

FACULTY OF ENGINEERING
BE 4/4 (Civil) II Sem. (Main & Backlog) Examination, May/June 2019

Sub: Ground Improvement Techniques (Elective-II)

Time: 3 Hours

Max Marks: 75

Note: Answer All Questions From Part-A, & Any Five Questions From Part-B.

PART – A (25 Marks)

1. What is stabilization? What are the different methods of Stabilization? 2M
2. Define "Groutability ratio". State its significance. 2M
3. What is meant by stone columns? Explain. 2M
4. It is required to improve bearing capacity of a soil. Identify the function of geo synthetic that serves the purpose. Also name the appropriate geo-synthetic product. 3M
5. What is "Curtain grouting" and Blanket grouting"? 2M
6. What are the different methods of De-watering systems? 2M
7. What is geo-textile? What are the types of geo-textiles? 3M
8. What is the use of geo-textile in erosion control? 3M
9. What is the principle of Reinforced earth? 3M
10. Discuss the proportioning technique in Soil Stabilization. 3M

PART – B (50 Marks)

11. At a given site, Black cotton soil is present to a depth of 8 m below the ground level. It is proposed to construct a single storied building at this site resting it on a raft foundation laid at a depth of 2 m below ground level. Discuss the need for ground improvement of this ground and suggests the ideal ground improvement technique. 10
12. a) Explain the principle and applications of Soil-cement stabilization. 5
 b) Explain the design procedure involved in soil-cement mix for stabilization of soils. 5
13. a) Briefly discuss the basic differences between Vibro-compaction and Vibro displacement compaction. 5
 b) Describe the Vibro-flotation techniques and state its merits and demerits? 5
14. a) Write a note on Vacuum method of in-situ densification of Cohesive soils and discuss the necessary condition for its effectiveness. 5
 b) Give comment on principle and process of fabric bag filters. Explain the concept of Pre-fabricated vertical drains and what are its merits and demerits. 5
15. a) Explain the classification of geo-textile? Why the use of Geo-textile is preferred over the other construction materials. 5
 b) Explain the mechanism involved in soil reinforcement duly giving emphasis to the stability of a vertical retaining wall. 5
16. a) Define grouting? What are the different methods of grouting? Explain any one briefly? 5
 b) Write a detailed note on Compaction by blast? 5
17. Write short note on **TWO** the following. (2x5=10)
 a) Stone columns
 b) Wick drains
 c) Pre-Compression
