

Reg. No. : **E N G G T R E E . C O M**

**Question Paper Code : 20465**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fifth Semester

Civil Engineering

CE 3016 — GROUND IMPROVEMENT TECHNIQUES

(Regulations 2021)

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Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Ground improvement.
2. What did you mean by the electro-osmotic dewatering method?
3. List the various methods of in-situ densification.
4. Define sand compaction Pile.
5. Infer the advantages of encased stone column.
6. Define Soil nailing.
7. Write the concept behind soil reinforcement.
8. Define Geosynthetics.
9. Indicate the basic requirements of grout.
10. State the principle behind Electro-chemical stabilization.

PART B — (5 × 13 = 65 marks)

11. (a) Explain the various methods of ground improvement techniques.

Or

- (b) Describe the well-point system of dewatering with neat sketches.

12. (a) Explain the dynamic compaction method of cohesionless and dynamic Consolidation of cohesive soil.

Or

- (b) Explain the methods of soil liquefaction mitigation.

13. (a) Discuss about the following preloading :

- (i) Sand Drains (3)  
(ii) Wick Drains (3)  
(iii) Sand Wicks (3)  
(iv) Plastic Wicks. (4)

Or

- (b) Describe in detail about Soil nailing and when it was adopted for the suitable situation.

14. (a) Explain the various applications of reinforced earth for ground improvement with neat sketches.

Or

- (b) Explain in detail how geosynthetics can be used as soil reinforcement with suitable sketches.

15. (a) Elaborate the various methods of grouting with neat sketches.

Or

- (b) Describe the various methods of grout injection and the necessity of grout monitoring.

PART C — (1 × 15 = 15 marks)

16. (a) Describe in detail how chemicals are used in stabilizing the soil with the help of an typical example.

Or

- (b) Discuss in detail how expansive Clays are stabilized with a suitable example.