

**B.TECH. SEM -VII (CIVIL) 2014 COURSE (CBCS) : WINTER -
2017**

SUBJECT: FOUNDATION ENGINEERING

Day: **Wednesday**
Date: **17/01/2018**

W-2017-2260

Time: **02.30 PM TO 05.30 PM**
Max Marks: 60

N.B.:

- 1) All questions are **COMPLUSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagram **WHEREVER** necessary.
- 4) Assume suitable data if necessary.

Q.1 Enumerate the various methods of sub-soil exploration and mention the circumstances under which each is best suited. [10]

OR

What is 'N-value' of Standard Penetration Test? Explain the various corrections to be applied to the observed value of 'N'. How do you relate the relative density with 'N-value'? [10]

Q.2 Differentiate between the general shear failure and local shear failure. How the ultimate bearing capacity in local shear is determined? [10]

OR

Using Terzaghi's theory determine the ultimate bearing capacity of a strip footing 1.5m wide resting on a saturated clay ($C_u = 30\text{kN/m}^2$, $\phi_u = 0$ and $\gamma_{\text{sat}} = 20\text{ kN/m}^3$) at a depth of 2m below GL. The water table is also at 2m from GL. If water table rises by 1m, calculate the percentage reduction in the ultimate bearing capacity. Take values of $N_c = 5.7$, $N_q = 1$ and $N_\gamma = 0$. [10]

Q.3 a) What are the different types of settlements which can occur in a foundation? How are these estimated? [05]

b) Differentiate between primary consolidation and secondary consolidation. [05]

OR

A plate load test using plate of size 30 cm × 30 cm was carried out at the level of prototype foundation. The soil at the site was cohesionless with the water table at great depth. The plate settled by 10mm at a load intensity of 160 kN/m². Determine the settlement of square footing of size 2m × 2m under the same load intensity. [10]

Q.4 a) Write a short note on micro pile. [05]

b) Explain the cyclic pile load test with sketch. [05]

OR

a) How will you calculate skin friction and end point resistance by using the data of cyclic load test? [05]

b) What is socketing of pile? What are the IS norms related to socketing of pile? [05]

Q.5 a) What are the different types of sheet piles? Explain with sketches. [05]

b) What are the factors affecting design of sheet pile? [05]

OR

a) What is under-reamed pile and what are the limitations of under-reamed pile? [05]

b) Explain how will you determine swelling pressure in laboratory. [05]

Q.6 a) Explain use of geo-grid in the construction of retaining wall. [05]

b) Explain any two methods of soil stabilization. [05]

OR

a) What are the different types of soil reinforcements used in construction industry? [05]

b) What is geo-grid and state its application in soil engineering? [05]

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