

Roll No.

3304

**B. Tech. 6th Semester (Civil)
Examination – May, 2023**

FOUNDATION ENGINEERING

Paper : PCC-CE-304-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks. Assume missing data, if any, suitably.

1. Describe the following :

- (a) Methods of boring
- (b) Types of shallow foundations
- (c) Components of settlement
- (d) Lateral load capacity of a pile
- (e) Negative skin friction
- (f) Factors affecting well foundation

UNIT – I

2. (a) What are the stages in soil exploration ? Explain in detail the depth and lateral extent of exploration.
- (b) What are the sounding and geophysical methods for sub-surface explorations ? Explain any *two* methods in detail.
3. What is the necessity of drainage and dewatering ? Explain the different methods of dewatering in detail.

UNIT – II

4. (a) Determine the net ultimate bearing capacity of a rectangular footing, $1\text{m} \times 2\text{m}$, on the surface of a saturated clay having unconfined compressive strength of 100 kN/m^2 .
- (b) Describe the effect of G.W.T. and eccentricity on the bearing capacity of soil.
5. (a) What are the various causes of settlement of foundation ? Describe the allowable bearing pressure based on settlement and IS code method.
- (b) What is the conventional procedure of proportioning of footing ? Explain in detail.

UNIT – III

6. (a) Describe the static analysis and dynamic analysis for pile foundation.
- (b) What is the necessity of pile foundation ? Classify the piles and their selection criteria on different bases and explain them in detail.
7. (a) What is floating and raft foundation ? Describe the bearing capacity of raft in different types of soil.
- (b) Write short notes on :
- (i) Methods of improving bearing capacity
- (ii) Seismic consideration

UNIT – IV

8. (a) What are the different types of caissons ? Describe in detail the settlement and construction procedure of any *one* type of caisson.
- (b) Describe the types and construction procedure of different drilled piers. Also explain the uses of drilled piers.

9. (a) What is the necessity of well foundation ? Describe the different methods to rectify the tilts and shifts of well foundation.

(b) What are the shapes of well foundation ? Describe the different components of well foundation in detail.
