

Basic Chemistry Concepts



Multiple Choice Questions (MCQs)

- 1. Which law states that mass is neither created nor destroyed in a chemical reaction?**
 - a) Law of Definite Proportions
 - b) Law of Multiple Proportions
 - c) Law of Conservation of Mass
 - d) Avogadro's Law
- 2. According to the Law of Definite Proportions, a chemical compound always contains:**
 - a) Elements in a fixed mass ratio
 - b) Equal numbers of atoms of each element
 - c) Different ratios of elements
 - d) Elements in a fixed volume ratio
- 3. Which law states that if two elements form more than one compound, the masses of one element that combine with a fixed mass of the other element are in small whole number ratios?**
 - a) Law of Conservation of Mass
 - b) Law of Definite Proportions
 - c) Law of Multiple Proportions
 - d) Gay-Lussac's Law of Gaseous Volumes
- 4. The Law of Reciprocal Proportions is used to compare:**
 - a) Volumes of gases
 - b) Masses of different compounds
 - c) Masses of elements combining with a fixed mass of another element
 - d) Volumes of liquids
- 5. Gay-Lussac's Law of Gaseous Volumes states that when gases react together at constant temperature and pressure, their volumes are in:**
 - a) Inverse ratios
 - b) Simple whole number ratios
 - c) Complex fractions
 - d) Unpredictable ratios
- 6. Which law states that equal volumes of gases, at the same temperature and pressure, contain equal numbers of molecules?**
 - a) Law of Multiple Proportions
 - b) Avogadro's Law
 - c) Law of Conservation of Mass
 - d) Law of Definite Proportions

7. **What is the unit of atomic mass?**
- Gram
 - Kilogram
 - Atomic Mass Unit (AMU)
 - Mole
8. **The atomic mass of an element is:**
- The total number of protons and electrons in an atom
 - The weighted average mass of the atoms in a naturally occurring sample of the element
 - The number of neutrons in an atom
 - The mass of the heaviest isotope of the element
9. **Which of the following is used to calculate the molecular mass of a compound?**
- Sum of the masses of protons and neutrons
 - Sum of the atomic masses of all atoms in the molecule
 - Average mass of all isotopes of the elements in the compound
 - Mass of one mole of the compound
10. **The average atomic mass of chlorine is 35.5 amu. What does this value represent?**
- The mass of the most abundant isotope of chlorine
 - The average mass of chlorine atoms, taking into account the relative abundance of its isotopes
 - The mass of a single chlorine atom
 - The mass of one mole of chlorine gas
11. **If 16 grams of oxygen react completely with 2 grams of hydrogen to form water, this is an example of:**
- Law of Multiple Proportions
 - Law of Definite Proportions
 - Law of Reciprocal Proportions
 - Law of Conservation of Mass
12. **If 12 grams of carbon combine with 32 grams of oxygen to form carbon dioxide, what law does this illustrate?**
- Law of Definite Proportions
 - Law of Multiple Proportions
 - Law of Conservation of Mass
 - Avogadro's Law
13. **If two elements A and B form AB and AB₂ compounds, and the mass of B that combines with a fixed mass of A in AB₂ is twice that in AB, this is an example of:**
- Law of Definite Proportions
 - Law of Multiple Proportions
 - Law of Reciprocal Proportions
 - Avogadro's Law
14. **What does Avogadro's Law allow scientists to determine about gases?**
- Their atomic masses
 - Their molecular masses

- c) The relative volumes of gases
 - d) The number of molecules in equal volumes of gases at the same temperature and pressure
15. **Which of the following pairs of elements demonstrates the Law of Reciprocal Proportions?**
- a) Hydrogen and oxygen combining with carbon
 - b) Nitrogen and hydrogen combining with oxygen
 - c) Sodium and chlorine combining with hydrogen
 - d) Carbon and sulfur combining with hydrogen

Answer Key

- 1. c) Law of Conservation of Mass
- 2. a) Elements in a fixed mass ratio
- 3. c) Law of Multiple Proportions
- 4. c) Masses of elements combining with a fixed mass of another element
- 5. b) Simple whole number ratios
- 6. b) Avogadro's Law
- 7. c) Atomic Mass Unit (AMU)
- 8. b) The weighted average mass of the atoms in a naturally occurring sample of the element
- 9. b) Sum of the atomic masses of all atoms in the molecule
- 10. b) The average mass of chlorine atoms, taking into account the relative abundance of its isotopes
- 11. d) Law of Conservation of Mass
- 12. a) Law of Definite Proportions
- 13. b) Law of Multiple Proportions
- 14. d) The number of molecules in equal volumes of gases at the same temperature and pressure
- 15. a) Hydrogen and oxygen combining with carbon