Model Question Paper

Reg.No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SEVENTH SEMESTER B. TECH DEGREE EXAMINATION

Course Code: CET423

Course Name: GROUND IMPROVEMENT TECHNIQUES

Max.Marks:100 Duration: 3Hours

PART A

Answer all questions; each question carries 3 marks.

(10×3 marks = 30 marks)

1. Explain the importance of Ground improvement in foundation engineering.
2. Name any five-material used for ground improvement.
3. Explain the blasting method used for Ground improvement.
4. Write note on Column techniques for Ground improvement.
5. How Electro osmotic method is applied for Ground Improvement.
6. Write note on the importance of lowering the ground water in a construction site.
7. Outline the use of micro pile as ground improvement choice.
8. List different type of geosynthetics.
9. list the different type of grouting material used for ground improvement?
10. Explain method of stabilisation using cement.

PART B

Answer one full question from each module (14 × 5 = 70 Marks)

Module I

11. (a) Categories different ground improvement methods based on the soil suitability (7)
    (b) Explain the property of material suitable for ground improvement (7)
12. (a) List the different method of insitu ground improvement techniques and its applications (10)
    (b) Explain the properties of material used for ground improvement (4)

Module II

13. (a) Explain the Dynamic Compaction for Ground improvement. (10)
    (b) Explain about the compaction control (4)
14. (a) Outline how the ground improvement are achieved by vibration techniques. (7)
    (b) What is Stone column? Explain its method of construction (7)

Module III

15. (a) Explain the application of vertical drain. (7)
    (b) What is PVD? Explain its advantage over other drains. (7)
16. (a) Illustrate the well point system of dewatering. (7)
    (b) Explain about different drains facility (7)

Module IV

17. Illustrate the application of geo-textile as (a) Filtration (b) Drainage (c) Erosion control.
18. Explain the design considerations of a) Reinforced Earth wall (b) Soil nailing

Module V

19. (a) Explain Grouting technique used for Ground Improvement. (10)
    (b) Explain the principle of ground freezing (4)
20. Describe the chemical aspects of lime stabilisation and its effects on adjacent soil.

Reg No.:_____ Name:_____

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree Regular and Supplementary Examination July 2021

Course Code: CE362

Course Name: GROUND IMPROVEMENT TECHNIQUES

Max. Marks: 100 Duration: 3 Hours

Instruction: ***Draw neat sketches where necessary***

PART A

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

1	a)	Illustrate typical applications of grouting.	(9)
	b)	Discuss the main points involved in ground improvement potential.	(6)
2	a)	Assume that you are a geotechnical engineer and you are asked to suggest suitability of materials for reclamation of a construction site. Discuss the suitability of any two materials you would choose for the reclamation of the site.	(9)
	b)	Classify the materials used for grouting.	(6)
3	a)	Discuss the suitability of ground modification techniques according to different site conditions.	(8)
	b)	Illustrate the method of permeation grouting to be done in a construction site.	(7)

PART B

Answer any two full questions, each carries 15 marks.

4	a)	Briefly explain the applications of ground anchors.	(5)
	b)	Illustrate the construction method of lime stabilization in a typical pavement site.	(10)
5	a)	Discuss how calcium chloride affects properties of soil.	(5)
	b)	Illustrate the mechanism of rock bolt action around an excavation.	(10)
6	a)	Discuss the effects of cement, on soil properties, used in chemical stabilization.	(8)
	b)	Illustrate the sequence of soil nailed wall construction.	(7)

PART C

Answer any two full questions, each carries 20 marks.

7 a) Briefly discuss the situations where the hydraulic modification techniques are being used (10)

b) Assume that you are a geotechnical engineer in a construction site which consists of fine sand and silt. Explain briefly, any one deep dynamic compaction technique for ground improvement with justification. (10)

8 a) Illustrate the deep well drainage system and its practical applications. (10)

b) Explain the significance of moisture-density relationships in the compaction of soils. (10)

9 a) Assume that you are a practicing geotechnical engineer. Illustrate with neat sketch how you will protect a finished structure from seeping ground water. (12)

b) Write a short note on any one compaction control test (8)

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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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Course Name: GROUND IMPROVEMENT TECHNIQUES

Max. Marks: 100 Duration: 3 Hours

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	b)	Explain compaction grouting using neat sketches.	5
	c)	Briefly explain the grouting procedure for any type of grouting.	5

PART B

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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SIXTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), MAY 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. Marks

1 a) Write on Ground Improvement potential. (5)

b) What are the applications of grouting? Describe with the help of neat diagrams. (10)

2 a) Give notes on different types of ground improvement techniques. (8)

b) Discuss on permeation grouting. (7)

3 a) What are the aspects and factors affecting grouting? (8)

b) Write short note on jet grouting. (7)

PART B

Answer any two full questions, each carries 15 marks.

4 a) What are different mechanisms involved in lime stabilization? (5)

b) What are ground anchors? What are its components and applications? (10)

5 a) Write short note on lime fixation point and optimum lime content. (6)

b) List out and explain the effect of lime on physical and engineering properties of soil. (9)

6 a) Discuss the process of cement stabilization in the field. (7)

b) Write short note on soil nailing. (8)

PART C

Answer any two full questions, each carries20 marks.

7 a) What is the range of depth of penetration of compaction if a weight of 40,000 kg is dropped from a height of 20 m on the ground surface? (8)

b) Write short note on the methods of dewatering. (12)

8 a) What are different compaction control tests in the field? Explain. (10)

b) Write short note on well point systems. (10)

9 a) Discuss on the properties of compacted soil. (10)

b) Differentiate between vacuum dewatering and electro osmosis. (5)

c) List out different types of compaction techniques for ground improvement. (5)

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Reg No.:_____ Name:_____

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Course Code: CE362

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