

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

00123

December, 2018

BICE-026 : GEO-TECHNICAL ENGINEERING - I

Time : 3 hours

Maximum Marks : 70

Note : Attempt any seven questions. All questions carry equal marks. Assume missing data, if any. Use of scientific calculator is permitted.

1. What is soil classification ? Discuss in detail Engineering classification of soils. 10
2. Explain with a neat sketch the Resistivity method of soil exploration. 10
3. The void ratio and specific gravity of a sample of clay are 0.73 and 2.7 respectively. If the voids are 92% saturated, find the bulk density, the dry density and the water content. What would be the water content for complete saturation, the void ratio remaining the same ? 10

4. (a) Explain Coulomb's law with the help of a graph plotted between normal pressure and shear strength. 10
- (b) Discuss advantages and disadvantages of direct triaxial shear tests. 10
5. For compacting which types of soils are 10
- (a) Sheep foot rollers,
- (b) Vibrating rollers most effective ?
- Explain by giving reasons with suitable applications in the field.
6. Explain the following : 10
- (a) Initial compression ratio
- (b) Primary consolidation
- (c) Secondary consolidation
- (d) Primary compression ratio
7. How many days would be required by a clay stratum 5 m thick, draining at both ends with a coefficient of consolidation = 50×10^{-4} cm²/sec to attain 50% of its ultimate settlement ? 10
- Given $T_{50} = 0.197$.

8. What are the factors affecting the compaction of soils ? Discuss. 10
9. Write short notes on any *two* of the following : 2×10=20
- (a) Darcy's Law
 - (b) Aquifer
 - (c) Vane Shear Test
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