Element Compound Symbol and Formulae

1. **What are called Pure Substances?**
   Ans. A substance of a definite compositions which has consistent properties throughout is called Pure Substances.

2. **How Purity of any matter can check?**
   Ans. Purity of any substance can be checked by measuring or examining some of its important properties such as colour, taste, melting and boiling point etc.

3. **Pure Substances are how many types?**
   Ans. Pure Substances are two types
   a. Elements
   b. Compounds

4. **What is Element?**
   Ans. An Element is defined as a pure substance made up of only one kind of atoms that cannot be converted into anything simpler than itself by any physical or chemical process.
   Ex: Gold is an Element. Because it is made up with only one element i.e. Gold.
   Scientists have discovered 118 elements, out of which 92 are found on earth, and remaining 26 have been created artificially.

5. **What are the properties of Elements?**
   Ans. Elements are the basic substances from which all other substances are made.

6. **On the basis of properties elements are how many times?**
   Ans. On the basis of properties elements are four times:
   a. Metals
   b. Non-metals
   c. Metalloids
   d. Nobel or Inert Gas

7. **What are the properties of Metals?**
   Ans. The properties of Metals are
   a. Metals are usually Lustrous and hard (Except: Sodium; it is Soft Metals)
   b. Metals are solid in Room temperature (Expect Mercury, which is Liquid).
   c. Most metals are Sonorous, i.e. they produce a ringing sound when struck.
   d. Most metals are Malleable and Ductile i.e. they can be drawn or stretched into thin wires.
   e. Most metals are Malleable i.e. they can be beaten into thin sheets.
      Ex: Zinc, is brittle, on bearing it break into pieces.
   f. Metals are good conductors of heat and electricity. (Ex: Tungsten; which is a poor conductor)
   g. Most metals have high melting and boiling point.
   h. They produce a specific sound when struck i.e. they are sonorous substances.

8. **What are the properties of Non-metals?**
   Ans. The properties of Non-metals are
   a. These are elements with dull surface i.e. they do not shine. (Except Iodine and Carbon, in the form of diamond and graphite which are shine.)
   b. Non-metals may be solid (Carbon), Liquid (Bromine) or Gases (Oxygen).
   c. They are mostly brittle in nature.
   d. They are less in number as compared to metals.
   e. Non metals cannot be drawn into wires or beaten into thin sheets i.e. they are neither ductile nor malleable.
   f. They are mostly brittle in nature.
   g. Non metals are bad conductor of heat and electricity. (Except Carbon, which is good conductor of Electricity)
   h. Most non-metals have low melting and boiling points. (Except: Diamond and Graphite)
   i. They are non-sonorous i.e. do not make sound.

9. **What are Metalloids?**
   Ans. Metalloids are the elements which show the properties of both metals and non-metals.
   Ex: Boron, Silicon, Arsenic, Tellurium, Polonium. etc.

10. **What are Inert Gases?**
    Ans. Inert gases are the elements which do not react chemically with other elements.
    Ex: Helium, Neon, Argon, Krypton, Xenon etc.

11. **What are the differences between Metals and Non-Metals?**
    Ans.

Metals	Non-metals
Have Lustre	Do not have Lustre.
Are malleable.	Are not Malleable.
Are ductile.	Are not Ductile
Are good conductor of Heat and electricity	Bad conductor of heat and electricity.
Have high density	Have low density

12. **What is the difference between Metalloids and Noble Gases?**
    Ans.

Metalloids	Noble Gases
These elements show the properties of both metals and non-metals	These elements exist in the gaseous state in the atmosphere.
These are chemically reactive.	These are chemically inert.
These elements are monoatomic, i.e. contain one type of atoms.	These elements are also monoatomic.

13. **What is Symbol?**
    Ans. Symbol is the short form that also represents an atom of a specific element.

14. **What is Periodic Table?**
    Ans. It is a Table in which elements are arranged in increasing order of their atomic number.
    The horizontal rows are called Periods and the vertical columns are called Groups.
15. **What is Compound?**
    Ans. Compounds are pure substances formed by the chemical combination of two or more elements in a definite proportion by mass.
    Ex: Water, it is a compound. Hydrogen and Oxygen with proper ratio prepare Water.

16. **Write the characteristics of Compound.**
    Ans. The characteristics of compound are:
    a. **Compound is formed chemically from two or more elements.**
       Ex: Water is made of hydrogen and Oxygen.
    b. **A compound is made of molecules of only one kind.**
       Ex: Pure water has only water molecules
    c. **The molecules of a compound are made up of atoms of two or more different elements that have combined in a fixed proportion.**
       Ex: Carbon Di Oxide has one atom of Carbon and two atoms of Oxygen. If the proportion changes to one atom of Carbon and one atom oxygen, a different compound called Carbon Monoxide is formed.
    d. **The elements that form a compound cannot be separated easily.**
       Ex: Water cannot be split into hydrogen and oxygen by boiling it or filtering it. It can only be split by passing electricity through it.
    e. **Energy is either absorbed or evolved when a compound is formed.**
    f. **The properties of compound are different from those of the combining elements.**
       Ex: Water is a liquid, whether hydrogen and oxygen are gases.

