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B.E/B.Tech(Full Time)DEGREE END SEMESTER ARREAR EXAMINATIONS APRIL/MAY
2011

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CIVIL ENGINEERING BRANCH

FIFTH SEMESTER

CE9303 FOUNDATION ENGINEERING

(REGULATION 2008)

Time:3 hr

Max.Mark:100

Answer ALL Questions

PART-A (10x2=20 Marks)

1. What are the different purposes for which site investigations are done?
2. How would you decide the depth of Exploration?
3. The ultimate bearing capacity of shallow foundation on sand is reduced to about.....when the water table rises to the ground surface.
4. Define the term 'allowable soil pressure'.
5. What are the various types of loads that are to be considered in the design of foundations?
6. Where do you provide a trapezoidal combined footing?
7. What is negative skin friction? What is its effect on the pile?
8. The group efficiency of the piles can be more than 100%. Write whether the statement true or false.
9. What is the expression for active pressure when the ground surface is inclined?
10. What are the different types of earth pressure? Give example.

PART-B (5X16=80)

11.a) Discuss standard penetration test. What are the various corrections applied? What is the importance of the test in geotechnical engineering? (16 Marks)

12.a) A strip footing is 2m wide and founded at a depth of 2m in a soil of unit weight 20kN/m^3 and a cohesion of 10kN/m^2 . Determine the increase in the bearing capacity when ...

is increased from 20° to 25° . Use Terzaghi's equation. Assume local shear failure. (16 Marks)

(Or)

b) A square footing 2.5m size is founded at a depth of 1.5m in a sandy soil deposit which has the corrected N value of 30. The water table is at a depth of 2m from the ground surface. Find the net allowable soil pressure if (i) the desired factor of safety is 3.0 (ii) the permissible settlement is 40mm. (16 Marks)

13. Design a R.C.C footing for a wall 30cm wide having a load of 80kN/m. The allowable soil pressure is 50kN/m^2 (16 Marks).

(Or)

b). A square footing is to be designed to carry a load of 500kN. If the depth of foundation is 1.5m. Determine a suitable size of foundation with factor of safety of 3.0. The water table is at foundation level. The $\phi=25^\circ$, $\gamma=16\text{kN/m}^3$, $\gamma_{\text{sat}}=19\text{kN/m}^3$. Use Terzaghi's theory. $C'=20\text{kN/m}^2$. Assume local shear failure. (16 Marks)

14.a) A 30cm diameter pile of length 12m was subjected to a pile load test and the following results were obtained.

Load (kN)	0	500	1000	1500	2000	2500
Settlement during loading(cm)	0	0.85	1.65	2.55	3.8	6.0
Settlement during unloading(cm)	4.0	4.6	5.2	5.5	5.8	6.0

Determine the allowable load and net settlement. (16 Marks)

(Or)

b)(i) What are the conditions where a pile foundation is more suitable than a shallow foundation. (4 Marks)

(ii) Discuss the methods for the installation of piles. (12 Marks)

15.a). Determine the passive earth pressure by Rankine's theory per unit run for a Retaining wall 4m high, with $i=15^\circ$, $\phi=30^\circ$ and $\gamma=19\text{kN/m}^3$. The backface of the wall is smooth and vertical. And also determine the active earth pressure per unit run. (16 Marks)

(Or)

b) Discuss the Culmann's method for the determination of active earth pressure. (16 Marks)