

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, NOVEMBER - 2024**

GROUND IMPROVEMENT TECHNIQUE

[Maximum marks: 100]

[Time: 3 Hours]

PART – A

Maximum marks: 10

I. (Answer *all* the questions in one or two sentences. Each question carries **2** marks)

1. Define compaction.
2. Define soil stabilisation.
3. Define Reinforced soil.
4. Define geosynthetics.
5. Give Mohr-Coulomb equation for total shear strength. **(5 x 2 = 10)**

PART – B

Maximum marks: 30

II. (Answer any *five* of the following questions. Each question carries **6** marks)

1. Explain the purpose of ground improvement technique.
2. List field compaction methods for ground improvement.
3. Explain cement stabilization.
4. Discuss the classification of grouting materials.
5. Explain the application of reinforced earth.
6. Explain the functions of geosynthetics.
7. Compare the compaction and consolidation of soil. **(5 x 6= 30)**

PART – C

Maximum marks: 60

(Answer *one full* question from each unit. Each full question carries **15** marks)

UNIT – I

- III.** (a) Explain vaccum dewatering system. (7)
- (b) Explain the method of lowering ground water table by well point system. (8)

OR

- IV.** (a) List down the objectives of dewatering. (7)
(b) Describe the method of deep well dewatering system. (8)

UNIT – II

- V.** (a) Write notes on bitumen stabilization. (7)
(b) Explain different applications of grouting. (8)

OR

- VI.** (a) Give constructional procedure for mechanical stabilisation of soil. (7)
(b) Explain jet grouting with its application. (8)

UNIT - III

- VII.** (a) Draw the reinforced earth wall and show all stages of construction. (7)
(b) Explain the applications of geo-synthetics. (8)

OR

- VIII.** (a) Explain the different types of geosynthetics used for ground improvement. (7)
(b) Explain the mechanism of reinforced earth. (8)

UNIT – IV

- IX.** (a) Explain direct shear test to measure the shear strength of soil. (7)
(b) Explain spring analogy by Terzaghi for primary consolidation of soil. (8)

OR

- X.** (a) Explain the laboratory procedure for determination of consolidation characteristics of soil. (7)
(b) List the advantages and disadvantages of direct shear test. (8)
