

5th Aug,
SATURDAY

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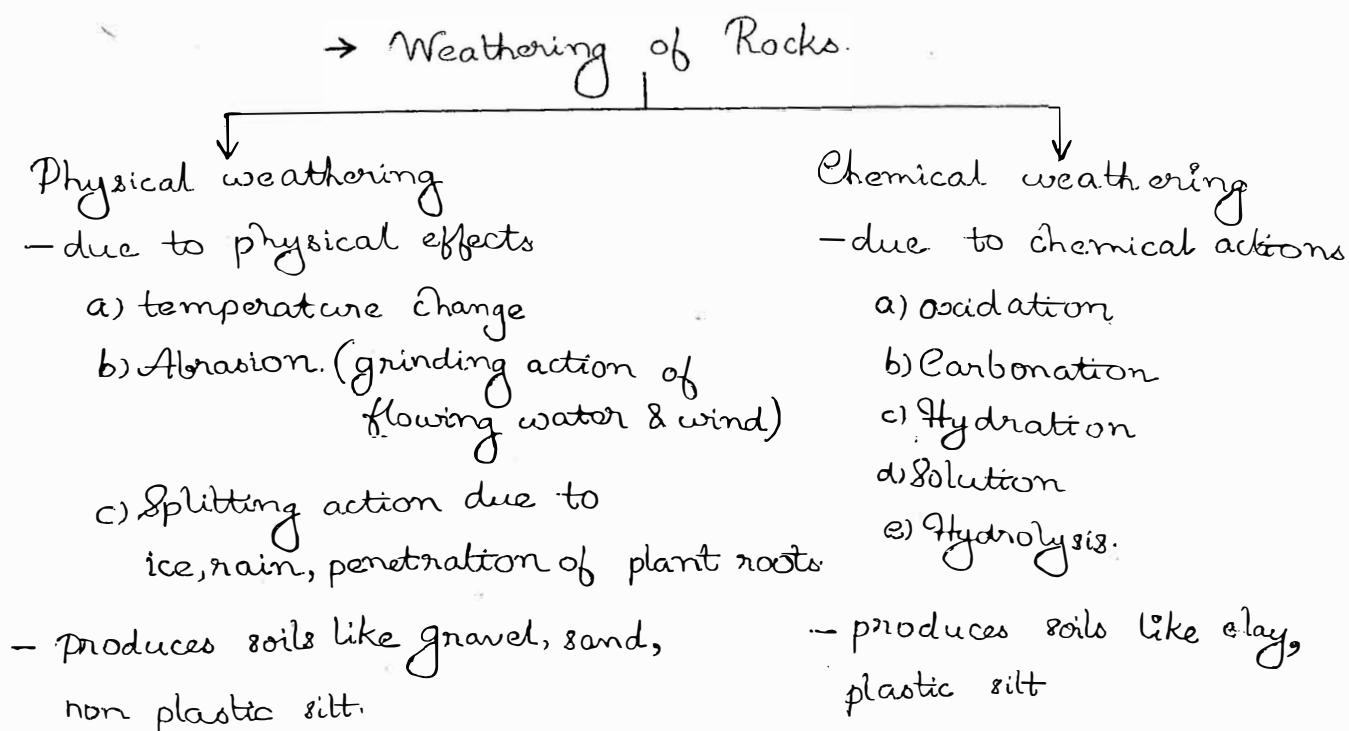
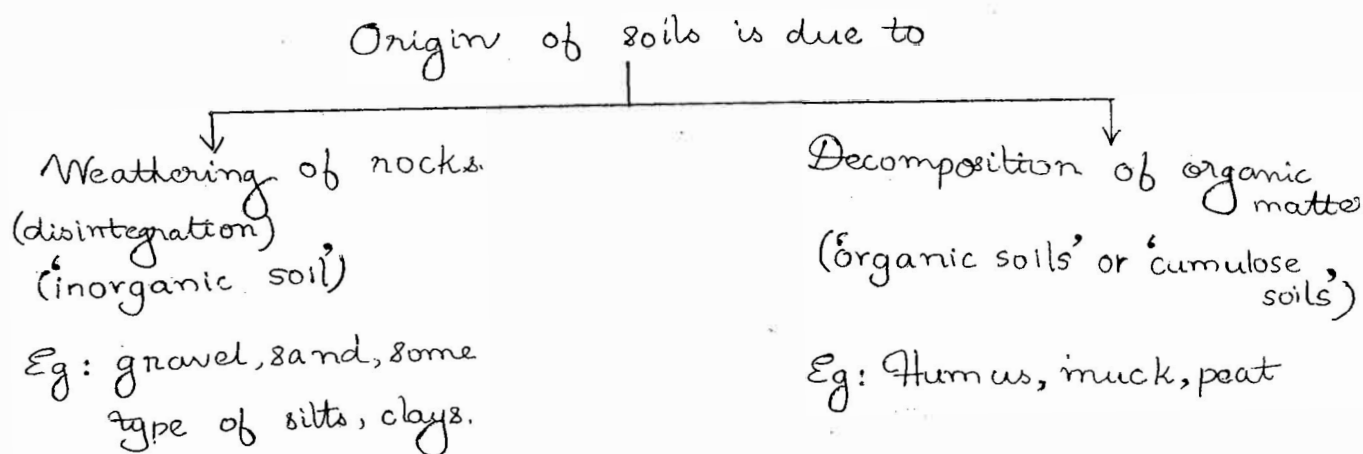
GEO TECHNICAL ENGINEERING

