D] alpha particle

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| **Symbol** | **Atomic Number** | **Mass**  **Number** | **Protons** | **Neutrons** | **Electrons** |
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Experiments

1. How did Thomson figure out that the electron has a negative charge?

2. Why did some oil drops in Millikan’s experiment fall faster (or slower) than others?

3. Dalton’s Atomic Theory set the standard for atomic theories that followed. Argue against the following statement from Dalton’s theory:

*Atoms of a given element are identical in size, mass, and other properties.*

4. What is an α-particle? What is its charge?

5. In Rutherford’s experiment, why did most α-particles pass through the gold foil?

6 What were the **two** major conclusions of Rutherford’s experiment?

7 Empedocles was the first to propose the theory of elements, before Aristotle. Why was this theory more successful than the theory of atoms?