

B

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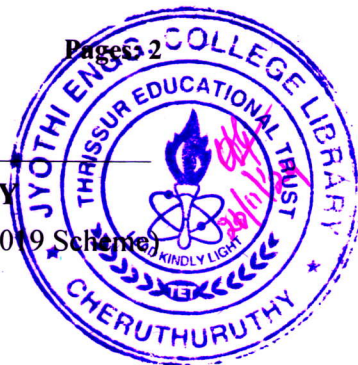
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Reg No.: _____

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S7 (R, S) / S5 (PT) (R,S) Examination November 2024 (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 | Discuss the Needs of ground improvement in foundation engineering? | (3) |
| 2 | List the emerging trends in ground improvement techniques. | (3) |
| 3 | Discuss the effect of sand compaction piles in cohesive soils. | (3) |
| 4 | Describe the effect of compaction on the properties of soil? | (3) |
| 5 | Discuss the dewatering method using open sumps. | (3) |
| 6 | Explain Vacuum dewatering method. | (3) |
| 7 | Explain the different types reinforcing materials. | (3) |
| 8 | Illustrate any one application of geotextile in pavements. | (3) |
| 9 | Explain thermal method of soil stabilization. | (3) |
| 10 | What are the factors controlling the characteristics of lime treated clay? | (3) |

PART B

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

Module I

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|----|--|-----|
| 11 | a) Explain the objectives and benefits of adopting ground improvement techniques. | (6) |
| | b) Discuss the classifications of ground improvement techniques based on the mechanism by which the engineering properties of soil are improved. | (8) |

OR

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|----|--|-----|
| 12 | a) Name any six material and its properties used for ground improvement. | (6) |
| | b) Explain the Microbial method of ground improvement in detail. | (8) |

Module II

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|----|--|-----|
| 13 | a) Describe proctor needle method for compaction control. | (7) |
| | b) Explain dynamic compaction method using neat sketch. Also explain the design considerations for dynamic compaction. | (7) |

OR

- 14 a) What is Stone column? Explain its method of construction and basic design parameters. (14)

Module III

- 15 a) Explain the installation procedure of PVDs with a neat sketch. (6)
b) Explain preloading technique with a neat sketch. List the advantages and disadvantages of preloading. (8)

OR

- 16 a) Discuss different types of drains used in dewatering. (6)
b) Explain the dewatering method using well points. What are the advantages and disadvantages of well point systems? (8)

Module IV

- 17 a) Discuss the functions of Geosynthetics. (6)
b) What is a micro pile? Explain the construction procedure for a micro pile. (8)

OR

- 18 a) Discuss the basic concept and construction sequences of soil nailing with the help of neat sketches. (14)

Module V

- 19 a) Explain the mechanism of lime stabilization. (10)
b) Explain the concept of soil-cement stabilization. (4)

OR

- 20 a) Explain a) Particulate grouting, b) Jet grouting, c) Compaction grouting, and d) Displacement grouting. (10)
b) Explain the term groutability. (4)
