

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech. IV Year I Semester Regular & Supplementary Examinations October/November-2025**  
**GROUND IMPROVEMENT TECHNIQUES**

(Civil Engineering)

**Time: 3 Hours**

**Max. Marks: 60**

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- |   |   |     |    |      |
|---|---|-----|----|------|
| 1 | Explain the following grouting methods:<br>(i) Compaction grouting      (ii) Jet grouting | CO1 | L2 | 12 M |
|---|---|-----|----|------|

**OR**

- |   |  |     |    |     |
|---|--|-----|----|-----|
| 2 | What are the objectives of dewatering? Explain the various types of drains along with neat sketches. | CO1 | L2 | 12M |
|---|--|-----|----|-----|

**UNIT-II**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 3 | a Compare vibratory probe compaction and dynamic compaction.  | CO2 | L2 | 6M |
|   | b Explain the vibro compaction method for cohesionless soils. | CO2 | L2 | 6M |

**OR**

- |   |   |     |    |     |
|---|---|-----|----|-----|
| 4 | Explain various in-situ densification methods for cohesive soils. | CO2 | L2 | 12M |
|---|---|-----|----|-----|

**UNIT-III**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 5 | a What are the factors affecting mechanical stabilized soil properties? | CO3 | L2 | 6M |
|   | b Explain the mechanics of soil stabilization.                          | CO3 | L2 | 6M |

**OR**

- |   |  |     |    |     |
|---|--|-----|----|-----|
| 6 | Discuss cement, lime and bitumen stabilization along with its merits and demerits. | CO3 | L2 | 12M |
|---|--|-----|----|-----|

**UNIT-IV**

- |   |  |     |    |    |
|---|--|-----|----|----|
| 7 | a What is the objective of soil reinforcement?                         | CO4 | L2 | 6M |
|   | b What are the factors governing the design of reinforced earth walls? | CO4 | L2 | 6M |

**OR**

- |   |   |     |    |    |
|---|---|-----|----|----|
| 8 | a Explain clearly the functions of Geotextiles. | CO4 | L2 | 6M |
|   | b Compare geotextiles and geomembrane.          | CO4 | L2 | 6M |

**UNIT-V**

- |   |  |     |    |    |
|---|--|-----|----|----|
| 9 | a Distinguish between woven and non woven geotextiles. How they are manufacture and what functions they can perform? | CO5 | L2 | 6M |
|   | b What is a geo-grid? Explain different types of geo grids. How do they differ from geotextiles functionally?        | CO5 | L2 | 6M |

**OR**

- |    |  |     |    |     |
|----|--|-----|----|-----|
| 10 | Explain different functions of geotextiles with neat sketches. | CO5 | L2 | 12M |
|----|--|-----|----|-----|

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