



**GIET UNIVERSITY, GUNUPUR – 765022**  
**B. Tech (Sixth Semester Regular) Examinations, May – 2024**  
**21BCVOE36001 - Ground Improvement Technique**  
 (Civil)

Time: 3 hrs

Maximum: 70 Marks

(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. What is ground improvement and why is it necessary?                    | CO1  | K1           |
| b. What are the different types of soil stabilization techniques?         | CO1  | K1           |
| c. What is the difference between One Shot and Two Shot Grouting?         | CO3  | K4           |
| d. Differentiate between suspended grout and solution grout.              | CO3  | K4           |
| e. Name any three methods for in situ densification of cohesionless soil. | CO2  | K1           |

**PART – B****(15 x 4 = 60 Marks)**Answer **ALL** questions

|  | Marks | CO # | Blooms Level |
|--|-------|------|--------------|
| 2. a. What do you mean by<br>(i) Preloading<br>(ii) Sand Drain<br>(iii) Wick Drain.  | 8     | CO2  | K2           |
| b. What is compaction and why is it important in construction projects?<br>(OR)  | 7     | CO2  | K2           |
| c. What is the “Compaction of Soil”? Differentiate between the Standard Proctor Test and Modified Proctor Test.                | 8     | CO2  | K2           |
| d. Explain the following in detail:<br>(i) Normally Consolidated soil<br>(ii) Over consolidated soil<br>(iii) Sensitive Clays. | 7     | CO2  | K2           |
| 3.a. Describe the effect of vegetation, effect of temperature variation and effect of vibration on the soil near ground.       | 8     | CO1  | K3           |
| b. What do you mean by Ground Improvement Potential?<br>Explain the Hazardous, Poor and Favourable Ground Condition.<br>(OR)   | 7     | CO2  | K2           |
| c. Write short notes on the different compaction machinery used to compact the different soils in the field .                  | 8     | CO2  | K1           |
| d. What are the functions of filters in seepage control? Discuss the applications of filters and various filter criteria.      | 7     | CO3  | K2           |
| 4.a. What do you mean by dewatering system? Explain multi well point system and vacuum dewatering system in details.           | 8     | CO2  | K2           |
| b. Explain the Following methods of field compaction.<br>(i) Vibro-compaction Method<br>(ii) Blasting method                   | 7     | CO3  | K2           |

(OR)

- |      |  |   |     |    |
|------|--|---|-----|----|
| c.   | Discuss “Drains” and Enlist its type and also Explain Open Drain and Closed Drains with neat sketches. | 8 | CO2 | K2 |
| d.   | How does soil reinforcement work, and what are the different methods used for soil reinforcement?      | 7 | CO3 | K4 |
| 5.a. | Write short notes on   | 8 | CO2 | K2 |
|      | (i) Dynamic Consolidation  |   |     |    |
|      | (ii) Consolidation by Electro-osmosis.   |   |     |    |
| b.   | What do you mean by soil stabilization? Explain two different types of soil stabilization techniques.  | 7 | CO3 | K2 |

(OR)

- |    |  |   |     |    |
|----|--|---|-----|----|
| c. | Explain the following with neat sketches           | 8 | CO3 | K2 |
|    | (i) Compaction Grouting                            |   |     |    |
|    | (ii) Permeation Grouting                           |   |     |    |
|    | (iii) Hydro-fracture Grouting                      |   |     |    |
| d. | Explain the Thermal Soil Stabilization in Details. | 7 | CO4 | K2 |

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