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10CT752

**Seventh Semester B.E. Degree Examination, June/July 2019**

**Ground Improvement Techniques**

Time: 3 hrs.

Max. Marks:100

- Note: 1. Answer any FIVE full questions, selecting at least TWO full questions from each part.  
2. Write appropriate sketches, wherever necessary.**

**PART – A**

- 1
  - a. How are the ground improvement techniques classified? (06 Marks)
  - b. Explain the appropriate techniques that can be used for controlling the problems in black cotton soils. (06 Marks)
  - c. Mention the factors to be considered in selecting the most suitable method of ground improvement. Explain briefly. (08 Marks)
- 2
  - a. What are Deep Compaction method? When do you recommend them and explain briefly. (06 Marks)
  - b. Explain different surface compaction methods with their suitability. Also explain field control tests. (10 Marks)
  - c. List and explain about the effect of compaction on soil properties. (04 Marks)
- 3
  - a. With the help of neat diagrams, explain :
    - i) Single stage well point system
    - ii) Multi stage well point system. (08 Marks)
  - b. What is Hydraulic Modification? Discuss the aims of this method. (06 Marks)
  - c. Describe the design steps for dewatering system. (06 Marks)
- 4
  - a. List the techniques adopted for drainage along slopes. (04 Marks)
  - b. Write short notes on the following:
    - i) Electro kinetic dewatering
    - ii) Sand drain with preloading. (10 Marks)
  - c. Explain briefly the principle and types of "Pre leading" techniques. (06 Marks)

**PART – B**

- 5
  - a. What are the beneficial effects of cement stabilization on soil properties? (06 Marks)
  - b. List the different types of stabilizers. Explain briefly how flyash can be used as stabilizing agent in the improvement of soil properties. (10 Marks)
  - c. Explain briefly about the sandwich technique. (04 Marks)
- 6
  - a. Explain in briefly the use of chemicals like sodium chloride, calcium chloride and lignin in stabilization of soil. (10 Marks)
  - b. Explain how bitumen is used as an stabilizing agent. (05 Marks)
  - c. In detail, explain the effect of lime stabilization on clayey soils. (05 Marks)

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- 7 a. List and explain about the effects of grouting on soils. (08 Marks)  
b. List and explain in detail, the different applications of grouting. (06 Marks)  
c. Write short notes on:  
i) Permeation Grouting  
ii) Deep Jet Grouting. (06 Marks)
- 8 a. Write short notes on the following:  
i) Soil Nailing Techniques  
ii) Gabions  
iii) Stone column  
iv) Micro piles. (12 Marks)  
b. Define Reinforced Earth. Explain the mechanism of reinforced soil. (08 Marks)

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