III B. Tech II Semester Supplementary Examinations, December -2023
GEO TECHNICAL ENGINEERING-II
(Civil Engineering)

Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
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UNIT-I

1. a) Identify the need for soil exploration and detail the plan for soil investigation? [4M]
   b) Explain the Standard penetration test in detail including the experimental procedure, sample collection, and report making? [10M]

(OR)

2. a) Explain different methods of soil borings for collecting destructive and nondestructive samples for investigation? [10M]
   b) List out the rules for limiting the depth and lateral extent of soil exploration? [4M]

UNIT-II

3. a) Describe the three different conditions of lateral earth pressure with the help of neat sketches. [6M]
   b) A smooth vertical wall of height 6.0 m retains a cohesionless soil of φ=30˚ and saturated density as 1.6g/cc. The water table is located at 3.0m below the top of the backfill. Draw the lateral earth pressure diagram for which the wall should be designed. Compute the magnitude of total active earth pressure and its point of application. [8M]

(OR)

4. a) Describe the factors effecting the stability of Infinite and finite earth slopes in sand and clay? [6M]
   b) Describe Taylors stability number? Explain its application in determining stability of dams and embankments for different conditions? [8M]

UNIT-III

5. a) What are various types of foundation? Describe the criteria for selection of particular type of foundation? [5M]
   b) Write about Terzaghi's Bearing capacity theory and derive the equation for evaluating bearing capacity under a strip footing? [9M]

(OR)

6. a) Describe any two analytical methods for determining bearing capacity? [8M]
   b) What are various types of bearing capacities? Explain different criteria considered in determination bearing capacity? [6M]

UNIT-IV

7. a) What are the allowable settlements for different types of structures? List out the problems associated with excess settlement of structures both uniform and differential? [5M]
   b) Describe any three empirical methods to predict the safe bearing capacity using SPT N value? [9M]

(OR)

8. a) What are the limitations of plate load test for determining bearing capacity and allowable settlement of foundations? [6M]
   b) A 2m x 3m rectangular footing is lying on a cohesive soil with elasticity modulus of 4×10^5 kPa and poison's ration of 0.5. If the load acting on the foundation is 200 kPa, determine the immediate settlement at centre of footing for both flexible and rigid considerations? Assume additional data if necessary? [8M]

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UNIT-V

9. a) Explain various classifications of pile foundations?   [6M]
    b) Describe different tests conducted for pile load test determination.   [8M]

(OR)

10. a) Describe different components of well foundation and explain their functions in detail?   [8M]
    b) Explain design criteria for well foundations?   [6M]

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