Class 11 Geography Notes Chapter 5 Minerals and Rocks

About 98 per cent of the total crust of the earth is composed of eight elements like oxygen, silicon, aluminium, iron, calcium, sodium, potassium and magnesium, and the rest is constituted by titanium, hydrogen, phosphorous, manganese, sulphur, carbon, nickel and other elements.

Thus, a mineral is a naturally occurring organic and inorganic substance, having an orderly atomic structure and a definite chemical composition and physical properties. A mineral is composed of two or more elements. But, sometimes single element minerals like sulphur, copper, silver, gold, graphite etc. are found.

There are many different kinds of rocks which are grouped under three families on the basis of their mode of formation. They are:

- Igneous Rocks — solidified from magma and lava;
- Sedimentary Rocks—the result of deposition of fragments of rocks by exogenous processes;
- Metamorphic Rocks — formed out of existing rocks undergoing recrystallisation.

The basic source of all minerals is the hot magma in the interior of the earth. When magma cools, crystals of minerals appear and a systematic series of minerals are formed in sequence to solidify so as to form rocks.

Granite, gabbro, pegmatite, basalt, volcanic breccia and tuff are some of the examples of . igneous rocks.

The word 'sedimentary' is derived from the Latin word sedimentum, which means settling.

There are at least 2,000 minerals that have been named and identified in the earth crust; but almost all the commonly occurring ones are related to six major mineral groups that are known as major rock forming minerals.

Class 11 Geography Notes Chapter 5 Important terms:

- Petrology: It is science of rocks. A petrologist studies rocks in all their aspects viz., mineral composition, texture, structure, origin, occurrence, alteration and relationship with other rocks.
- Igneous Rocks: Igneous rocks form out of magma and lava from the interior of the earth, they are known as primary rocks. The igneous rocks (Ignis – in Latin means 'Fire') are formed when magma cools and solidifies.
- Sedimentary Rocks: The word 'sedimentary' is derived from the Latin word sedimentum, which means settling.

- Metamorphic Rocks: The word metamorphic means ‘change of form’. These rocks form under the action of pressure, volume and temperature (PVT) changes. Metamorphism occurs when rocks are forced down to lower levels by tectonic processes or when molten magma rising through the crust comes in contact with the crustal rocks or the underlying rocks are subjected to great amounts of pressure by overlying rocks.
- Lithification: Rocks (igneous, sedimentary and metamorphic) of the earth’s surface are exposed to denudational agents, and are broken up into various sizes of fragments. Such fragments are transported by different exogenous agencies and deposited. These deposits through compaction turn into rocks. This process is called lithification.
- Metamorphism: It is a process by which already consolidated rocks undergo recrystallisation and reorganization of materials within original rocks.
- Dynamic Metamorphism: Mechanical disruption and reorganization of the original minerals within rocks due to breaking and crushing without any appreciable chemical changes is called dynamic metamorphism.
- Rock Cycle: Rock cycle is a continuous process through which old rocks are transformed into new ones.
- Lineation: In the process of metamorphism in some rocks grains or minerals get arranged in layers or lines. Such an arrangement of minerals or grains in metamorphic rocks is called foliation or lineation.
- Banding: Sometimes minerals or materials of different groups are arranged into alternating thin to thick layers appearing in light and dark shades. Such a structure in metamorphic rocks is called banding.
- Banding Rocks: Rocks displaying banding are called banded rocks.