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Total No. of Pages : 02

Total No. of Questions : 08

M.Tech. (Soil Mechanics & Foundation Engineering)/(Geo Technical Engineering) (2016 & Onwards) (Sem.-1)

ADVANCED SOIL MECHANICS

Subject Code : CESE-1

M.Code : 37201

Time : 2 Hrs.

Max. Marks : 50

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE question(s), each question carries 10 marks.

1. a) What are three basic factors which influence the characteristics of a transported soil?
b) Illustrate the effect of grain size on 'specific surface'. How does this influence the engineering behaviour of a soil?

2. a) What is Isomorphous Substitution ? Apart from Isomorphous substitution, what other sources contribute to the negative charge at the surface of the clay crystal?
b) Distinguish between :
 - i) Texture & structure
 - ii) Open & dispersed structure

3. a) Explain the shape of compaction curve of a cohesive soil in terms of the development of water films around the particles.
b) For the following projects, would you prefer to compact the soil on dry side of OMC or on the wet side of OMC :
 - i) Core of an earth dam
 - ii) Subgrades for highways
 - iii) Earth fills.

Give reasons to support your answer.

4. a) For a sedimentary soil deposit, which solution is more appropriate-Boussinesq's or Westergaard's? Why?
b) Sketch the distribution of contact pressure for eccentric loading with $e > (B/6)$.

5.
 - a) What is the significance of pore pressure coefficients? Illustrate your answer with examples.
 - b) Describe the method of calculation of Immediate settlement in granular soil by simplified Strain Influence Factor.
6.
 - a) How is Bishop's rigorous analysis different from his simplified method? Explain.
 - b) What are probable types of failure of a slope?
7.
 - a) Explain about critical state for over consolidated soil.
 - b) Discuss the methods of sand drain installation. Also discuss their relative suitability compared to multiwall point systems and electro-osmotic method.
8. Write short notes on :
 - a) Burmister theories
 - b) Diffused double layer.

Note: Any student found attempting answer sheet from any other person(s), using incriminating material or involved in any wrong activity reported by evaluator shall be treated under UMC provisions.

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