

16. Natural Resources

1. Minerals are non-renewable natural resources found in the earth's crust.

- When the magma moves out from earth's crust, it cools down and transformed into crystals. Minerals like basalt, granite are formed this way.
- Some minerals like gypsum are the solid crystals that are left over after the process of evaporation. These are the sedimentary rocks.
- Minerals like diamond are formed from one form to another because of the large change in pressure and temperature. These are known as metamorphic rocks.
- Some inorganic minerals are obtained from the living organisms of animals like shell, pearls etc.

2. Most minerals are found embedded in rocks present inside the earth. They consist of metals, non-metals, etc.

- **Metallic minerals** contain one or more than one metallic mineral in it. These minerals can be reshaped as they can be melted down. Example, Iron, gold, silver, tin, etc.
- **Non-metallic minerals** are some form of sediments and are not recycled or meltdown. They are used in industrial materials. Example, limestone, slate, diamond, sulphur etc.
- **Energy minerals** are the minerals that generate energy. Example, mineral oil, coal etc.
- **Gemstones:** Gemstones are crystals having ornamental value. These are used in jewellery because of their brilliance and colour. Examples include diamond, ruby, sapphire, etc. These are extremely hard.

3. They are obtained by mining.

I. Importance of minerals:

1. Important constituents of food
2. Used as raw materials for various industries
3. Used for construction, art, jewellery, utensils, etc.
4. Needed by all plants for their survival

II. Effects of mineral mining on the environment:

1. Causes soil erosion, soil pollution and loss of biodiversity
2. Affects air quality by releasing harmful chemicals
3. Causes water-pollution, destroys water creatures and disturbs the water-nutrient balance
4. Causes physical disturbances to the landscape

III. Conservation of minerals:

1. Judicious use of minerals to prevent misuse and wastage
2. Recycling of minerals and their products, like metals, plastic, etc., to reduce environmental pollution

1. Carbon is a non-metal which is found in free state in nature in the form of graphite and diamond.



2. Coal cannot be renewed or regenerated again in a short interval of time. It also cannot be reused. So, it is regarded as a non-renewable resource of energy.
3. When trees and animals die, their dead remains got buried inside the earth's crust. They were subjected to very high temperature and pressure. So they got compressed into coal.
4. Coal is classified into four types on the basis of percentage of carbon.
 - (i) **Anthracite:** Contains 80% carbon
 - (ii) **Bituminous:** Contains 60% carbon
 - (iii) **Lignite:** Contains 22% carbon
 - (iv) **Peat:** Contains 11% carbon
5. Anthracite coal is widely used coal because of higher percentage of carbon.
6. Bituminous coal is a soft coal while lignite coal is regarded as 'Brown Coal'.
7. After compressing of plants and animal remainings, peat coal is formed which then gets converted into anthracite coal due to further compressing.

Petroleum:

- Petroleum was formed from the dead organisms present in the sea.
- Petrol, diesel, kerosene, paraffin wax, lubricating oil, and petroleum gas are the products of petroleum.
- The process of separating various constituents of petroleum is known as **refining**.
- Refining of petroleum is done in fractionating column.
 - Components with higher boiling points are collected at the bottom of the fractionating column.
 - Components with lower boiling points are collected at the top of the column.

Cracking

- Heating higher alkanes to sufficiently high temperatures in absence of oxygen, in order to obtain lower hydrocarbons is known as cracking or pyrolysis.

Natural Gas

- Natural gas is formed from dead organisms which decompose in the absence of air under conditions of high pressure and temperature.
- It is stored under high pressure as compressed natural gas (CNG). It is used as a fuel for vehicles because it is a cleaner fuel (less polluting).

LPG

- LPG stands for liquified petroleum gas.
- The mixture of these gases is liquified at high pressure and then filled in cylinders.
- It is usually used as a household fuel.
- **Productive** functions of forests
 - Helps in containing various fibres like cotton, jute etc.
 - Wood is obtained from the trees which is used for making furniture.
 - Vegetable oils are also obtained from the trees.
- **Protective** functions of forests
 - Helps in controlling flood.



- Helps in preventing soil erosion.
 - Provide habitat for various wildlife animals and birds.
 - Acts as a windbreak for both hot and cold winds.
- Various medicinal plants are also present in the forest which helps in curing various ailments.
- The large reserves of minerals present in the seabed and these resources from sea and ocean are called **marine resources**.
- Mineral resources like phosphorous, coal, zinc etc are obtained from the oceans.
- Bioresources like pearls and fishes also obtained from the oceans.