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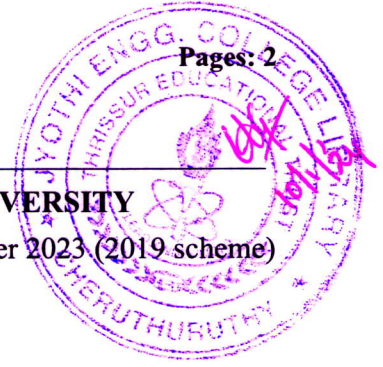
Pages: 2

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S7 (R, S) / S5 (PT) (R, S) Examination December 2023 (2019 scheme)



Course Code: CET423

Course Name: GROUND IMPROVEMENT TECHNIQUES

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

- 1 List the various ground modification techniques practiced in Engineering works. (3)
- 2 What is meant by Problematic soil? (3)
- 3 Explain the difference between Deep compaction and Shallow compaction. (3)
- 4 Write short note on lime pile. (3)
- 5 Explain the dewatering method using open sump. (3)
- 6 Discuss how dewatering techniques improve soil condition. (3)
- 7 Enumerate the applications of geotextiles in different works (3)
- 8 What are the merit and demerit of micropiles? (3)
- 9 Explain in detail Mechanism of lime stabilisation (3)
- 10 What is meant by the term groutability? (3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

- 11 a) Explain the Microbial method of ground improvement in detail. (7)
- b) What are the Needs of ground improvement in foundation engineering? (7)

OR

- 12 a) Explain any two ground modification techniques and its suitability in the field. (7)
- b) What are the factors that should be considered in the selection of the best ground improvement technique? Explain in detail. (7)

Module II

- 13 a) Describe the Vibro-flotation method for cohesionless soil. (6)
- b) Explain the installation procedure for Stone column with a neat sketch. (8)

OR

14 a) Explain in detail different Vibration methods for ground improvement techniques. (6)

b) Explain the deep compaction method using explosion with a neat sketch. (8)

Module III

15 a) How is single stage well point system different from multi- stage well point system.? Explain with the help of suitable diagrams. (8)

b) Explain the Vacuum methods of dewatering. (6)

OR

16 a) How is dewatering carried out during excavation? Explain. (8)

b) Discuss the uses of single stage well point installation. (6)

Module IV

17 a) Explain the properties of materials to be selected as Geosynthetics. (6)

b) Explain in detail Soil nailing its construction sequence and its applications. (8)

OR

18 a) Discuss the construction sequence of Micro pile with suitable sketches. (8)

b) Describe in detail the design considerations for reinforced earth wall (6)

Module V

19 a) Write short notes on Compaction grouting, penetration grouting, jet grouting, and displacement grouting? (8)

b) Explain the principles of ground freezing with its uses and advantages. (6)

OR

20 a) Explain in details the concept of cement stabilization. (7)

b) Explain the merits and demerits of grouting techniques. (7)
