

Chapter 3: Atoms and Molecules Quiz

Introduction to Atoms and Molecules

1. Who postulated the term 'Parmanu'?

- ☐ Maharishi Kanad
- ☐ Democritus
- ☐ Lavoisier
- ☐ Dalton

Answer: Maharishi Kanad

2. What does the Greek word 'atom' mean?

- ☐ Indivisible
- ☐ Invisible
- ☐ Tiny
- ☐ Hard

Answer: Indivisible

3. Who laid the foundation of chemical sciences?

- ☐ Antoine L. Lavoisier
- ☐ John Dalton
- ☐ Proust
- ☐ Kanad

Answer: Antoine L. Lavoisier

4. When was the idea of divisibility of matter considered in India?

- ☐ Around 500 BC
- ☐ Around 1800 AD
- ☐ Around 100 AD
- ☐ Around 2000 BC

Answer: Around 500 BC

5. Who suggested that particles normally exist in a combined form?

- ☐ Pakudha Katayama
- ☐ Democritus
- ☐ Lavoisier
- ☐ Proust

Answer: Pakudha Katayama

Law of Conservation of Mass

1. The Law of Conservation of Mass states that mass can?

- ☐ Neither be created nor destroyed
- ☐ Be created but not destroyed
- ☐ Be destroyed but not created
- ☐ Be created and destroyed

Answer: Neither be created nor destroyed

2. Who established the Law of Conservation of Mass?

- ☐ Lavoisier
- ☐ Dalton
- ☐ Proust
- ☐ Bohr

Answer: Lavoisier

3. In a chemical reaction, the total mass of reactants is?

- ☐ Equal to total mass of products
- ☐ Greater than products
- ☐ Less than products
- ☐ Variable

Answer: Equal to total mass of products

4. If 10g of A reacts with 5g of B to give C and D, the total mass of C and D is?

- ☐ 15g
- ☐ 10g
- ☐ 5g
- ☐ 20g

Answer: 15g

5. Why is a cork put on the flask during the experiment?

- ☐ To prevent matter from escaping
- ☐ To keep it warm
- ☐ To look good
- ☐ To mix solutions

Answer: To prevent matter from escaping

Law of Constant Proportions

1. This law is also known as?

- ☐ Law of Definite Proportions
- ☐ Law of Mass Action
- ☐ Law of Multiple Proportions
- ☐ Law of Conservation

Answer: Law of Definite Proportions

2. In water, the ratio of Hydrogen to Oxygen by mass is?

- ☐ 1:8
- ☐ 1:2
- ☐ 2:1
- ☐ 8:1

Answer: 1:8

3. Who stated the Law of Constant Proportions?

- ☐ Proust
- ☐ Lavoisier
- ☐ Dalton
- ☐ Kanad

Answer: Proust

4. In Ammonia (NH₃), Nitrogen and Hydrogen are in ratio?

- ☐ 14:3
- ☐ 1:3
- ☐ 3:14
- ☐ 14:1

Answer: 14:3

5. If 9g of water is decomposed, we get?

- ☐ 1g Hydrogen and 8g Oxygen
- ☐ 2g Hydrogen and 16g Oxygen
- ☐ 8g Hydrogen and 1g Oxygen
- ☐ 4.5g each

Answer: 1g Hydrogen and 8g Oxygen

Dalton's Atomic Theory

1. Dalton's theory was based on?

- ☐ Laws of chemical combination
- ☐ Law of gravity
- ☐ Atomic structure
- ☐ Electrons

Answer: Laws of chemical combination

2. According to Dalton, all matter is made of?

- ☐ Tiny particles called atoms
- ☐ Molecules
- ☐ Compounds
- ☐ Mixtures

Answer: Tiny particles called atoms

3. Which postulate explains the Law of Conservation of Mass?

- ☐ Atoms are indivisible and cannot be created/destroyed
- ☐ Atoms combine in whole numbers
- ☐ Atoms of different elements differ
- ☐ Atoms of same element are identical

Answer: Atoms are indivisible and cannot be created/destroyed

4. Atoms of a given element are identical in?

- ☐ Mass and chemical properties
- ☐ Size only
- ☐ Shape only
- ☐ Nothing

Answer: Mass and chemical properties

5. Atoms combine in the ratio of?

- ☐ Small whole numbers
- ☐ Large fractions
- ☐ Decimals
- ☐ Random numbers

Answer: Small whole numbers

What is an Atom?

1. The building blocks of all matter are?

- ☐ Atoms
- ☐ Cells
- ☐ Bricks
- ☐ Sand

Answer: Atoms

2. Atomic radius is measured in?

- ☐ Nanometres
- ☐ Metres
- ☐ Centimetres
- ☐ Kilometres

Answer: Nanometres

3. 1 nanometre is equal to?

