

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM**  
**IV B. Tech I Semester Advanced Supplementary Examinations March 2025**

**GROUND IMPROVEMENT TECHNIQUES**

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

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**UNIT-I**

1. a) Discuss the advantage of using vertical drains along with preloading. [7M]  
b) Describe the in-situ densification methods of cohesive soils? [7M]  
(OR)
2. a) Explain the in-situ densification methods of granular soils at ground surface. [7M]  
b) Discuss the salient features of sand drains and geo-drains with the sketches wherever necessary. [7M]

**UNIT-II**

3. a) Explain the open sumps and vacuum well dewatering systems. [7M]  
b) Illustrate the mechanism and applications of Electro-Osmosis with a neat sketch? [7M]  
(OR)
4. a) Explain single and multistage well point system of dewatering. [7M]  
b) Describe advantages of open sumps and the interceptor ditches in dewatering? [7M]

**UNIT-III**

5. a) Explain the term Liquefaction, its effects & applications. [7M]  
b) Define grouting and explain its objectives. [7M]  
(OR)
6. a) Discuss polymer stabilization method and its applications. [7M]  
b) Explain the impact of flyash method in soil stabilization. [7M]

**UNIT-IV**

7. a) Discuss Reinforced earth wall and its components. [7M]  
b) Explain the design principles of reinforced earth walls. [7M]  
(OR)
8. a) Describe soil nailing and explain their applications? [7M]  
b) Explain reinforced earth and enumerate the field applications of reinforced earth. [7M]

**UNIT-V**

9. a) Explain the functions and field applications of geosynthetics. [7M]  
b) Differentiate between Geogrids and Geomembranes. [7M]  
(OR)
10. a) Explain the functions and applications of gabions. [7M]  
b) Describe the separation and filtration functions of geotextiles and the applications of based on these functions? [7M]

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