17. **What are the differences between Element and Compound?**
    Ans.

Element	Compound
An element is a pure chemical substance made of same type of atom.	A compound contains atoms of different elements chemically combined together in a fixed ratio.
An element is represented using symbols.	A compound is represented using its chemical formula that represents the symbols of its constituent elements
Elements contain only one type of atom. Each atom has the same atomic number.	Compounds contain different elements.
Elements cannot be broken down into simpler substances by chemical reactions.	A compound can be separated into simpler substances by chemical methods/reactions.

18. **What is Mixture?**
    Ans. When two or more elements are not mixed in any proportion are called Mixture.
    Ex: The mixture Chalk dust and Iron Dust. They can be separated easily by physical method.

19. What is Atom?

Ans. Atom is the smallest invisible unit of elements which exabits all the properties of the elements and may or may not have independent existence.

20. What are Molecules?

Ans. Molecule is the smallest unit of an element or compound which shows al the properties of that element or compound and has independent existence.
They are divided in to atoms.
They can take part in Chemical Reaction.

21. What are monoatomic molecules?

Ans. The elements which made up of single atoms are known as monoatomic molecules.
Ex: Sodium (Na), Magnesium (Mg), Potassium (K), Helium (He), Neon (Ne), Argan (Ar) etc.

22. Which are Diatomic Molecules?

Ans. The molecules which contains two atoms in the same type are called Diatomic Molecules.
Ex: Hydrogen (H_2), Oxygen (O_2), Chlorine (Cl_2), Nitrogen (N_2) Etc.

23. Which is Tri-atomic Molecules?

Ans. The molecules which contains three atoms in the same type are called Triatomic Molecules.
Ex: Ozone (O_3)

24. Which is Polyatomic Molecules?

Ans. The molecules which contains more than three atoms in the same type are called Triatomic Molecules.
Ex: Phosphorus (P_4), Sulphur (S_8)

25. What are the differences between Atom and Molecule?

Ans

Factor	Atoms	Molecules
Definition	Most fundamental and smallest part that can exist of an element.	Two or more atoms chemically bonded together.
Example	Oxygen – O Phosphorus – P Sulphur – S Hydrogen – H	Oxygen – O2 Phosphorus – P4 Sulphur – S8 Water – H2O
Structure	The smallest particle with properties of an element.	Combination of two or more atoms.
Stability	An atom may not always be stable in nature due to the presence of electrons in the outer shells.	Molecules are formed to attain stability.
Constituent Elements	Protons, Electrons & Neutrons	Two or more atoms of the same or different elements
Reactivity	Except for the noble elements, atoms of all elements showcase a certain level of reactivity.	Compared to a molecule, the level of reactivity is less as some of the valence points are filled by electrons of combined elements.

26. What is Formula?

Ans. A formula is a short way of representing the molecule of an element or a compound.

27. What is Atomicity?

Ans. It is the number of atoms in a molecule is called Atomicity.

28. What are the rules to write Chemical Formulae with an example?

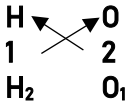
Ans. Let us take the example of water. Water molecules are made of hydrogen atoms and oxygen atoms. The combining capacity of oxygen is 2 and that of hydrogen is 1.

The basic rules to write the Chemical Formulae are

i. Write the symbols of the elements that form the compound, with their valency under them.

H	O
1	2

ii. Interchange the valences and write them as subscripts.

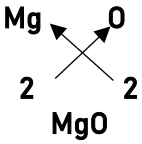


iii. Omit 1 as subscript.

H_2O

iv. If the subscripts of the elements are the same, they may be generally be omitted.

Ex: MgO



29. What is the importance of Formulae?

Ans. A formula gives us the following information about a compound.

a. Types of elements present in the compound.
b. Number of each kind of atoms in one molecule of the compound.
c. Ratio of different types of atoms present in the molecules.
d. Mass of one molecule of the compound.

30. Why a Frying Pan is made up of steel but its handle is made up of wood?

Ans. A Frying Pan is made up of steel but its handle is made up of wood or plastic this is because steel is a good conductor of heat and it allows heat to pass to the food kept in the pan for cooking while wood and plastic being bad conductors or insulators do not get too hot to burn our hand.

31. Why Gold, Platinum, Silver are used for Jewellery?

Ans. Gold, Platinum, Silver are used for jewellery because

a. They are lustrous
b. They shine and look very attractive.
c. They can also remain in free state.
d. They do not tarnish in air.

32. Why Copper and Aluminium are used for making electric wires and utensils?

Ans. Copper and Aluminium are used for making electric wires and utensils because

a. They are good conductor of electricity
b. They can be drawn into wire and beaten into sheets.

33. What is Brass and Bronze, and what are the uses of them?

Ans. Copper can be mixed with Zinc and Tin to produce Brass and Bronze. They are used to make door knob, handles, machine parts etc.

34. What are the uses of Graphite?

Ans. The uses of Graphite are

a. It is used for writing in pencil
b. It used to make Lubricant.

35. In electric bulb which gas is used and why?

Ans. Argon and Neon are used in electric bulb due to their inert nature. They do not react with tungsten filament of the bulb and prevent it from destruction.