

Tutorial- 1

1. What is the scope of soil engineering?
2. What are the limitations of soil engineering?

Tutorial: 2

1. Explain soil formation in geological cycle
2. Explain
 - Wind transported soils
 - Physical weathering
 - Glacier deposited soils
3. Discuss the properties of black cotton soil

Tutorial: 3

1: Explain phase diagram

2 : Define following term

- water content
- bulk density
- dry density
- saturated density
- void ratio
- porosity
- density index
- specific gravity
- degree of saturation

3: derive the following relationship

- $e = wG/s_r$
- $r_b = ((G + e s_r) r_w) / (1 + e)$
- $r_d = r_b / (1 + w)$
- $r_d = G r_w / (1 + e)$

Example :- A sample of fully saturated soil has water content 34%. The specific gravity of soil is 2.7. Calculate 1) Void ration 2) dry density 3) bulk density

- Enlist the various methods of obtaining water content. Explain oven drying method.

Tutorial: 4

1. Distinguish between coarse grained & fine grained soils
2. Define terms
 - Uniformity coefficient
 - Coefficient of curvature
3. Sedimentation analysis or wet mechanical analysis

Tutorial: 5

1. What are different types of soil structures which can occur in nature? describe in brief
2. Describe terms:-
 - Elongation
 - Angularity

Tutorial: 6

1. Define the terms
 - Liquid limit
 - Plastic limit
 - Shrinkage limit
 - Plasticity index
 - Shrinkage index
 - Liquidity index
2. Describe the method for determination of plastic limit of a soil.
3. Describe the method for determination of shrinkage limit of a soil.
4. What is flow curve? Explain flow index & toughness index of a soil.

Tutorial: 7

1. List the various soil classification system explain textural classification
2. Discuss 'IS classification' system
3. What is group index? What is its importance In classifying fine grained soil?