Q What are minerals and what are their types? Discuss the properties of minerals.

Minerals:

Minerals are naturally occuring inorganic solid with a definite chemical composition and a crystalline structure. {Byju's.com, What are Minerals}

Minerals are the building blocks of all rocks. Presently, there are about 4,000 minerals that have been identified. There are eight elements that make up most of these minerals: oxygen, silicon, aluminium, iron, calcium, sodium, potassium, and magnesium. They account for about 98% of the earth's crust. Table salt is an example of mineral called sodium chloride. Its ordered structure is apparent because it occurs in crystals shaped like small cubes.

Properties OF Minerals:

Minerals have certain physical and chemical properties which are used to identify and describe mineral. These traits include color, streak, transparency, lustre, density, hardness, cleavage and fracture, tenacity, and crystal habit.

1- Colour:

Minerals derive their colour from the presence of a particular element within the crystal lattice. The presence of such an element can determine which wavelengths of light are of reflected and which are absorbed.

2- Streak:

Streak is the colour which a mineral displays when it has been ground to a fine powder. Trace amounts of impurities do not tend to affect the streak of a mineral, so this characteristic is usually more predictable.

than color. Two different specimens of the same species may be expected to possess the same streak, whereas they may display different colours.

Transparency :

Minerals are either opaque or transparent. A thin section of an opaque mineral such as a metal will not transmit light, whereas a thin section of a transparent mineral will. Typically, those minerals which possess metallic bonding are opaque whereas those where ionic bonding is prevalent are transparent.

4- Lustre :

Lustre is the property of minerals that indicates how much the surface of a mineral reflects light. The lustre of a mineral is affected by the brilliance of the light used to observe the mineral surface. Lustre thus describes how much the mineral surface 'sparkles'.

5- Crystal Habit :

The term crystal habit describes the favoured growth pattern of the crystals of a mineral species. The crystals of particular mineral species sometimes form very distinctive, characteristic shapes.

6- Tenacity :

The characteristics of tenacity describes the physical behaviour of a mineral under stress or deformation. Most minerals are brittle, metals, in contrast, are malleable, ductile, and sectile.

7- Hardness :

Hardness is defined as the level of difficulty with which a smooth surface of a mineral specimen may be scratched. Hardness has historically been measured according to the Moh's scale.

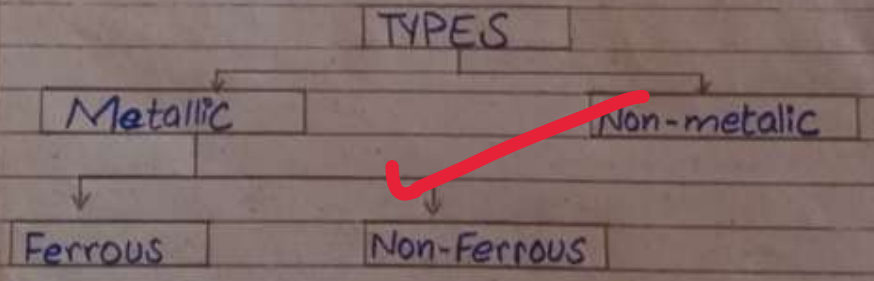
8- Density :

The property of density is defined as mass per unit volume. Certain trends exist with respect to density which may sometimes aid in mineral identification. Minerals whose chemical composition contains heavy metals, or atoms possessing an atomic number greater than iron (Fe, atomic number 26), are relatively dense. Dark-colour minerals are typically fairly dense whereas light-color ones tend to be less dense.

9- Cleavage and Fracture :

- Cleavage refers to the splitting of a crystal along a smooth plane. A cleavage plane is a plane of structural weakness along which a mineral is likely to split.
- Fracture takes place when a mineral sample is split in a direction which does not serve as a plane of perfect or distinct cleavage. Some of the minerals have cleavage property and they break or split in a natural pattern while other breaks irregularly, i.e. they have fracture property.

: TYPES OF Minerals :



1- Metallic Minerals :

Metallic minerals exhibit lustre in their appearance and consist of metals in their chemical composition. These minerals serve as a potential source of metal and can be extracted through mining. Examples of metallic minerals are Manganese, iron ore and bauxite and be divided into ferrous and non-ferrous metallic minerals.

Ferrous minerals are one that contains iron and non-ferrous are one that does not contain iron.
{byjus.com, What are Minerals?}

2- Non-Metallic Minerals :

Non-metallic minerals are which either show a non-metallic lustre or shine in their appearance. Extractable metals are not present in their chemical composition. Limestone, gypsum, and mica are examples of non-metallic minerals.

1- Bauxite ore mostly exists in deeply weathered rocks. Volcanic rocks contain bauxite deposits in some regions.
2- Iron metal extracted from iron ore. It never exists in pure form and has to be extracted from iron ore by eliminating to be known.
3- Gold is the oldest and most precious element to be known.
4- Manganese ore is a silvery brittle or grey-white metallic ore occurs in many forms and found worldwide.
{byjus.com, What are Minerals?}

9.5/5

overall good answer!!

but the answer is a bit lengthy and will affect your time management. so shorten it a bit.