

**B.TECH. SEM -VII (CIVIL) 2014 COURSE (CBCS) : SUMMER -
2018**

SUBJECT: FOUNDATION ENGINEERING

Day: **Wednesday**
Date: **23/05/2018**

S-2018-2472

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

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data, if necessary.

Q.1 What do you understand by site investigations? What are the different objectives for which site investigations are done? (10)

OR

Why are undisturbed samples required? Describe any one procedure of obtaining undisturbed samples for multi-storeyed building project. (10)

Q.2 Explain clearly the effect of ground water table on the safe bearing capacity. Write down the Terzaghi's bearing capacity equation for depth of water table above and below founding level. (10)

OR

Determine the net allowable load for a square footing of 2.0m side and having a depth of foundation 1.0m below ground level. Use Terzaghi's theory and assume local shear failure. Take factor of safety of 3. The soil at site has $\gamma=18$ kN/m³, $c=15$ kN/m², $\phi=25^\circ$, $N_c=14.8$, $N_q=5.6$ and $N_\gamma=3.2$. (10)

Q.3 a) Differentiate between total settlement and differential settlement. State the methods of predicting immediate settlement in cohesive and cohesionless soils. (05)

b) What are the various assumptions in Terzaghi's theory of consolidation? State their validity. (05)

OR

A 4m² footing is to be constructed on a homogeneous soil. The maximum settlement of the footing is not to exceed 2cm. Two load tests were conducted at the site using (a) 100 cm x 100 cm and (b) 160 cm x 160 cm size plate. For 2 cm settlement, the respective loads were 17,000 kg and 33,250 kg. What is the bearing capacity of soil? (10)

Q.4 a) What are the classifications of pile foundation? (05)

b) What are different dynamic pile formulae to determine pile load capacity? (05)

OR

a) Write a short note on group capacity of pile. (05)

b) How will you determine bearing capacity by using pile load test? (05)

Q.5 a) What is sheet pile? Draw pressure distribution diagram for cantilever sheet pile. (05)

b) What is under-reamed pile? What are the limitations of under-reamed pile foundation? (05)

OR

a) Derive an expression for depth of embedment of cantilever sheet pile by making simplified assumption. (05)

b) What are the engineering problems of black cotton soil? (05)

Q.6 a) Write a short note on geo-synthetics application in civil engineering. (05)

b) Enlist different methods of soil stabilization. Explain any one method in detail. (05)

OR

a) What are geo-synthetics? State their functions. (05)

b) Write a short note on reinforced earth retaining structures. (05)

* * * * *