



Reg. No. :

Name :

Seventh Semester B.Tech. Degree Examination, October 2011
(2008 Scheme)
08.705.3 Elective – III : DEEP FOUNDATIONS (C)

Time : 3 Hours

Max. Marks : 100

Instruction : Answer all questions in Part – A and one from each Module in Part – B.

PART – A

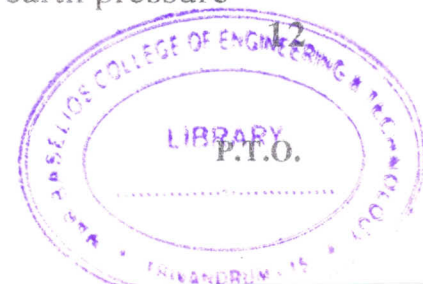
1. What are the merits and demerits of timber piles over steel piles ?
2. List out the various dynamic formulae.
3. How would you estimate the load carrying capacity of a pile in cohesive soils ?
4. Explain the determination of settlement of pile groups in clays.
5. Explain cyclic pile load test.
6. Explain 'group action of piles'. What is the criterion for designing the spacing of piles.
7. Explain the steps involved in sinking of wells.
8. Enumerate the various methods for 'the analysis of lateral stability of a well acted on by horizontal forces. **(8×5=40 Marks)**

PART – B

Module – I

9. A 30 cm diameter concrete pile is driven in a normally consolidated clay deposit 15 m thick. Estimate the safe load. Take $C_u = 70 \text{ kN/m}^2$, $\alpha = 0.9$ and F.S = 2.5. **8**
10. A 30 cm square pile, 15 m long, is driven in a deposit of medium dense sand ($\phi = 36^\circ$, $N_r = 40$ and $N_q = 42$). The unit wt. of sand is 15 kN/m^3 . What is the allowable load with a factor of safety of 3 ? Assume lateral earth pressure coefficient = 0.6.

OR





11. Explain critical depth concept ? Explain the penetration tests in determining the ultimate skin friction and end bearing capacity of single pile installed in granular soils. 20

Module – II

12. A square group of 9 piles was driven into soft clay extending to a large depth. The diameter and length of the piles were 30 cm and 9 m respectively. If the unconfined compression strength of the clay is 90 kN/m^2 , and the pile spacing is 90 cm centre to centre, what is the capacity of the group ? Assume a factor of safety of 2.5 and adhesion factor of 0.75. 12
13. What is negative skin friction ? How would you estimate the negative skin friction of pile groups ? 8

OR

14. Design a friction pile group to carry a load of 500 kN. The soil is uniform clay upto depth 20 m and is underlined by rock. Average $u_{cc} = 70 \text{ kPa}$, liquid limit = 60%, $C_o = 1.2$, $F_s = 3$, Also compute settlement of pile. Assume the length of the pile 15 m. 20

Module – III

15. What are the advantages of well foundations over pile foundation ? Draw a neat sketch of a well foundation and explain the function of different parts. 12
16. How will you fix up the minimum steining thickness of the well foundation. 8
- OR
17. Explain Terzaghi's analysis for determining the lateral stability of well foundations. 20