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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

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

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- (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  $2.5 \text{ m} \times 2.5 \text{ m}$  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.

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- (ii) GWT is at the surface.  
Given unit weight of sand =  $18 \text{ kN/m}^3$ ,  $c' = 0$  and  $\phi = 35^\circ$ . For  $\phi = 35^\circ$ ,  $N_c = 58$ ,  $N_q = 49$  and  $N_\gamma = 67$ .

**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

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