

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SEVENTH SEMESTER B.TECH DEGREE EXAMINATION (S), FEBRUARY 2024**CIVIL ENGINEERING****(2020 SCHEME)****Course Code : 20CET421****Course Name: Ground Improvement Techniques****Max. Marks : 100****Duration: 3 Hours****PART A*****(Answer all questions. Each question carries 3 marks)***

1. Comment on the role of ground improvement in foundation engineering.
2. Outline an emerging trend in ground improvement.
3. List the advantages and disadvantages of vibroflotation method.
4. Differentiate between deep compaction and shallow compaction methods.
5. Explain the needs of dewatering in a construction site.
6. Summarize electro-osmotic method of ground improvement.
7. List the advantages of the soil-reinforcement technique.
8. Describe a micropile. List its applications.
9. Enumerate the different classifications of grout. Explain them in detail with Examples.
10. Discuss the mechanism of lime stabilization in soils.

PART B***(Answer one full question from each module, each question carries 14 marks)*****MODULE I**

11. a) List the various ground improvement methods practiced in engineering works. Explain any four techniques and its suitability in the field. (10)
- b) Describe microbial method of ground improvement. (4)

OR

12. a) Enumerate the factors that should be considered while selecting a suitable ground improvement technique for any soil. (8)
- b) Identify two problematic soils in India and suggest suitable methods of ground improvement for these soils. (6)

MODULE II

13. a) Explain the design considerations for dynamic compaction. (8)
- b) Describe the properties of compacted soil. (6)

OR

14. a) Describe stone column. Explain its method of construction. (8)
b) Describe blasting technique for ground improvement. (6)

MODULE III

15. a) Illustrate the different methods of dewatering systems. (8)
b) Describe blanket drains, foundation drains and interceptor drains. (6)

OR

16. a) Illustrate different types of vertical drains and list its advantages. (8)
b) Describe the method of preloading, also list its advantages and disadvantages. (6)

MODULE IV

17. a) Describe the functions of geosynthetics in civil engineering applications. (10)
b) Enumerate the different types of reinforcements used in a reinforced earth wall? (4)

OR

18. a) Explain the design considerations of Reinforced Earth wall. (7)
b) Explain the procedure for soil nailing. Also mention the various materials used for soil nailing. (7)

MODULE V

19. a) Describe cement stabilization of soil and the factors affecting cement stabilization. (8)
b) List and explain any six desirable characteristics of grouting material. (6)

OR

20. a) Illustrate grouting techniques used for ground improvement. (9)
b) Describe thermal stabilization of soil by heating. (5)
