Reg No.:_____ Name:_____

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (S, FE) / S6 (PT) (S, FE) Examination May 2023 (2015 Scheme)

Course Code: CE362

Course Name: Ground improvement techniques

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks. Marks

1 a) Describe examples of three geotechnical problems that can be caused by problematic soil. (6)

b) Explain the construction procedure of jet grouting with neat sketches. (9)

2 a) Write short note on pre-grouting site investigation. (6)

b) Describe the group of materials used in practice for reclamation purpose. (9)

3 a) How can ground improvement methods be classified based on their function? (5)

b) Draw a typical layout of a grouting plant and explain the function of each unit. (10)

PART B

Answer any two full questions, each carries 15 marks.

4 a) Explain how the engineering properties of soil are changed by the addition of calcium and sodium chloride. (5)

b) What are the key differences between ground anchors and soil nails? (5)

c) Illustrate five applications of ground anchors. (5)

5 a) What are the advantages and limitations of ground anchors? (5)

b) Explain the principle of soil-cement stabilization. (5)

c) What are the factors affecting bituminous stabilization of soil. (5)

6 a) Explain the different construction methods used in soil cement stabilization. (7½)

b) Define soil nailing technique. Explain with neat sketches the installation sequence of soil nailing. (7½)

PART C

Answer any two full questions, each carries 20 marks.

7	a)	With the help of neat sketches, explain vibro-compaction and vibro replacement methods.	(10)
	b)	Explain vacuum dewatering system with a neat sketch.	(10)
8	a)	What are the advantages and limitations of deep dynamic compaction?	(6)
	b)	Explain why deep dynamic compaction is less effective for saturated fine-grained soil.	(4)
	c)	Explain about the design parameters of dewatering system.	(10)
9	a)	What are the main purposes of dewatering system?	(6)
	b)	What are the advantages and limitations of open sump and ditches dewatering method?	(4)
	c)	Explain any four types of rollers used in compaction with its operational aspects.	(10)

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