



## Multiple Choice Questions

- A substance made of only one kind of particles is called**
  - Mixture
  - Pure substance
  - Alloy
  - Solution
- Which of the following is a uniform mixture?**
  - Sand and water
  - Air
  - Muddy water
  - Soil
- The components of a mixture**
  - Lose their properties
  - Combine chemically
  - Retain their properties
  - Form new substances
- Which of the following is an element?**
  - Water
  - Sugar
  - Oxygen
  - Salt
- A compound differs from a mixture because it**
  - Can be separated physically
  - Has variable composition
  - Has fixed composition
  - Retains properties of components
- Which process separates salt from seawater?**
  - Filtration
  - Evaporation
  - Sedimentation
  - Sieving
- Iron and sulphur when heated together form**
  - A mixture
  - An element
  - A compound
  - A solution
- Air is classified as a mixture because**
  - It is visible
  - It contains dust
  - Its gases are chemically combined
  - Its components are not chemically combined
- Which of the following is an alloy?**
  - Water
  - Bronze
  - Sugar
  - Oxygen

10. **A substance that cannot be broken into simpler substances by chemical means is called**
- (a) Compound
  - (b) Mixture
  - (c) Element
  - (d) Solution

### Fill in the blanks :

11. A mixture whose components are evenly distributed is called a \_\_\_\_\_ mixture.
12. Water is a \_\_\_\_\_ formed by hydrogen and oxygen.

### True / False

13. A compound can be separated into its components by physical methods.
14. Alloys are uniform mixtures of metals.

### Very Short Type Questions

15. What is a mixture?
16. What is an element?

### Short Type Questions

17. How is a mixture different from a compound?
18. Why is air considered a mixture?

### Essay Type Questions

19. Explain the difference between elements, compounds, and mixtures with suitable examples.
20. Describe the experiment of heating iron filings and sulphur. How does it show the difference between a mixture and a compound?

### HOTS

21. **Assertion (A):** Water is a compound and not a mixture.  
**Reason (R):** Hydrogen and oxygen are chemically combined in a fixed ratio in water.  
Choose the correct option:
- 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

Chapter-8 | NATURE OF MATTER:  
ELEMENTS, COMPOUNDS AND MIXTURES Answer & Solution

## Worksheet-1

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- (b) Pure substance
- (b) Air
- (c) Retain their properties
- (c) Oxygen
- (c) Has fixed composition
- (b) Evaporation
- (c) A compound
- (d) Its components are not chemically combined
- (b) Bronze
- (c) Element
- Uniform
- Compound
- False
- True
- A mixture is a combination of two or more substances in which the components retain their individual properties and are not chemically combined.
- An element is a pure substance made of only one type of atom and cannot be broken down into simpler substances by chemical methods.
- A mixture is formed when two or more substances are combined physically and each component retains its own properties. The composition of a mixture can vary and its components can be separated by physical methods. A compound, on the other hand, is formed when elements combine chemically in a fixed ratio. The properties of a compound are different from those of its elements and its components cannot be separated by physical methods.
- Air is considered a mixture because it contains gases such as nitrogen, oxygen, carbon dioxide, and water vapour that are not chemically combined. Each gas retains its own properties and the composition of air can vary from place to place.
- Matter can be classified into elements, compounds, and mixtures based on its composition.  
An element is a pure substance made up of only one kind of atom. It cannot be broken down into simpler substances by any chemical method. Elements have definite properties. Examples of elements include iron, copper, oxygen, and hydrogen.  
A compound is a pure substance formed when two or more elements combine chemically in a fixed proportion. Compounds have properties that are different from the elements from which they are formed. The components of a compound cannot be separated by physical methods. Examples of compounds are water ( $H_2O$ ), carbon dioxide ( $CO_2$ ), and sodium chloride (common salt).  
A mixture is formed when two or more substances are mixed together in any proportion without any chemical change. The substances in a mixture retain their individual properties and can be separated by physical methods. Examples of mixtures include air, salt and sand, and iron filings mixed with sulphur. Thus, elements consist of one type of atom, compounds have a fixed composition and new properties, while mixtures have variable composition and components that can be separated physically.

**20.** Take some iron filings and sulphur powder in a China dish and mix them thoroughly. This mixture can be separated using a magnet, showing that iron and sulphur are only physically mixed.

Now heat the mixture strongly. After some time, a black solid substance is formed. This new substance is called iron sulphide (FeS).

**Observation:**

The black substance formed does not show the properties of iron or sulphur. It is not attracted by a magnet and cannot be separated by physical methods.

**Conclusion:**

Before heating, iron filings and sulphur form a mixture, in which substances retain their properties and can be separated physically. After heating, iron and sulphur combine chemically to form a compound, iron sulphide, which has new properties and a fixed composition.

**21.** Correct Answer: (a)

**Explanation:**

The assertion is true because water is formed by the chemical combination of hydrogen and oxygen. The reason is also true because these elements combine in a fixed ratio of 2:1. Since the reason correctly explains why water is a compound, it is the correct explanation of the assertion.

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