- ☐ 10^{-9} m
- ☐ 10^{-6} m
- ☐ 10^{-3} m
- ☐ 10^{-12} m

Answer: 10^{-9} m

4. Can we see atoms with naked eyes?

- ☐ No
- ☐ Yes
- ☐ Sometimes
- ☐ Only large ones

Answer: No

5. Which of these is the smallest?

- ☐ Atom of hydrogen
- ☐ Molecule of water
- ☐ Grain of sand
- ☐ Ant

Answer: Atom of hydrogen

Modern Day Symbols of Elements

1. Who was the first scientist to use symbols for elements?

- ☐ Dalton
- ☐ Lavoisier
- ☐ Bohr
- ☐ Newton

Answer: Dalton

2. Who approves names of elements?

- ☐ IUPAC
- ☐ NASA
- ☐ WHO
- ☐ UN

Answer: IUPAC

3. The symbol for Iron is derived from?

- ☐ Ferrum
- ☐ Iron
- ☐ Ferrous
- ☐ Fe

Answer: Ferrum

4. What is the symbol for Sodium?

- ☐ Na
- ☐ So
- ☐ S
- ☐ Nu

Answer: Na

5. The symbol for Gold is?

- ☐ Au
- ☐ Go
- ☐ Gd
- ☐ Ag

Answer: Au

Atomic Mass

1. The reference atom for atomic mass is?

- ☐ Carbon-12
- ☐ Oxygen-16
- ☐ Hydrogen-1
- ☐ Nitrogen-14

Answer: Carbon-12

2. One atomic mass unit (u) is equal to?

- ☐ 1/12th the mass of one C-12 atom
- ☐ Mass of one C-12 atom
- ☐ Mass of one H atom
- ☐ 1/16th mass of O atom

Answer: 1/12th the mass of one C-12 atom

3. What is the atomic mass of Oxygen?

- ☐ 16 u
- ☐ 8 u
- ☐ 12 u
- ☐ 14 u

Answer: 16 u

4. What is the atomic mass of Hydrogen?

- ☐ 1 u
- ☐ 2 u
- ☐ 12 u
- ☐ 16 u

Answer: 1 u

5. Relative atomic mass is defined as?

- ☐ Average mass of the atom compared to C-12
- ☐ Absolute mass
- ☐ Weight of atom
- ☐ Mass of nucleus

Answer: Average mass of the atom compared to C-12

How Do Atoms Exist?

1. Can atoms of most elements exist independently?

- ☐ No
- ☐ Yes
- ☐ Always
- ☐ Only noble gases

Answer: No

2. Atoms form?

- ☐ Molecules and ions
- ☐ Only molecules
- ☐ Only ions
- ☐ Nothing

Answer: Molecules and ions

3. Molecules and ions aggregate to form?

- ☐ Matter
- ☐ Energy
- ☐ Space
- ☐ Time

Answer: Matter

4. Which atoms can exist independently?

- ☐ Noble gases (e.g., Helium)
- ☐ Oxygen
- ☐ Hydrogen
- ☐ Nitrogen

Answer: Noble gases (e.g., Helium)

5. Why do atoms form molecules?

- ☐ To become stable
- ☐ To become unstable
- ☐ To increase mass
- ☐ To decrease size

Answer: To become stable

What is a Molecule?

1. A molecule is a group of atoms held together by?

- ☐ Chemical bonds
- ☐ Gravity
- ☐ Magnetism
- ☐ Glue

Answer: Chemical bonds

2. A molecule is capable of?

- ☐ Independent existence
- ☐ Breathing
- ☐ Moving
- ☐ Dividing

Answer: Independent existence

3. Can a molecule contain atoms of different elements?

- ☐ Yes
- ☐ No
- ☐ Never
- ☐ Only if heated

Answer: Yes

4. What is the smallest particle of a compound?

- ☐ Molecule
- ☐ Atom
- ☐ Ion
- ☐ Electron

Answer: Molecule

5. Does a molecule show properties of the substance?

- ☐ Yes
- ☐ No
- ☐ Sometimes
- ☐ Only in gas

Answer: Yes

Molecules of Elements

1. Molecules of elements contain?

- ☐ Same type of atoms
- ☐ Different atoms
- ☐ Ions
- ☐ Mixtures

Answer: Same type of atoms

2. The number of atoms in a molecule is called?

- ☐ Atomicity
- ☐ Valency
- ☐ Atomic mass
- ☐ Molecular weight

Answer: Atomicity

3. What is the atomicity of Oxygen?

- ☐ Diatomic
- ☐ Monoatomic
- ☐ Triatomic
- ☐ Polyatomic

Answer: Diatomic

4. Ozone (O₃) is?

- ☐ Triatomic
- ☐ Diatomic
- ☐ Monoatomic
- ☐ Tetra-atomic

Answer: Triatomic

5. Phosphorus (P₄) is?

- ☐ Tetra-atomic
- ☐ Diatomic
- ☐ Monoatomic
- ☐ Polyatomic

Answer: Tetra-atomic

Molecules of Compounds

1. Molecules of compounds contain?

- ☐ Atoms of different elements
- ☐ Atoms of same element
- ☐ Only ions
- ☐ Only metals

