

PETROLOGY

It is the branch of Geology that deals with the study of rocks. It involves the study of origin, texture, structure, types, classification, mode of occurrence and properties of all type of rocks.

Rocks -

Rocks are the aggregates of minerals that forms the crust of the earth. The smallest component of the crust is element. More than one element of the earth's crust are organised to form minerals and then minerals are organized to form Rocks.

CLASSIFICATION OF ROCKS -

On the basis of ~~rock~~ origin, the rocks are classified into three -

- 1) Igneous Rocks
- 2) Sedimentary Rocks
- 3) Metamorphic Rocks.

## IGNEOUS ROCKS

These are formed by the solidification and crystallization of magma (below the surface) and lava (on the surface).

### CLASSIFICATION OF IGNEOUS ROCKS -

On the basis of origin and mode of Occurrence -

#### a) Plutonic Rocks -

These are formed by the cooling and consolidation of magma very deep inside the earth, in magma chamber. Since due to high temp. in the depth the rate of cooling is very slow, hence there is sufficient time for the development of the grains. Thus, the rocks are of coarse-grains (5 mm more). e.g. Granite, Pegmatite.

#### b) Hypabyssal Rocks -

These are formed due to cooling and consolidation of magma during volcanic activity in the cracks, pores, hollow places just beneath the earth's surface at shallow depth. These rocks are of medium grain (1-5 mm).

e.g. Apatite, Diorite.

The Plutonic and Hypabyssal rocks are collectively termed as Intrusive Rocks.



## Volcanic Rocks -

These are formed due to cooling and consolidation of lava at the surface of the earth. These are generally fine grained or glassy b'coz lavas cool down very quickly due to extremely low temp. of the atmosphere and thus there is not enough time for development of grains. (less than 1 mm)  
e.g. Rhyolite, Basalt.

The volcanic rocks are also termed as Extrusive rocks.

### On the basis of silica percentage -

- a) Acidic Igneous rocks - contain more than 62% of silica.
- b) Intermediate Igneous rocks - 62-55%
- c) Basic Igneous rocks - 55-45%
- d) Ultrabasic Igneous rocks - most less than 45%.

### On the basis of Mineralogical composition -

- a) Felsic Minerals - These are generally light in colour and lower in density and include quartz, feldspar, feldspathoid etc.
- b) Mafic - These are dark in colour, comparatively heavier and contain Fe-Mg minerals such as amphiboles, pyroxenes, olivines, micas, etc.