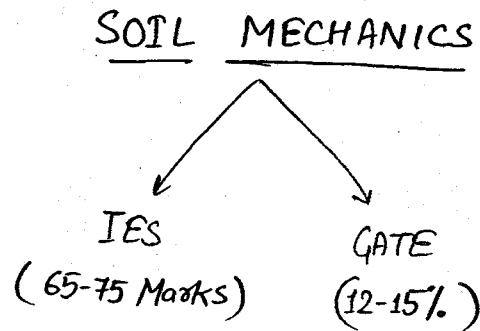
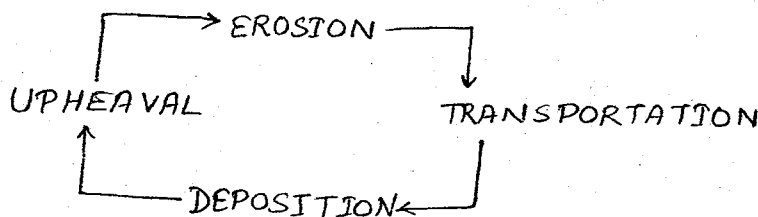


# SOIL MECHANICS



GEOLOGICAL CYCLE :



The process of formation of soil is known as PEDOGENESIS. Soil is formed due to the weathering of the rocks which may be carried out either physically or chemically.

Physical forces involved in weathering of rocks are flowing water, ice, the wind and gravity.

Chemical forces involved in weathering of rocks are oxidation, reduction and carbonation (addition of  $\text{CO}_2$ ).

Mineral constituents of the soil formed due to physical weathering are same as that of parent rock but if the soil is formed due to chemical weathering, its mineral constituents differ from parent rock.

Geological cycle involved in the formation of soil includes

four steps:-

1. Erosion
2. Transportation
3. Deposition
4. Upheaval

If after weathering, soil is retained over the parent rock, it is termed as residual soil and if it is being transported, it is termed as transported soil.

## TYPES OF SOILS

### 1. Alluvial Soil:

It is the soil which is being deposited from the suspension in running water.

- Transported Soil (Running Water)
- Physical Weathering
- Found along the banks of rivers.

This soil is generally found along the banks of the rivers.

(NORTHERN INDIA)

### 2. ~~Lacustrine~~ Lacustrine Soil:

It is the soil that is deposited from the suspension in fresh still water for the lake.

- Physical Weathering
- Residual Soil (Water)

### 3. Marine Soil!

It is the soil which is deposited from the suspension in sea water.

- Physical Weathering (Flowing Water)
- Transported Soil.

### 4. Aeolian Soil:

It is the soil which is formed due to transportation by wind.

- Physical Weathering
- Transported Soil

### 5. Glacial Soil:

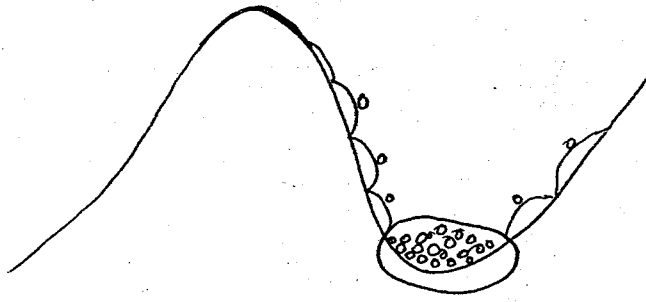
It is the soil that is being transported due to flowing ice.

- Physical Weathering (Ice)
- Transported Soil

### 6. Colluvial Soil:

This soil is known as TALLUS SOIL. It is formed due to weathering of the rocks by physical agencies and in which transportation is by the gravitational forces. This soil is generally found in the hilly areas at the bottom of the valleys.

- Physical Weathering
- Transported Soil (Gravity)



### 7. Loess Soil:

It is uniformly graded wind blown silt that is slightly cemented due to calcium compounds and Montmorillonite.

- Type of Aeolian Soil
- Physical Weathering
- Transported Soil

Cementitious properties are induced by calcium compounds ( $\text{CaCO}_3$ ) and Montmorillonite (highly plastic in nature).

### 8. Marl Soil:

It is fine graded calcium carbonated soil of marine origin which is formed due to decomposition of bones and cell mass of aquatic life (both plants and animals).

- Chemical weathering

### 9. Bentonite Soil:

It is chemically weathered volcanic ash that is generally used as a lubricant in drilling.

(Application is found in PILE FOUNDATION)

- Chemical Weathering