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Register Number :

7904

Name of the Candidate :

**DIPLOMA IN DESIGN OF FOUNDATION SYSTEMS EXAMINATION
DECEMBER 2013.**

110 — PRINCIPLES OF SOIL MECHANICS

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

Answer ONE questions from each unit.

UNIT I

1. (a) Define water content, void ratio, porosity and Degree of saturation? (8)
- (b) A soil sample has a porosity of 40%. The specific gravity of solid is 2.70. Calculate
 - (i) Void ratio,
 - (ii) dry density and
 - (iii) Unit weight of soil is 50% saturated (12)

Or

2. The mass specific gravity of a saturated specimen of clay is 1.84. When water content ψ is 38% on oven drying the mass specific gravity falls to 1.70. Determine specific gravity of clay and shrinkage limit. (20)

UNIT II

3. (a) Explain about the standard proctor's compaction test. (10)
- (b) Discuss about the factors affecting the compaction test. (10)

Or

4. (a) Explain about the classification of soils. (10)
- (b) Explain about the Group Index method. (10)

UNIT III

5. A sand layer over a clay stratum is 5m in depth. The water table is 1.5m below ground level and the sand above water table assumed to be dry. If bulk density of saturated sand is 1.8 g/cc. Calculate the effective and neutral pressure on top of the clay layer. Assume specific gravity of solids $G = 2.65$ (20)

Or

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6. (a) Explain about the factors affecting the coefficient of permeability test. (10)
- (b) Explain about the field permeability test. (10)

UNIT IV

7. (a) Explain the direct shear test in detail. (10)
- (b) Explain the Mohr's Columb theory of failure. (10)

Or

8. (a) Explain briefly how field vane shear test is carried out and shear strength parameter are obtained. (10)
- (b) Draw and explain about the Mohr's circle of stress? (10)

UNIT V

9. (a) Explain the Terazaghi's theory of one dimensional consolidation in detail. (10)
- (b) State the assumption made in the Terazaghi's one dimensional consolidation theory. (10)

Or

10. Explain intermediate and consolidate settlement. (20)