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E – 2357

Reg. No. : .....

Name : .....

Eighth Semester B.Tech. Degree Examination, May 2018
(2013 Scheme)
13.805.3 : DEEP FOUNDATIONS (C)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **(5×4=20 Marks)**

I. a) Capacity of piles based on SPT.
   b) Pile driving formulae.
   c) Spacing of piles and its effect on pile capacity.
   d) Types of drilled piers.
   e) Tilts and shifts of Well foundations.

PART – B

Module – I

II. a) How piles can be classified based on the material of construction. **5**

   b) Differentiate between Maintained Load test and Cyclic Load test for piles. How the capacity is determined in each case ? **15**

OR

III. The soil profile in a particular site consists of a 1.5 m thick filled up soil (N = 3, γ = 17 kN/m^3) followed by 2 m thick very soft clay layer (N = 0, c_u = 5 kN/m^2). This is followed by 6 m thick sandy layer (av. N value = 8 and γ = 17 kN/m^3) which is followed by 11 m thick stiff clay layer (av. Cohesion = 25 kN/m^2, γ = 15 kN/m^3) with WT 1.5 m below GL. This is followed by dense sand up to 30 m (av, N value = 50, γ = 19 kN/m^3). Calculate the safe load that a 24 m long 600 mm dia bored cast in situ pile can carry. **20**

$$\begin{pmatrix} \text{For } N = 3,\ \phi = 24^\circ,\ \ N = 8,\ \phi = 28^\circ \\ N = 50, \phi = 41^\circ, N_q = 140\ \&\ N\gamma = 152 \end{pmatrix}$$

P.T.O.

Module – II

IV.a) Explain the salient features of an Under reamed pile. How its capacity can be estimated ? **10**

b) In the case of a pile group in clayey soil, how one can estimate the **10**
i) negative skin friction ii) settlement.

OR

V. a) The soil profile in a particular site consists of a 3 m thick very soft clay ($c = 5$ kN/m^2, $\gamma = 14$ kN/m^3) underlain by stiff clay ($c = 35$ kN/m^2, $\gamma = 15$ kN/ m^3) up to 18 m. Compute the safe capacity of a group of 9 bored cast in situ piles of 400 mm dia and 15 m long. **10**

b) In the case of a pile group in sandy soil, how can estimate the **10**
i) uplift capacity ii) settlement.

Module – III

VI. a) Discuss the different methods adopted for the construction of a drilled pier. **12**

b) Write a note on the uplift capacity of drilled piers. **8**

OR

VII. Explain in detail, how one can estimate the capacity of a drilled pier. **20**
i) in sandy soil ii) in clayey soil.

Module – IV

VIII. a) Explain the different components of a Well Foundation and discuss the problems encounter normally during sinking. **8**

b) What are the factors to be considered in checking the lateral stability of Well foundations ? Briefly explain the Terzaghi's analysis. **12**

OR

IX. a) How one can arrive at the depth of a Well foundation ? **8**

b) Explain the various steps suggested by IS in checking the lateral stability of a Well foundation, using Elastic Theory. **12**