Reg. No. :

Question Paper Code: 31512

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2016

Fifth Semester

Civil Engineering

01UCE502 - FOUNDATION ENGINEERING

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. List out the primary objectives of soil exploration.

2. Mention the types of boring methods.

3. State the situations in which combined footing should be adopted.

4. Mention any four methods of determining bearing capacity of a foundation.

5. What are floating foundations?

6. Define spread footing.

7. Explain negative skin friction.

8. What is meant by pile capacity?

9. Define active earth pressure.

10. List out the assumptions made in Rankines theory.

11. (a) Explain the procedure involved in split-spoon sampler and thin walled sampler with neat sketches. (16)

Or

(b) Explain the procedure involved in standard penetration test with neat sketch. (16)

12. (a) Explain the factors affecting bearing capacity of soils. (16)

Or

(b) A soft, normally consolidated clay layer is 18 m thick. The natural water content is 45%. The saturated unit weight is 18 kN/m^3; the grain specific gravity is 2.70 and the liquid limit is 63%. The vertical stress increment at the centre of the layer due to the foundation load is 9 kN/m^2. The ground water level is at the surface of the clay layer. Determine the settlement of the foundation. (16)

13. (a) Discuss the general types of foundations. (16)

Or

(b) Explain the factors governing the selection of the types of foundations. (16)

14. (a) Discuss the classification of piles based on function; material and method of installation. (16)

Or

(b) A group of 16 piles of 50 cm diameter is arranged with a centre to centre spacing of 1.0 m. The piles are 9 m long and are embedded in soft clay with cohesion 30 kN/m^2. Bearing resistance may be neglected for the piles. Adhesion factor is 0.6. Determine the ultimate load capacity of the pile group. (16)

15. (a) Explain the primary assumptions made in coulombs wedge theory. (16)

Or

(b) A wall 5.4 m high retains sand. In the loose state the sand has a void ratio of 0.63 and $\phi = 27$ *degrees*, while in the dense state, the corresponding values of void ratio and ϕ are 0.36 and 45 *degrees* respectively. Compare the ratio of active and passive earth pressure in the two cases, assuming G is 2.64. (16)

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