Shantilal Shah Engineering College- Bhavnagar

Applied Mechanics Department

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GEOTECHNICAL ENGINEERING (3130606)

B.E. 3rd Semester Civil Engineering

Tutorial: 1 : Type of Soils and It's Properties :

Q:-1 Explain soil formation in geological cycle.

Q:-2 Explain three phase diagram of soil.

Q:-3 Write a short note on texture of the soil?

Q:-4 With schematic diagram explain single grained, honey combed and composite structure.

Q:-5 Discuss clay water relations with regards to properties of clay.

Tutorial: 2 : Permeability and Seepage :

Q:-1 State and explain factors affecting permeability.

Q:-2 Give the applications of flow net.

Q:-3 What is flow net? what are its characteristics?

Tutorial: 3 : Compaction :

Q:-1 Write Difference between compaction and consolidation.

Q:-2 Explain MDD and OMC.

Q:-3 What are the factors affecting compaction ? Discuss in brief.

Q:-4 What is the effect of compaction o the engineering properties of the soil?

Q:-5 A cohesive soil yields a maximum dry density of 1.8 g/cc at an OMC of 16% during a standard proctor test. If the values of G is 2.65, what is the degree of saturation ? What is the maximum dry density it can further be compacted.

Tutorial: 4 : Consolidation of Soil :

Q:-1 List the assumption made in the theory of one dimensional consolidation.

Q:-2 What is time factor? How is it related to the average degree of consolidation.

Q:-3 How would you determine the preconsolidation pressure?

Q:-4 The time to reach 40% consolidation on a two-way drained laboratory 1 cm thick saturated clayey soil sample is 35 seconds. Determine the time required for 60 % consolidation of the same soil 10 m thick in the field on the top of rocky surface subjected to same loading condition as the laboratory sample.

Tutorial: 5 : Stress Distribution of Soil :

Q:-1 Explain the concept of pressure bulb and its use in soil mechanics.

Q:-2 Explain in detail the construction of Newmark's influence chart. How is it used?

Q:-3 Explain vertical stress distribution on a horizontal plane due to point load acting on the ground surface.

Tutorial: 6 : Shear Strength of Soil :

Q:-1 Describe Mohr- Coulomb's strength theroty.

Q:-2 Describe triaxial shear test. What are its merits and demerits?

Q:-3 List out various tests of determine shear strength of soil in the laboratory. Based on drainage conditions explain types of shear test developed.

Q:-4 The following results were obtained from an untrained shear box test on a soil.

Normal Load (N)	250	500	750
Shear Load (N)	320	460	610

Determine the shear strength parameters in terms of total stresses. The cross sectional area of the shear box was 36 cm^2.

Tutorial: 7 : Earth pressure :

Q:-1 Distinguish between active earth pressure and passive earth pressure.

Q:-2 What are different types of earth pressure? Give examples.

Q:-3 Write short note on Coulomb's wedge theory.

Tutorial: 8 : Foundations and Bearing Capacity :

Q:-1 Write the difference between shallow and deep foundations.

Q:-2 Explain the effect of ground water table on the safe bearing capacity of soil.

Q:-3 Elaborate the conditions where a pile foundation is more suitable than a shallow foundaton .