

B. Tech. (Civil) 6th Semester (G Scheme)

Examination, July-2022

FOUNDATION ENGINEERING

Paper-PCC-CE-304-G

Time allowed : 3 hours]

[Maximum marks : 75

Note : (i) Question No. 1 is compulsory. Attempt one question from each section.

(ii) All questions carry equal marks.

(iii) Assume missing data, if any, suitably.

1. Describe the following : 15

- (a) Methods of boring
- (b) Under reamed Pile
- (c) Components of settlement
- (d) Floating foundation and its suitability
- (e) Negative skin friction
- (f) Types of drilled piers

Section-A

2. (a) What do you mean by soil sampling ? Describe in detail the different types of soil sampler with their suitability. 7

- (b) Describe briefly different sounding and geophysical methods for sub-surface explorations. 8
- 3. (a) With the neat sketches, explain the working of "Electro-osmosis" and "Deep well drainage" methods of dewatering. 7
- (b) Briefly describe :
 - (i) Exploration logs
 - (ii) Pressure-meter Test 8

Section-B

- 4. (a) Describe in detail the conventional procedure of proportioning of footing. 8
- (b) Explain the Plate Load Test with diagram. How the bearing capacity of soil can be determined by this test ? 7
- 5. (a) Briefly describe the design criteria for structural safety of foundation. 5
- (b) A square footing 2.5 m x 2.5 m is located at a depth of 1.8 m in sand. Calculate the ultimate bearing capacity if :
 - (i) GWT is well below the foundation level.

(ii) GWT is at the surface.
 Given unit weight of sand = 18 kN/m³, c' = 0 and $\phi = 35^\circ$. For $\phi = 35^\circ$, $N_c = 58$, $N_q = 49$ and $N_r = 67$.

Section-C

- 6. (a) What is the necessity of pile foundation ? Classify the pile on different bases and explain them in detail. 7
- (b) Briefly describe "Group action of piles". Explain the factors affecting pile group capacity. 8

- 7. (a) Explain the detailed procedure to conduct pile load with neat diagram. 7
- (b) Write a short note on :
 - (i) Raft foundation and its types
 - (ii) Methods of improving bearing capacity of soil 8

Section-D

- 8. (a) Explain the components of Pneumatic caisson with diagram. What are the advantages and disadvantages of Pneumatic caisson ? 10
- (b) What do you mean by sinking of well ? Explain briefly. 5

9. (a) Describe the different methods to rectify the tilts and shifts of well foundation. 8
- (b) What is the necessity of well foundation ? Describe different components of well foundation in detail. 7