Answer: Atoms of different elements

2. In NH₃ (Ammonia), the elements are?

- ☐ Nitrogen and Hydrogen
- ☐ Nitrogen and Helium
- ☐ Nickel and Hydrogen
- ☐ Neon and Hydrogen

Answer: Nitrogen and Hydrogen

3. The ratio by mass in CO₂ is?

- ☐ 3:8
- ☐ 1:2
- ☐ 12:16
- ☐ 1:1

Answer: 3:8

4. Water is a molecule of?

- ☐ Compound
- ☐ Element
- ☐ Mixture
- ☐ Ion

Answer: Compound

5. Atoms in a compound are combined in?

- ☐ Definite proportions
- ☐ Random proportions
- ☐ Variable proportions
- ☐ No proportions

Answer: Definite proportions

What is an Ion?

1. An ion is a?

- ☐ Charged species
- ☐ Neutral atom
- ☐ Molecule
- ☐ Compound

Answer: Charged species

2. A positively charged ion is called?

- ☐ Cation
- ☐ Anion
- ☐ Atom
- ☐ Molecule

Answer: Cation

3. A negatively charged ion is called?

- ☐ Anion
- ☐ Cation
- ☐ Positron
- ☐ Electron

Answer: Anion

4. A group of atoms carrying a charge is?

- ☐ Polyatomic ion
- ☐ Monoatomic ion
- ☐ Molecule
- ☐ Compound

Answer: Polyatomic ion

5. In NaCl, the cation is?

- ☐ Sodium (Na⁺)
- ☐ Chloride (Cl⁻)
- ☐ Both
- ☐ None

Answer: Sodium (Na⁺)

Writing Chemical Formulae

1. Combining power of an element is called?

- ☐ Valency
- ☐ Atomicity
- ☐ Atomic number
- ☐ Mass

Answer: Valency

2. In a formula, valencies must?

- ☐ Balance
- ☐ Be equal
- ☐ Be zero
- ☐ Be negative

Answer: Balance

3. When writing formula for metal and non-metal, which comes first?

- ☐ Metal
- ☐ Non-metal
- ☐ Any
- ☐ Heavier one

Answer: Metal

4. Polyatomic ions are enclosed in?

- ☐ Brackets
- ☐ Quotes
- ☐ Commas
- ☐ Spaces

Answer: Brackets

5. The formula for Magnesium Hydroxide is?

- ☐ Mg(OH)_2
- ☐ MgOH_2
- ☐ Mg_2OH
- ☐ MgO_2H_2

Answer: Mg(OH)_2

Formulae of Simple Compounds

1. Formula of Hydrogen Chloride is?

- ☐ HCl
- ☐ H₂Cl
- ☐ HCl₂
- ☐ HCL

Answer: HCl

2. Formula of Aluminium Oxide is?

- ☐ Al₂O₃
- ☐ AlO
- ☐ Al₃O₂
- ☐ AlO₃

Answer: Al₂O₃

3. Formula of Sodium Nitrate is?

- ☐ NaNO₃
- ☐ Na₂NO₃
- ☐ Na(NO₃)₂
- ☐ Na₃N

Answer: NaNO₃

4. Formula of Calcium Oxide is?

- ☐ CaO
- ☐ Ca₂O₂
- ☐ Ca₂O
- ☐ CaO₂

Answer: CaO

5. In MgCl₂, the valency of Mg is?

- ☐ 2
- ☐ 1
- ☐ 3
- ☐ 0

Answer: 2

Molecular Mass

1. Molecular mass is the sum of?

- ☐ Atomic masses of all atoms
- ☐ Atomic numbers
- ☐ Valencies
- ☐ Electrons

Answer: Atomic masses of all atoms

2. Molecular mass of H₂O is?

- ☐ 18 u
- ☐ 16 u
- ☐ 20 u
- ☐ 10 u

Answer: 18 u

3. Formula unit mass is used for?

- ☐ Ionic compounds
- ☐ Elements
- ☐ Gases
- ☐ Liquids

Answer: Ionic compounds

4. Mass of one mole of a substance is called?

- ☐ Molar mass
- ☐ Atomic mass
- ☐ Molecular mass
- ☐ Unit mass

Answer: Molar mass

5. Molecular mass of NaCl (Na=23, Cl=35.5) is?

- ☐ 58.5 u
- ☐ 58 u
- ☐ 23 u
- ☐ 35.5 u

Answer: 58.5 u