

R18

Code No: 157BV

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, July/August - 2023

GROUND IMPROVEMENT TECHNIQUES

(Civil Engineering)

Time: 3 Hours

Max.Marks:75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

- 1.a) What are the sustainable method of ground improvement? [2]
- b) List out the objectives of ground modification. [3]
- c) What do you understand by compaction piles? [2]
- d) What are the objectives of field compaction? [3]
- e) What are the requirements of hydraulic modification? [2]
- f) What are the requirements a drain should satisfy? [3]
- g) What are suspension grouts? [2]
- h) What are the basic requirements of grouting? [3]
- i) List out the properties of geogrids. [2]
- j) Write down the limitations of soil reinforcement. [3]

PART – B

(50 Marks)

- 2.a) What are the various ground improvement techniques? Write their suitability with respect to the soil type.
- b) Explain briefly the criteria for identification of soil types for ground modification.[5+5]

OR

3. Explain the various thermal methods of densifying cohesive soils. [10]

- 4.a) What are the shallow soil compaction equipments? Discuss their suitability for different soils.
- b) What is Dynamic Compaction? Discuss how it is carried out. Also write its benefits and limitations. [5+5]

OR

- 5.a) Explain the objectives of densification in cohesionless soils.
- b) Discuss the benefits and limitations of blasting method of soil densification. [5+5]

- 6.a) How dewatering methods improve the strength characteristics of a soil? Explain in detail.
- b) Explain the ground modification by heavy tamping. [5+5]

OR

- 7.a) Explain the practical situation and purpose with examples where the dewatering techniques are employed commonly.
- b) Explain in detail the advantage of using vertical drains along with preloading? [5+5]

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- 8.a) Explain briefly different types of grouting techniques.
b) What are the various admixtures used in stabilization of soil? Describe in detail the engineering benefits of lime modification of soils. [5+5]

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- 9.a) List out four physical characteristics of grouting liquid relevant to engineering applications.
b) Discuss the factors that influence the grout requirement. [5+5]

- 10.a) Describe the construction of a reinforced earth wall with the help of neat sketches for different stages.
b) Give the applications of reinforced earth in civil engineering and the principles governing reinforced earth. [5+5]

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- 11.a) Explain the advantages and disadvantages of reinforced earth walls over the traditional retaining walls.
b) Discuss about the soil nailing. [5+5]

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