Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)

B. Tech (Sixth Semester – Regular/Supplementary) Examinations, April 2025

21BCVOE36011 /22BCVOE36011 – Ground Improvement Techniques

(Civil Engineering)

Time: 3 hrs   Maximum: 70 Marks

Answer ALL questions
(The figures in the right hand margin indicate marks)

PART – A   **(2 x 5 = 10 Marks)**

Q.1. Answer *ALL* questions

		CO #	Blooms Level
a.	Mention any two situations where ground improvement is necessary.	CO1	K1
b.	Write a short note on electro-kinetic dewatering.	CO2	K2
c.	What is the function of grouting?	CO2	K1
d.	What is meant by ground thawing?	CO3	K2
e.	How does temperature affect soil behavior?	CO4	K1

PART – B   **(15 x 4 = 60 Marks)**

Answer *All* the questions

		Marks	CO #	Blooms Level
2. a.	List and explain the classification of ground improvement techniques.	8	CO1	K2
b.	Discuss how soil characterization affects the ground improvement process.	7	CO1	K3
	(OR)			
c.	Analyze the challenges faced during ground improvement in urban areas.	8	CO1	K3
d.	How do technological advancements impact ground improvement solutions?	7	CO1	K2
3.a.	Explain the construction and benefits of stone columns.	8	CO2	K3
b.	Discuss the principle and process of hydraulic dewatering systems.	7	CO2	K2
	(OR)			
c.	Compare mechanical and hydraulic ground improvement methods.	8	CO2	K2
d.	Discuss site considerations for choosing a mechanical improvement method.	7	CO2	K2
4.a.	Explain the role of industrial waste in ground improvement.	8	CO3	K2
b.	Describe the mechanism of lime and cement stabilization.	7	CO3	K2
	(OR)			
c.	Discuss the procedure and applications of grouting.	8	CO3	K3
d.	Discuss factors affecting the effectiveness of chemical stabilization.	7	CO3	K3
5.a.	Explain the principle and methods of ground freezing.	8	CO4	K2
b.	Explain how ground freezing enhances excavation stability.	7	CO4	K3
	(OR)			
c.	Write a case study on thermal stabilization in soft soil	8	CO4	K4
d.	Discuss the environmental concerns of thermal ground improvement.	7	CO4	K3

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