



Multiple Choice Questions

- Who gave the law of conservation of mass?**

(a) John Dalton (b) Joseph Proust
 (c) Antoine Lavoisier (d) Rutherford
- According to Dalton's atomic theory, atoms are**

(a) Divisible
 (b) Indivisible
 (c) Electrically Charged
 (d) Unstable
- In water, hydrogen and oxygen combine in the mass ratio**

(a) 2 : 1 (b) 8 : 1
 (c) 1 : 8 (d) 1 : 2
- The smallest particle of an element that takes part in a chemical reaction is**

(a) Molecule (b) Ion
 (c) Atom (d) Compound
- Which of the following is a polyatomic ion?**

(a) Na⁺ (b) Ca²⁺
 (c) Cl⁻ (d) NH₄⁺
- The atomic mass unit is defined with reference to**

(a) Hydrogen atom (b) Oxygen atom
 (c) Nitrogen atom (d) Carbon-12 atom
- The number of atoms present in one molecule of ozone is**

(a) One
 (b) Two
 (c) Three
 (d) Four
- Which of the following represents a correct chemical formula?**

(a) H + O (b) H₂O
 (c) 2H + O (d) H₂ + O₂
- The molecular mass of carbon dioxide (CO₂) is**

(a) 28 u
 (b) 32 u
 (c) 40 u
 (d) 44 u

10. Which law states that elements combine in fixed proportions by mass?
(a) Law of conservation of mass (b) Law of multiple proportions
(c) Law of constant proportions (d) Avogadro's law

Fill in the blanks :

11. One atomic mass unit is equal to one-twelfth the mass of a _____ atom.
12. A group of atoms carrying a charge is called an _____.

True / False

13. Atoms of the same element always have identical chemical properties.
14. A molecule of an element can contain more than one atom.

Very Short Type Questions

15. What is atomicity?
16. Write the chemical formula of calcium oxide.

Short Type Questions

17. State any two postulates of Dalton's atomic theory.
18. Why is it not possible to see atoms with the naked eye?

Essay Type Questions

19. Explain the law of conservation of mass and the law of constant proportions with suitable examples.
20. Describe Dalton's atomic theory in detail and explain its importance.

HOTS

21. **Assertion (A):** The mass of reactants is equal to the mass of products in a chemical reaction.
Reason (R): Atoms are neither created nor destroyed during a chemical reaction.
a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true



1. (c) Antoine Lavoisier
2. (b) Indivisible
3. (c) 1 : 8
4. (c) Atom
5. (d) NH_4^+
6. (d) Carbon-12 atom
7. (c) Three
8. (b) H_2O
9. (d) 44 u
10. (c) Law of constant proportions
11. Carbon-12
12. Ion
13. True
14. True
15. Atomicity is the number of atoms present in one molecule of an element.
16. CaO
17. • All matter is made up of tiny particles called atoms.
• Atoms of a given element are identical in mass and chemical properties.
18. Atoms are extremely small in size and cannot be seen with the naked eye even under a microscope.

19. The law of conservation of mass states that mass can neither be created nor destroyed in a chemical reaction. This law was given by Antoine Lavoisier. According to this law, the total mass of reactants before a chemical reaction is always equal to the total mass of products after the reaction. For example, when calcium carbonate is heated, it decomposes into calcium oxide and carbon dioxide. If the masses are measured before and after the reaction in a closed system, they are found to be equal. This proves that mass is conserved.
The law of constant proportions states that a chemical compound always contains the same elements combined in a fixed proportion by mass, irrespective of its source or method of preparation. This law was given by Joseph Proust. For example, water obtained from rivers, rain or prepared in a laboratory always contains hydrogen and oxygen in the ratio of 1:8 by mass. These laws explain how elements combine to form compounds and form the foundation of chemical science.

20. Dalton's atomic theory was proposed by John Dalton to explain the laws of chemical combination. According to this theory, all matter is made up of very tiny particles called atoms. Atoms cannot be created or destroyed during a chemical reaction. Atoms of the same element are identical in mass and chemical properties, while atoms of different elements have different masses and properties. Dalton also stated that atoms combine in simple whole-number ratios to form compounds, and in a given compound, the relative number and kinds of atoms remain fixed.

This theory successfully explained the law of conservation of mass and the law of constant proportions. Although later discoveries showed that atoms are divisible, Dalton's atomic theory laid the foundation of modern chemistry and helped scientists understand the structure of matter.

21. Correct option: a

Explanation: Since atoms are neither created nor destroyed during a chemical reaction, the total mass remains unchanged, which explains the law of conservation of mass.

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