

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SIXTH SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 2019

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.

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| 1 | a | Classify the major soil deposits in India based on different climatic conditions and amount of rainfall. | (8) |
| | b | What do you mean by the term “reclaimed” soil? Mention any two materials with specifications that are used in practice for reclamation purposes along with their drawbacks. | (7) |
| 2 | a | Which are the various approaches incorporated in association with ground improvement potential? Identify the various ground/soil conditions on the basis of these approaches. | (9) |
| | b | List the various ground modification techniques practiced in Engineering works. Explain any two ground modification techniques and its suitability in the field. | (6) |
| 3 | a | What is the principle behind the technique of grouting? According to Koerner, which are the basic functions of soil and rock grouting? | (5) |
| | b | What do you mean by “one shot” and “two shot” systems? Explain with neat sketches. | (5) |
| | c | Discuss the advantages and disadvantages of compaction grouting. | (5) |

PART B

Answer any two full questions, each carries 15 marks.

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| 4 | a | How do polymers stabilize soil? Mention five natural resins used to stabilize soil along with their functions. | (9) |
| | b | Differentiate between cement and bituminous stabilization of soil | (6) |
| 5 | a | Explain the step – wise procedure for the construction of soil asphalt. Also mention the tests conducted to control the quality of work. | (8) |
| | b | Mention any four basic types of lime. How is lime stabilized base constructed? | (7) |
| 6 | a | Explain the procedure for the construction of soil nail. Also mention the various | (8) |

materials used for soil nailing.

- b What is the significance of addition – removal technique in mechanical stabilization of soil? (7)

PART C

Answer any two full questions, each carries 20 marks.

- 7 a How does particle size distribution affect moisture - density relationship when densified? Explain with suitable curves/ plots. (16)
- b What are the suitability criteria for the various shallow surface compaction methods? (4)
- 8 a How can we check or control the quality of compaction? (5)
- b Mention the various deep compaction techniques. Explain any two in detail with suitable sketch. (15)
- 9 a How does compaction affect the shear strength of soil? (4)
- b Differentiate between progressive system and ring system of well point installation. (6)
- c How is single stage well point system different from multi- stage well point system. Explain with the help of suitable diagrams. (10)
