



# CBCS SCHEME

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18CV644

Sixth Semester B.E. Degree Examination, Dec.2023/Jan.2024

## Ground Improvement Techniques

Time: 3 hrs.

Max. Marks: 100

- Note:** 1. Answer any FIVE full questions, choosing ONE full question from each module.  
2. Write neat and labelled sketches, where ever necessary.

### Module-1

- 1 a. Explain briefly the formation process of different types of Rocks and Soils. (10 Marks)  
b. List and explain about the effect of compaction on Soil properties. (10 Marks)

OR

- 2 a. Write a brief descriptive note on any four types of soils found in India. (10 Marks)  
b. List the different types of field compaction procedure and explain any two in brief. (10 Marks)

### Module-2

- 3 a. With the help of neat diagrams, explain :  
i) Single stage well point system  
ii) Multi stage well point system (10 Marks)  
b. Explain with neat sketch the concept of vertical drains. (10 Marks)

OR

- 4 a. Describe briefly the Electro – Osmosis dewatering method with help of a neat labelled diagram. (10 Marks)  
b. Write an Explanatory note on Design of dewatering systems taking into consideration the pipeline. Effect of Dewatering. (10 Marks)

### Module-3

- 5 Write short notes on:  
a) Sandwich technique  
b) Stabilization using chlorides  
c) Stabilization using Lignins  
d) Stabilization using hydroxides (20 Marks)

OR

- 6 a. In detail, explain the effect of cement stabilization on the following properties of soils.  
i) Permeability  
ii) Swelling and Shrinkage  
iii) Strength and deformation properties (10 Marks)  
b. Write short notes on :  
i) Bitumen stabilization  
ii) Fly ash stabilization (10 Marks)

**Module-4**

- 7 a. List and explain the effects of grouting on soils. (10 Marks)  
b. Explain briefly about  
i) Vibroflotation ii) Stone columns. (10 Marks)

**OR**

- 8 a. List and explain in detail, the different applications of grouting. (10 Marks)  
b. Briefly explain: i) Heavy tamping ii) Sand compaction piles. (10 Marks)

**Module-5**

- 9 a. Write short note on :  
i) Soil nailing and its applications  
ii) Micro piles and its applications (10 Marks)  
b. List the different types of Geosynthetics and explain in detail about any two types. (10 Marks)

**OR**

- 10 a. Explain in detail, about the following properties of Geosynthetics.  
i) Geometrical aspects  
ii) Mechanical properties  
iii) Filtration and Fluid transmission  
iv) Durability aspects (10 Marks)  
b. Briefly describe the concept of  
i) Thermal methods of ground improvement  
ii) Gabions and Crib walls. (10 Marks)

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