

Roll No.

Total No. of Pages : 2

Total No. of Questions : 09

B.Tech. (CE) (Sem.-7th & 8th)**FOUNDATION ENGINEERING**

Subject Code : CE-412

Paper ID : [A0629]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is **COMPULSORY** consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A**1. Write briefly :**

- (a) Difference between safe bearing capacity and safe allowable bearing pressure.
- (b) Characteristics of punching shear failure.
- (c) Define uniform settlement and differential settlement.
- (d) Degrees of freedom of block foundation.
- (e) Depth of exploration for a raft foundation.
- (f) Define inside clearance and outside clearance.
- (g) Types of pile driving hammers.
- (h) Displacement piles and non displacement piles.
- (i) Forces acting on well foundation.
- (j) Determination of scour depth.

SECTION-B

2. What are assumptions made in the Terzaghi's bearing capacity equation?
3. What do you mean by Tilt and Shift? Explain with neat diagram.
4. How can the natural frequency of a foundation be determined? Explain the use of this determination?
5. A 450mm dia concrete pile 9m long is driven into a soft clay soil. The average corrected standard penetration test value is 15. Using the correlations, estimate the ultimate bearing capacity of the pile. $\gamma = 16 \text{ kN/m}^3$
6. What are the advantages and disadvantages of pile foundations?

SECTION-C

7. A cyclic plate load test was carried out on a sand soil to estimate the elastic coefficients for the design of a foundation. The test was carried out at a depth of 2m below the ground surface. The data obtained was:

Load Intensity (kN/m^2)	25	0	25
Settlement (mm)	0.50	0.40	0.60
Load Intensity (kN/m^2)	0	150	0
Settlement (mm)	1.90	3.60	2.10

Determine the values of C_u , C_r , C_ϕ for the soil.

8. A 60m high tower rests on three legs with square foundations of sides 8m each in. The load coming on each leg is equivalent to a 300kN point. Using the Boussinesq's equation, estimate the vertical stress increase at a point 2m below the foundation level.
9. Write short notes on following :
 - (a) Comparison of SPT and DCPT
 - (b) Electrical resistivity method
 - (c) Floating foundation.