Register No: ……

M.E. DEGREE EXAMINATIONS: JUNE 2011

Second Semester

STRUCTURAL ENGINEERING

SEE506: Design of Substructures

Time: Three hours **Maximum Marks: 100**

Answer ALL Questions

PART A (10x2 = 20 Marks)

1. What are different types of soil formation?
2. What is bore log?
3. Define bearing capacity
4. What is compensated foundation?
5. Define settlement
6. What is a pile cap?
7. State the major forces in the foundation of tall structures
8. What is a drilled shaft foundation?
9. Write different type of machine foundations
10. Define stiffness and damping

PART B (5 x 16 = 80 Marks)

11. a) Explain different soil exploration techniques.

(OR)

b) Explain the methodology of preparing soil investigation report.

12. a) Design a combined rectangular footing for two columns spaced at 4m c/c. Face of one of the columns of section 300mm x 300mm and subjected to a ultimate load of 1800 kN coincides with the property line and the other column section 300mm x 300mm and subjected to a ultimate load of 2000 kN. Unit weight of soil is 18 kN/ m^3. Angle of repose of soil is 30°. The safe bearing capacity of soil is 120 kN/m^2. Use M20 grade concrete and Fe415 grade steel.

(OR)

b) Explain the design concept of

i) strap foundation and ii) raft foundation

13. a) A 400mm x 400mm RC pile 20m long weighing 74 kN is driven as bearing pile with a set of 30mm for last blows using a drop hammer 30kN in weight falling through 1.5m Determine the capacity of pile.

(OR)

b) In case of group action of piles, explain the method of finding settlement in sand and clay soils.

14. a) Explain the design procedure of well foundation.

(OR)

b) Explain the design steps of supports for foundation excavation.

15. a) Write down the design procedure for machine foundation.

(OR)

b) Write the guidelines for design of reciprocating engines, rotary type machines and framed foundations.

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