

GANPAT UNIVERSITY
B.TECH SEM VI CIVIL ENGINEERING
REGULAREXAMINATION (NEW CBCS) APRIL-JUNE- 2017
2CI-603 Foundation Engineering

Time: 3 Hours

Max Marks: 60

Instructions:-(1) Answer to the two sections must be written in separate answer books.

- (2) Figures to the right indicate full marks.
(3) Assume suitable data if required.

SECTION – I

- Q1(A) Write a short note on Mode of shear failure. (5)
(B) Describe the pile load test with a neat sketch. (5)
OR
- Q1(A) Write a short note on floating foundation. (5)
(B) Write a short note on negative skin friction. (5)
- Q2(A) Write short note on Plate load test (5)
(B) What are the assumptions made in the derivation of Terzaghi's bearing capacity theory and derive the equation for the ultimate bearing capacity. (5)
OR
- Q2(A) Give the details of classification of pile based on mode of transfer of loads. (5)
(B) Write a short note on factor affecting bearing capacity including water table effect. (5)
- Q3(A) A strip footing 2 m wide carries a load intensity of 400 kN/m^2 at a depth of 1.2 m in sand. The saturated unit weight of sand is 19.5 kN/m^3 and unit weight above water table is 16.8 kN/m^3 . The shear strength parameters are $c=0$, and $\phi=35^\circ$. Determine the factor of safety with respect to shear failure for the following cases of location of water table. (a) Water table is 4 m below G.L. (b) Water table is 1.2 m below G.L. Where $N_q=41.4$, $N_v=42.4$ (5)
- (B) Design of friction pile group to carry a load of 3000 kN including the weight of the pile cap at a site where the soil is uniform clay to a depth of 20 m, underlain by rock. Average unconfined compressive strength of the clay is 70 kN/m^2 . The clay may be assumed to be normal sensitivity and normally loaded, with liquid limit 60%. A factor of safety of 3 is required against shear failure. Where $m=0.7$, $N_c=9$. (5)

SECTION – II

Q4(A) Explain the types of shallow foundation in detail (5)

(B) Describe open excavation methods of exploration in detail. (5)

OR

Q4(A) Enlist the factors affecting the selection of type of foundation. (5)

(B) Enlist the various methods of boring for subsurface investigation and explain wash boring. (5)

Q5(A) Discuss the standard penetration test and explain its various corrections. (5)

(B) Define the parameters (1) Free swell (2) Undrained free swell (3) Differential free well (4) Swelling pressure (5) Swelling potential (5)

OR

Q5(A) What are the factors affecting the sample disturbances? (5)

(B) What are the effects of swelling on building? (5)

Q6(A) Enlist the various methods of modification of an expansive soil to improve its characteristics and explain modification of expansive soil. (5)

(B) Explain the function of Geotextile in detail. (5)

----- END OF PAPER-----