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Name.....

Reg. No.....

**EIGHTH SEMESTER B.TECH. (ENGINEERING) [2014 SCHEME] DEGREE
EXAMINATION, APRIL 2018**

Civil Engineering

CE 14 805 D—GROUND IMPROVEMENT TECHNIQUES

Time : Three Hours

Maximum : 100 Marks

Part A

Answer eight questions.

1. What are the different types of surface compaction equipments ? Mention its suitability for different soil types.
2. What are the advantages of using vertical drains along with preloading ?
3. Write a brief note on bio-technical stabilization.
4. What is grout injection measurement and why is grout monitoring necessary ?
5. Explain the factors affecting soil-cement stabilization.
6. Compare and contrast compaction grouting and jet grouting.
7. What are the applications of geotextiles ?
8. How does geotextiles/geogrid improve the performance of embankments on soft soils ?
9. Explain the soil-reinforcement interactions.
10. Enumerate the design procedure for a soil-nailed retaining structure.

(8 × 5 = 40 marks)

Part B

Answer any one full question from each Module.

Module - I

11. List the methods employed to improve soft clay soils. Explain in detail stone column and preloading techniques with neat sketches.

Or

12. Explain in detail the densification of cohesionless soils using i) compaction piles ii) vibrofloatation technique

Turn over

Module - II

13. Explain the physio-chemical reactions occurring when lime is added to clay. Also discuss the effect of the reactions on physical and engineering properties of clay.

Or

14. List the different grouting materials. Explain the properties, merits, demerits and suitability of each grout.

Module - III

15. Explain the parameters indicating the physical and strength properties of geotextiles and geogrids that need to be considered for use in geotechnical applications.

Or

16. Explain the Groud and Noiray approach for design of unpaved roads.

Module - IV

17. What are the components reinforced soil walls? Also discuss the internal and external stability aspects of reinforced soil retaining walls.

Or

18. Give a detailed note on the following :

- (a) Soil improvement using natural reinforcing materials.
- (b) Load transfer mechanism and strength development in reinforced earth.

(4 × 15 = 60 marks)