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Reg. No.....

**EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE  
[SUPPLEMENTARY] EXAMINATION, OCTOBER 2013**

CE/PTCE 09 804 L 21—GROUND IMPROVEMENT TECHNIQUES

Time : Three Hours

Maximum : 70 Marks

**Part A**

*Answer all questions.*

- I. (a) List out the objectives of ground improvement.  
(b) Explain on compaction piles in sand.  
(c) Define the term lime stabilisation.  
(d) What is meant by soil nailing ?  
(e) What is meant by geosynthetics ?

(5 × 2 = 10 marks)

**Part B**

*Answer any four questions.*

- II. (a) Write a short note on surface compaction.  
(b) Explain on vibroflotation in sand.  
(c) Explain briefly on lime fixation point.  
(d) Write a short note on load transfer mechanism (in connection with soil improvement using reinforced earth).  
(e) Explain on lime column method.  
(f) Differentiate between geotextiles and geogrids.

(4 × 5 = 20 marks)

**Part C**

*Answer all questions.*

- III. (a) Discuss in detail on biotechnical stabilisation and soil improvement by thermal treatment.

*Or*

- (b) Write short notes on :
- 1 vibroflotation in clays
  - 2 Terraprobe method

**Turn over**

- IV. (a) Discuss in detail the types of grouts along with its characteristics. Also add a short note on permeation grouting.

*Or*

- (b) List out and explain the effect of lime on physical and engineering properties of soil. Also add a short note on soil fracture grouting.

- V. (a) Write short notes on reinforced earth retaining walls and reinforced embankments.

*Or*

- (b) List down and discuss in detail the various reinforcing materials used for soil improvement.

- VI. (a) Discuss in detail the following :—

- 1 Physical and strength of properties of geogrids.
- 2 Design aspects with geotextiles for clay embankments.

*Or*

- (b) Write short notes on :

- 1 Types of geotextiles
- 2 Design aspects with geogrids for clay embankments

(4 × 10 = 40 marks)