

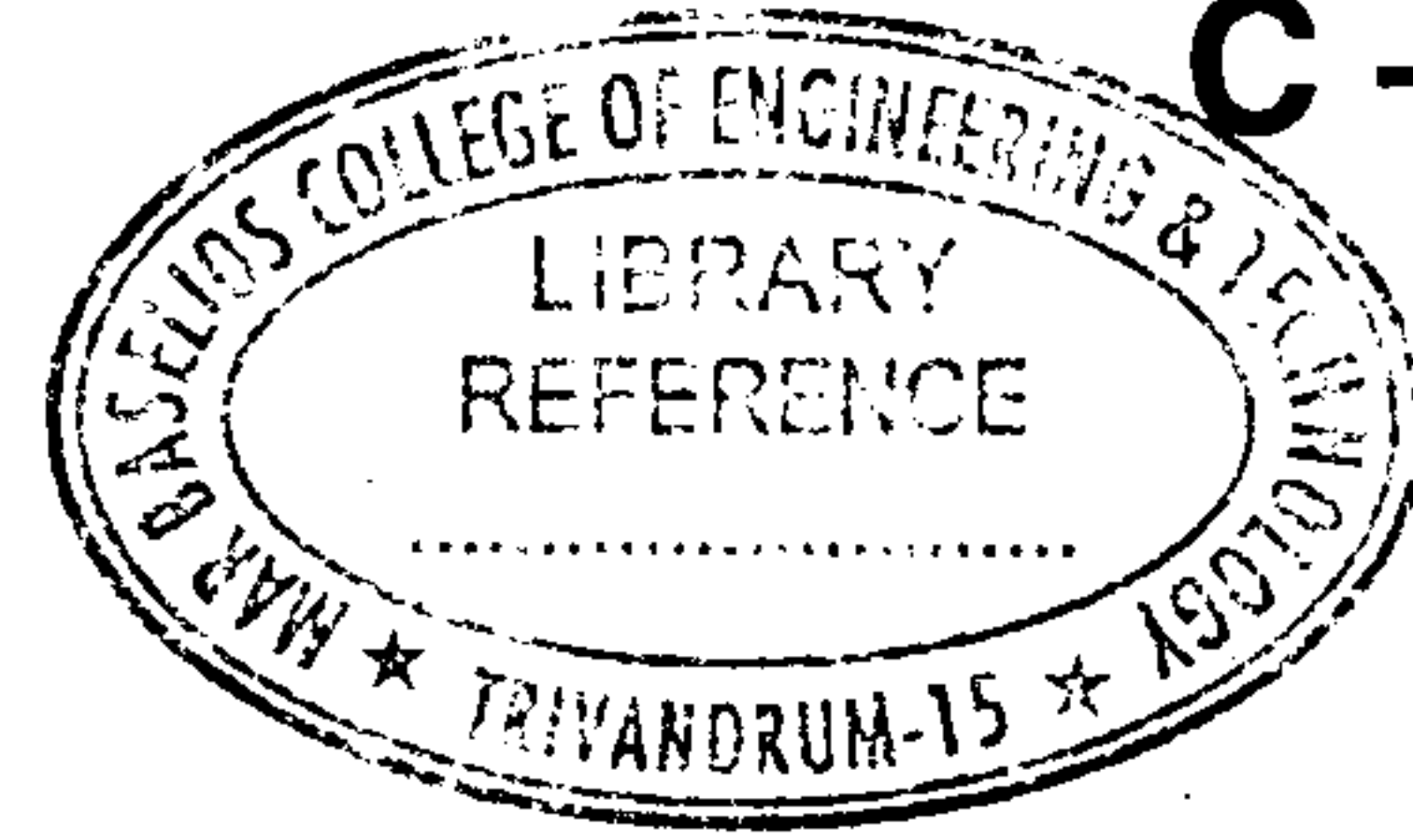


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C – 2342

Reg. No. :

Name :



**Eighth Semester B.Tech. Degree Examination, May 2017
(2013 Scheme)
13.805.3 : DEEP FOUNDATIONS (C)**

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **4** marks :

1. Explain the different methods used for the installation of precast piles.
2. Explain in detail about the construction requirements of an under-reamed pile.
3. What are the advantages of constructing a single pier instead of a pile group ?
4. Explain the various components of a well foundation with suitable figures.
5. Write in detail about the uplifting resistance of drilled pier on different soil types.

PART – B

Answer **one full** question from **each** Module. **Each** question carries **20** marks :

Module – I

6. Discuss various dynamic formulae used to find the load carrying capacity of piles. Also list out their limitations. 20

OR

7. a) Explain the procedure of cyclic plate load test. 10
- b) A precast concrete pile is driven with a 50 kN hammer, having a free fall of 1 m. If the penetration in the last blow is 0.5 cm, determine the load carrying capacity of the pile using Engineering News Record formula. Take factor of safety as 6. 10

P.T.O.



Module – II

8. A pile group with square arrangement resting on hard bearing strata carries a total load of 4000 kN including its self weight. The length of the pile is 7 m and its width of the square arrangement is 4 m. The soil in the site is clay up to a depth of 20 m, underlain by hard strata. The properties of the remoulded soil are $LL = 60\%$, initial void's ratio = 1 and $\gamma = 16 \text{ kN/m}^3$. Assume 2 : 1 load distribution. Design the pile and also calculate the settlement of the pile group. 20

OR

9. a) The pile load test on a 40 cm diameter concrete pile in a deposit of sand indicates a settlement of 4mm under a load of 400 kN. Estimate the settlement of a 4×4 pile group. The piles are driven at a spacing of 100 cm. The total load on the group is 6400 kN. 10
- b) What is driving stress ? How it is varied on the characteristic of a pile ? 10

Module – III

10. a) A drilled pier of 1 m diameter has a total depth of 15 m. The diameter of the bell is 2 m and its height is 1 m. If $c_u = 80 \text{ kN/m}^2$, $\gamma = 20 \text{ kN/m}^3$ and $\alpha = 0.3$. Determine the allowable load if factor of safety is 3. 10
- b) Determine the allowable soil pressure for a pier, 3 m diameter, 10 m long, on sand with $N = 30$ for a factor of safety of 3 and for an allowable settlement of 40 mm. Assume full submergence. 10

OR

11. a) Explain in detail about the different types of pier foundation. 10
- b) Write the differences between a drilled pier and a caisson foundation. 10

Module – IV

12. A cylindrical well of external diameter 6 m and internal diameter 4 m is sunk to a depth 16 m below the maximum scour level in a sand deposit. The well is subjected to a horizontal force of 1000 kN acting at a height of 8 m above the scour level. Determine the total allowable equivalent resisting force due to earth pressure, assuming that :
- i) The well rotates about a point above the base and
 - ii) The well rotates about the base.

Assume $\gamma' = 10 \text{ kN/m}^3$, $\phi = 30^\circ$ and factor of safety against passive resistance = 2.5. Use Terzaghi's approach. 20

OR

13. Discuss in detail about the various precautions used to avoid tilts and shifts in well foundation. 20