Is Matter Around Us Pure
NON-METALS AND METALLOIDS, COMPOUNDS

❖ CHARACTERISTICS OF COMPOUNDS: -

1. The properties of compound differ from those of its constituents.
2. Compound has fixed melting point and boiling point.
3. Compound is a homogeneous substance.
4. Constituent elements can be separated by chemical process.

❖ COMPOUNDS: -

A compound is a substance made up of two or more elements chemically combined in a fixed proportion by mass. For example, water (H_2O) is a compound made up of two elements, hydrogen and oxygen, chemically combined in a fixed proportion of 1:8 by mass. Some more examples of compounds are : Ammonia (NH_3), Carbon dioxide (CO_2), Ice (H_2O), Steam(H_2O). Compounds can be further divided into three classes: acids, bases and salts, on the basis of their properties.

❖ DIFFERENCE BETWEEN METALS AND NON-METALS: -

METALS	NON-METALS
Metals are solids at room temperature.	Non-Metals can be solids, liquids, or gases at room temperature.
Metals are good conductors of heat and electricity.	Non-Metals are poor conductors of heat and electricity.
They have lustre.	They are not lustrous.
Metals are sonorous.	Non-metals are non-sonorous.
Metals are shiny.	Non-metals are dull.
They can be bent and stretched.	They are usually brittle.
They are malleable.	They are non-malleable.
They form positive ions.	They form negative ions.

❖ INTRODUCTION OF NON-METALS: -

A non-metal is an element that is neither malleable nor ductile, and does not conduct electricity. **Examples** of non-metals are : Carbon, Sulphur. Oxygen, Nitrogen, Fluorine, Chlorine. All the non-metals are solids or gases, except bromine which is a liquid non-metal at room temperature.

❖ MATALLOIDS :-

There are a few elements which show some properties of metals and other properties of non - metals. For example they look like metals but they are brittle like non - metals. They are neither conductors of electricity like metals nor insulators like non-metals, they are semiconductor. The elements which show some properties of metals and some other properties of non-metals are called metalloids. Their properties are intermediate between the properties of metals and non-metals. Metalloids are also sometimes called semi-metals. The important examples of metalloids are: Boron (B), Silicon (SI) and Germanium (Ge).

❖ PROPERTIES OF NON-METALS:-

1. Non-metals are not malleable. Non-metals are brittle. For example, sulphur and phosphorus are solid non-metals which are not malleable, they cannot be beaten into thin sheets with a hammer.

2. Non-metals are not ductile. For example, sulphur and phosphorus are non-metals and they are not ductile.

3. Non-metals are bad conductors of heat and electricity. For example, sulphur and phosphorus are non-metals which do not conduct heat or electricity. Some exceptions. Diamond is a non-metal which is a good conductor of heat. Graphite is a non-metal which is a good conductor of electricity.

4. Non-metals are not Iustrous. They are dull in appearance. An exception. Iodine is a non-metal having Iustrous appearance.

5. Non-metals are generally soft (except diamond which is extremely hard non-metal).

6. Non-metals are not strong. They have low tensile strength. For example graphite is a non-metal which is not strong. It has a low tensile strength.

7. Non-metals may be solid, liquid or gases at the room temperature.

8. Non-metals have comparatively low melting points and boiling points (except graphite which is a non-metal having a very high melting point 3700ºC).

9. Non-metals have low densities. For example, sulphur is a solid non-metal having a low density of 2g/cm3. One non-metal iodine has, however, high density.

10.Non-metals are not sonorous. Non-metals do not produce ringing sound when beaten. And thus, non-metals are non-sonorous. They produce a dull sound when hit with hammer