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**Question Paper Code : 21209**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Fifth Semester

Civil Engineering

CE 2305/CE 54/10111 CE 505 — FOUNDATION ENGINEERING

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the objective of site exploration?
2. What is site reconnaissance?
3. What is ultimate bearing capacity?
4. What is net pressure intensity?
5. What is safe bearing pressure?
6. What is total settlement of a footing?
7. What are Anchor piles?
8. What are fender piles?
9. What is earth pressure at rest?
10. What is surcharge angle?

PART B — (5 × 16 = 80 marks)

11. (a) Explain any two Geophysical methods of site exploration.

Or

- (b) Explain any two types of soil samplers.

12. (a) Determine the depth at which a circular footing of 3.30 m diameter be found to be provided to carry a safe load of 1500 kN with a factor of safety of 2.40. The foundation soil has  $C = 9 \text{ kN/m}^2$ ;  $\phi = 18^\circ$ . Use Terzaghi's analysis.

Or

- (b) A raft foundation 10.5 m wide and 12.30 m long is to be constructed in a clayey soil having a shear strength of 11.40 kN/m<sup>2</sup>. Unit weight of soil is 15 kN/m<sup>3</sup>. If the ground surface carries a surcharge of 19.50 kN/m<sup>2</sup>, calculate the maximum depth of foundation to ensure a factor of safety of 1.20 against base failure.  $N_c$  for clay is 5.70.
13. (a) Explain the pile load test to determine the load carrying capacity of a pile.

Or

- (b) Explain the various stages involved in the construction of under reamed pile foundation.
14. (a) Explain the design procedure of rectangular combined footing.

Or

- (b) Explain the design procedure of mat footing.
15. (a) Explain the Rankine's theory for the cases of Cohesionless backfill.

Or

- (b) Explain the Coulomb's wedge theory of earth pressure with a neat sketch.
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