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**Question Paper Code : 71572**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Fifth Semester

Civil Engineering

CE 6502 — FOUNDATION ENGINEERING

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the factors influencing in depth of exploration of sub soil?
2. List out the various methods of site exploration.
3. Write down the components of settlement.
4. Draw the pressure distribution diagram for sand and clay layer at the beneath of rigid footing.
5. What are the advantages of combined footing?
6. Under what situation, RAFT foundation adopted?
7. Compute the safe bearing of a pile of 550 mm diameter and 12 cm long driven in clay soil having unconfined compressive strength of 140 kN/m<sup>2</sup>. Take  $\alpha = 0.55$ ,  $FOS = 3$ .
8. Define Negative SKIN FRICTION.
9. Write the assumptions of Coulomb's Theory.
10. Calculate the active earth pressure give that  $C = 20$  kN/m<sup>2</sup> and unit weight of the soil being 20 kN/m<sup>3</sup> for a vertical cut of depth 3 m. The soil is cohesionless soil.

PART B — (5 × 16 = 80 marks)

11. (a) Briefly discuss about the various types of boring with neat sketch. (16)

Or

- (b) (i) Write short notes on bore log report with neat sketch. (6)  
(ii) Explain in detail about the test procedure of static cone penetration test. (10)

12. (a) Discuss in detail about the plate load test by reaction truss method with suitable sketch. (16)

Or

- (b) Explain the Terzaghi's analysis for determining the safe bearing capacity of the soil with their assumptions. (16)

13. (a) Briefly discuss about the various types of footing with neat sketch. (16)

Or

- (b) (i) Explain the design procedure of a combined footing. (12)  
(ii) List out the various factors consider in earthquake area. (4)

14. (a) Discuss in detail about the method of estimating the individual and group capacity of piles. (16)

Or

- (b) Define pile foundation. Briefly discuss about the type of pile and their functions. (16)

15. (a) Explain the Culmann's graphical method of calculating active earth pressure with neat sketch. (16)

Or

- (b) (i) A retaining wall is 5 m high. It's back is vertical and it has got sandy backfill upto it's top. The top fill is horizontal and carries a uniform surcharge of 80 kN/m<sup>2</sup>. Determine the active earth pressure on the wall per meter length of the wall. Water table is 1.5 m below the top of the fill,  $\gamma_d = 18.5 \text{ kN/m}^3$ . Moisture content above water table is 13%.  $\phi = 30^\circ$ .  $G = 2.6$  and  $n = 30$ . The wall friction may be neglected. (12)  
(ii) Write a short notes on type of retaining wall. (4)