

**BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(AUTONOMOUS)**

III - B.TechII-Semester Regular Examinations (BR23), MAY - 2026

GROUND IMPROVEMENT TECHNIQUES (CIVIL)

Time: 3 hours

Max. Marks: 70

Question Paper consists of Part-A and Part-B

*Answer ALL the question in **Part-A and Part-B***

PART-A (10X2 = 20M)

	Marks	CO	BL
1. a) What is vibro-compaction?	(2M)	CO1	L1
b) Define stone columns.	(2M)	CO1	L1
c) Define well point system.	(2M)	CO2	L1
d) State any one application of horizontal wells.	(2M)	CO2	L2
e) Define lime stabilization.	(2M)	CO3	L1
f) State one application of fly ash in soil stabilization.	(2M)	CO3	L2
g) Define soil nailing.	(2M)	CO4	L1
h) Name any one component of reinforced earth wall.	(2M)	CO4	L1
i) Define geotextiles.	(2M)	CO5	L1
j) State one application of geogrids.	(2M)	CO5	L2

PART-B (5X10 = 50M)

2a. Describe the working mechanism of impact-based compaction methods used in field conditions.	5(M)	CO1	L2
b. Explain how vertical drains accelerate consolidation in saturated clay deposits.	5(M)	CO1	L2
(OR)			
3. Elaborate on ground improvement methods adopted for soft cohesive soils, emphasizing the role of drainage and load application in accelerating consolidation.	10(M)	CO1	L4
4. Analyze various dewatering techniques and recommend suitable methods for deep excavations in different soil conditions.	10(M)	CO2	L4
(OR)			
5a. Outline the procedure involved in installing a well point system at a construction site.	5(M)	CO2	L2
b. Explain the role of filter materials in preventing soil loss during dewatering operations.	5(M)	CO2	L2
6. Evaluate different soil stabilization methods and discuss their effectiveness based on soil type and engineering requirements.	10(M)	CO3	L4
(OR)			

7a.	Explain the mechanism of bitumen stabilization in improving soil strength.	5(M)	CO3	L2
b.	Describe the stages involved in a typical grouting operation.	5(M)	CO3	L2
8a.	Explain the concept of load transfer in reinforced soil systems.	5(M)	CO4	L2
b.	Describe the construction procedure of soil nailing technique.	5(M)	CO4	L2
(OR)				
9.	Analyze the stability aspects of reinforced earth structures and discuss design considerations under different loading conditions.	10(M)	CO4	L4
10	Evaluate the performance of various geosynthetic materials and justify their selection for different geotechnical engineering applications.	10(M)	CO5	L4
(OR)				
11a	Explain the separation and filtration functions of geotextiles in soil systems.	5(M)	CO5	L2
b.	Describe the role of geomembranes in containment applications.	5(M)	CO5	L2
