

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**SIXTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018**

**Course Code: CE 362**  
**Course Name: GROUND IMPROVEMENT TECHNIQUES**

Max. Marks: 100

Duration: 3 Hours

**PART A**

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

- |   |    |  |   |
|---|----|--|---|
| 1 | a) | What are the factors that should be considered in the selection of the best ground improvement technique?              | 5 |
|   | b) | What are the different aspects of grouting?  | 5 |
|   | c) | Explain briefly the major distribution of soil in India.   | 5 |
| 2 | a) | What is the difference between suspension grout and solution grout?  | 5 |
|   | b) | Write any 3 applications of grouting with neat sketches.   | 5 |
|   | c) | What is reclaimed soil? Explain the different types of reclamation materials.  | 5 |
| 3 | a) | What are the different ground conditions which will enable an engineer to decide a proper treatment approach? Explain. | 5 |
|   | b) | Explain compaction grouting using neat sketches.   | 5 |
|   | c) | Briefly explain the grouting procedure for any type of grouting.   | 5 |

**PART B**

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

- |   |    |   |   |
|---|----|---|---|
| 4 | a) | Write a short note on soil nailing.   | 5 |
|   | b) | Explain briefly soil bitumen stabilization.   | 5 |
|   | c) | Explain the principle of soil-lime stabilization.   | 5 |
| 5 | a) | What do you understand about fly ash stabilization?   | 5 |
|   | b) | Write short notes on ground anchors.  | 5 |
|   | c) | Explain how the engineering properties are changed by the addition of calcium and sodium chlorides. | 5 |
| 6 | a) | Explain the principle and mechanism of cement stabilization.  | 8 |
|   | b) | Write short notes on rock bolts.  | 7 |

**PART C**

*Answer any two full questions, each carries 20 marks.*

- 7 a) Explain well point system of dewatering for ground improvement. 7  
b) With neat sketches, explain vibro-compaction method. 7  
c) What is vacuum dewatering method? Explain. 6
- 8 a) Explain the electro-osmotic method of dewatering for ground improvement. 7  
b) What are the different shallow surface compaction methods? Explain. 7  
c) Explain the deep compaction method of explosion with a neat sketch. 6
- 9 a) Briefly explain dynamic compaction method using neat sketches. 7  
b) Explain the moisture-density relationship for different compaction energy. 7  
c) Explain the dewatering method using open sump and ditches. 6

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