Code No: 157BV **R18**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, February - 2025

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)	Write the behavior of soft soil.	[2]
b)	Write any three objectives of ground improvement.	[3]
c)	How do you identify loose sand?	[2]
d)	How do you assess a soil is loose and soft using SPT N?	[3]
e)	Write the uses of dewatering.	[2]
f)	Write about single well point method of dewatering.	[3]
g)	When do you prefer thermal freezing of soil?	[2]
h)	List out the solid wastes used in soil stabilization.	[3]
i)	When do you prefer soil reinforcement technique?	[2]
j)	Write about guniting technique.	[3]

PART – B

(50 Marks)

2.a) What are the problematic soils? How do you identify swelling type soil?
b) Write the objectives of ground modification. [5+5]

OR

3.a) List the various methods of ground modification and write their suitability for different soils.
b) What is shallow compaction? Write the method of filed compaction by rollers. [5+5]

4. When do you prefer stone column technique? Write the method of installation of stone column and also enlist advantages and limitations of the stone column method. [10]

OR

5. Explain the deep compaction method called “vibro comoaction” employed in densifying the loose sand. Also write the advantages and limitations of vibro compaction technique. [10]

6. Enlist various dewatering methods. Explain electro-kinetic dewatering method with clear illustrations mentioning advantages and limitations. [10]

OR

7. Discuss salient points involved in design of dewatering system. [10]

8. Write the grout materials and their suitability. Explain in detail the process of jet grouting carried out in modifying the in-situ soil. [10]

OR

9. Discuss about soil fracture grouting and materials used in it. Also explain how you ensure quality of the soil treated with grouting. [10]

10. Discuss the importance of soil reinforcement and write its limitations. Explain step by step how do you carry out soil nailing in-situ. [10]

OR

11. Write the purpose of ground anchors. Explain installation of ground anchors mentioning various components in it. [10]

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