

GUJARAT TECHNOLOGICAL UNIVERSITY

4th Semester Civil Engineering – PDDC

Subject Code & Name : X40603 - Soil Engineering

Tutorial – 1

Date : 27-03-2015

1. Differentiate between standard proctor test and Modified proctor test.
2. The following data have been obtained in a standard laboratory proctor compaction test on glacial till

Water content %	5.02	8.81	11.25	13.05	14.40	19.25
Wt. of container with compacted soil (N)	35.8	37.3	39.32	40.00	40.07	39.07

The specific gravity of soil particle is 2.77. The container is 9.44 cm³ in volume and its weight is 19.78 N. Plot the compaction curve and find out OMC and MDD.

3. Write short note on Compaction needle.
4. What is the effect of compaction on the engineering properties of the soil?
5. Discuss shear tests based on different drainage conditions.
6. Enlist the method for determination of coefficient of consolidation and explain any one in detail.
7. Differentiate between consolidation and Compaction with examples.
8. What are the advantages of triaxial shear test over direct shear test?
9. In a consolidation test following result have been obtained when the load was changed from 100 KN/m² to 200 KN/m², void ratio changed from 0.7 to 0.65. Determine the coefficient of volume decrease (mv) and compression index (Cc).
10. In an unconfined compression test a sample of clay 100mm long and 50mm in diameter fails under a load of 150N at 10% strain. Calculate the shearing resistance taking into account the effect of change in cross-section of the sample.
11. Explain Mohr-coulomb's strength theory.
12. A stratum of clay is 2m thick and has an initial overburden pressure of 50 KN/m² at its middle. Determine the final settlement due to an increase in pressure of 40 KN/m² at the middle of the clay layer. The clay is over-consolidated, with a reconsolidation pressure of 75 KN/m². The values of the coefficient of recompression and compression index are 0.05 and 0.25, respectively. Take initial void ratio as 1.40.
13. A standard specimen of cohesionless sand was tested in triaxial compression and the sample failed at deviator stress of 460KN/m², when the cell pressure was 150KN/m², under drained conditions. Find the effective angle of shearing resistance of sand. What would be the deviator stress and the major principle stress at failure for another identical specimen of sand if it is tested under a cell pressure of 200KN/m²?
14. Explain the modified Mohr-coulomb theory.

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