

# MODULE-1

- **Rock formation**
- **Soil & Rock Classification**
- **Soil Properties**

## SOIL

(i) Regolith

(ii) The solid unconsolidated material lying over the top of bed rock is called regolith.

(iii) Thus regolith includes soil, alluvium, weathered rock etc.

## Soil

(i) The part of regolith which supports the growth of plant is called soil.

(ii) Soil is a combination of mineral, organic matter, air and water.

## SOIL PROFILE

(i) If we examine the wall of a trench, they are found to be a number of horizontal layers.

(ii) These horizontal layers are called horizons.

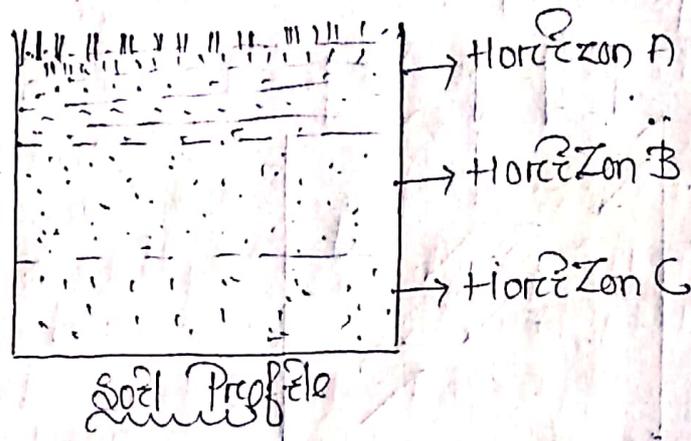
(iii) All these horizons together is known as soil profile.

(iv) There are 3 main horizons

1. Horizon = A

2. Horizon = B

3. Horizon = C



### Horizon A

- (i) It is the upper most layer of soil profile.
- (ii) It is also known as "surface soil."
- (iii) It consists of organic matters and micro-organisms.

### Horizon B

- (i) It is also known as "subsoil."
- (ii) This zone is also called "Zone of accumulation."
- (iii) as the material that is leached from horizon A is accumulated here.

### Horizon C

- (i) This is the lowermost horizon.
- (ii) It contains parent rock material.

### Types of soil

Depending on their mode of formation

soils are of 2 types

1. Residual soil deposit
2. Transported soil deposit

#### 1. Residual soil deposits

- (i) In plain areas, the product of weathered rock continue to accumulate over the area place of parent rock mass and give rise to residual soil deposit.

(ii) Ex: 1. Laterite

2. Terra-Rosa

3. Peat bogs

## TRANSPORTED SOIL DEPOSIT

- 1) The weathered and broken rocks get eroded and transported from one place to another by natural agencies like wind, water, ice or gravity.
- 2) The type of deposit formed in this manner is called transported soil deposit.

Ex

<u>Agencies</u>	<u>Nature of soil</u>
1. River	a) Alluvial deposit
2. Lake	b) lacustrine deposit
3. Sea	c) Marine deposit
4. Wind	d) Eolian deposit
5. Glacier	e) Glacial deposit

<u>Sediment Name</u>	<u>Size</u>
1. Boulders	a) 60mm or more
2. Gravel	b) 60-2mm
3. Coarse sand	c) 2-0.6mm
4. Medium sand	d) 0.6-0.2mm
5. Fine sand	e) 0.2-0.06mm
6. Silt	f) 0.06-0.002mm
7. Clay	g) 0.002 or less mm

## Types of Rock

There are three types of rock,

1. Igneous Rock
2. Sedimentary Rock
3. Metamorphic Rock

### 1. IGNEOUS ROCK

(i) Igneous rocks are formed when molten rock or magma cools and solidifies with or without crystallization.

(ii) These are again of two types.

a) Intrusive Igneous Rock

b) Extrusive Igneous Rock

(iii) Intrusive igneous rocks are found below the earth's surface. They crystallize slowly.

(iv) Extrusive igneous rocks are found close to the earth's surface. They crystallize rapidly.

(v) Ex: Gabbro, basalt, Dolerite, Granite, Kimberlite etc.

### 2. SEDIMENTARY ROCK

(i) Rocks exposed to the atmosphere are subjected to weathering - physical, chemical and biological weathering breakdown through weathering.

(ii) After weathering the rock disintegrates into boulders, gravel, silt, clay, sand, soil etc.

(iii) Each rock disintegrates slowly by mechanical weathering and chemical weathering.

(iv) In mechanical weathering, rock disintegrates into particles without changing the chemical composition.

(v) In chemical weathering, rock disintegrates into sediments by chemical reaction and changes into the chemical composition.

(vi) The weathered rock are transformed back to rock by lithification process. and these types of rocks are called sedimentary rock.

(vii) Sedimentary Rocks are again of 3 types,

1. Elastic sedimentary Rock
2. Organic sedimentary Rock
3. Chemical sedimentary Rock

(viii) Ex: Sandstone, Limestone, Marble, chalk, shale & etc.

### METAMORPHIC ROCK

(i) At times, Igneous, sedimentary and <sup>old</sup> Metamorphic rocks are subjected to intense heat, and pressure while deep in the earth crust.

(ii) This give rise to metamorphic Rock.

(iii) Ex: Quartzite, Marble, schists, gneisses slate etc.

### Rock Cycle