(12 marks)

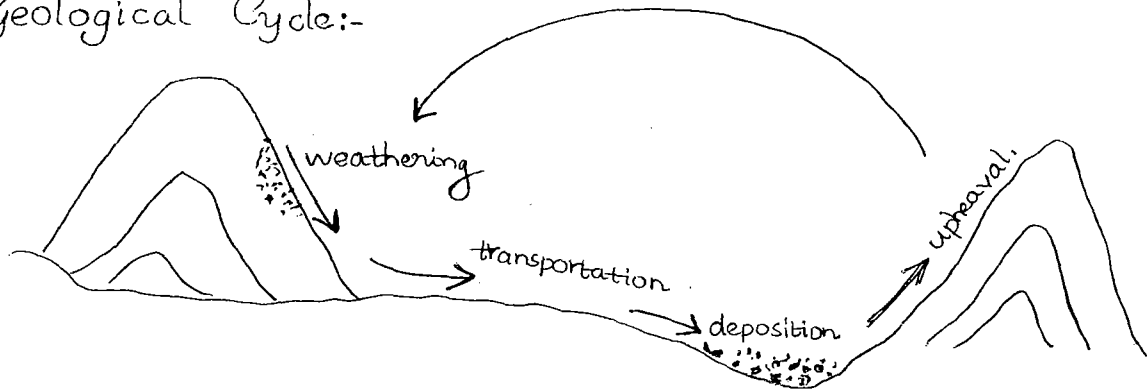
1. ORIGIN OF SOILS

Soil is a naturally occurring unconsolidated earth material present above the bed rock. - Terzaghy.

Karl Terzaghy - Father of Soil Mechanics.



→ Geological Cycle:-



• Pedogenesis : It is a process of formation of soil.

→ Transportation of Soil :

It is due to -

- Wind - Aeolian Soil : transported & deposited by wind.
- Water - Alluvial Soil : transported by water & deposited along river.
- Glacier - Glacier deposit : transported by glacier
- Gravity - Colluvial Soil : transported & deposited by Gravity.

Lacustrine Soil :- transported by water & deposited in lakes

Marine Soil :- transported by water & deposited in sea

* Classification of Soils.

a) Residual Soils. :- soil which remains at or near the (Sedentary Soil). parent rock.

b) Transported Soil :- transported away from parent rock

→ Forces acting on the Soil Particles :

- Gravitational Force or Body Force.
- Surface force

Body Force

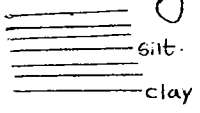
- It is proportional to mass
- Eg: weight.
- It is predominant in gravel & sand

Surface Force.

- It is proportional to surface ^{area}
- Eg: cohesion, electrochemical force.
- It is predominant in clay. (Clay behaviour is mainly controlled by surface force).

In the case of silty soil both body force and surface force ³ are equally important.

→ Popular Field names of Soils.

1. Black Cotton soil (BC Soil):- a residual clayey soil.
 - highly plastic.
 - exhibits high swelling & shrinkage due to presence of "Montmorillonite" clay minerals
 - parent rock is Basalt or trap
2. Loam :- a mix of sand, silt & clay
3. Moorum :- a gravel mixed with red clay
4. Bentonite :- a decomposed volcanic ash.
 - a clayey soil, highly plastic, highly water absorb
 - bentonite slurry is called "Drilling Mud"
5. Varved Clay :- contains alternate thin layers of silt & clay
 - lacustrine deposits.
6. Loess :- Aeolian deposit.
 - contains silt sized particles
 - weakly cemented by CaCO_3 particles.
7. Sand dunes :- Aeolian deposit.
 - particle size is same.
8. Humus :- half decomposed organic soil.
 - amorphous in nature. (amorphous & crystalline)
9. Muck :- contains fine inorganic particles with decomposed organic material.
 - black in colour.
10. Peat :- highly decomposed organic matter.
 - fibrous in nature.
 - dark brown to black colour
 - bad odour.

11. Fill :- a manually deposited soil. (a man made deposit)