

R18

Code No: 157BV

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, December-2023/January-2024

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) Define degree of compaction and write its importance. [2]
- b) What is ground freezing? When do you prefer it? [3]
- c) How do you assess a clay soil consistency using consistency index? [2]
- d) What is density index? Write its importance. [3]
- e) Write about gravity dewatering. [2]
- f) How do you measure pore water pressure? Write the effects of it in construction. [3]
- g) Write about fracture grouting. [2]
- h) How do you ensure quality of compaction grouting? [3]
- i) What is soil nailing? [2]
- j) Write about guniting process. [3]

PART – B

(50 Marks)

2. List various improvement methods of ground. Explain, the need and objectives of ground modification. [10]

OR

- 3.a) How do you identify a soil require improvement? Discuss. [5]
- b) What are the problematic soils? Explain their behaviour. [5]
- 4.a) Describe the vibrocompaction technique of densifying cohesive soil. [5]
- b) Explain the impact at ground surface method of densifying granular soils. [5]

OR

- 5.a) Describe the method of densification by Blasting? Explain its effectiveness. [5]
- b) How can you densify cohesion less soil with the help of vibro compaction technique? [5]
- 6.a) Explain the open sumps and vacuum well dewatering systems. [5]
- b) What are the filter requirements of a filler material around the drains? [5]

OR

- 7.a) Discuss how the stress history of a soil deposit affects its suitability for preloading with vertical drains. [5]
- b) Explain single and multistage well point system of dewatering. [5]

QA QA QA QA QA QA QA G

- 8.a) What is a grout? Explain in detail the applications of grouting.
b) Describe about jet grouting method and also write its limitations.

[5+5]

QA QA QA QA QA QA QA QA QA G

- 9.a) Discuss the applicability of industrial wastes in soil stabilization.
b) Explain in detail the mechanical soil stabilization.

[5+5]

10. Explain the steps involved in designing reinforced earth wall and also discuss about various modes of failures occur in it.

[10]

OR

QA QA QA QA QA QA QA QA QA G

11. Explain with clear illustrations, the principle involved in geotextile materials reinforcement for improving the bearing capacity of soil.

[10]

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QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G