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10CT752

Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020

**Ground Improvements Techniques**

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO full questions from each part.

**PART – A**

- 1 a. Define Ground improvement. What are the objectives of ground improvement? (10 Marks)
- b. Explain the various techniques of ground modification. (10 Marks)
- 2 a. Explain how the shallow surface compaction is carried out using different rollers. (12 Marks)
- b. Write short notes on :
  - i) Dynamic compaction
  - ii) Vibro – compaction. (08 Marks)
- 3 a. Explain with sketch, vaccum dewatering system. (08 Marks)
- b. Describe the well point system of dewatering with figures. (12 Marks)
- 4 a. Explain the following
  - i) Prefabricated vertical drains
  - ii) Electrokinetic dewatering
  - iii) Preloading. (15 Marks)
- b. List advantages and disadvantages of preloading technique. (05 Marks)

**PART – B**

- 5 a. What do you mean by chemical modification of soils? Discuss benefits. (06 Marks)
- b. Describe effect of cement stabilization on various properties of soils. (08 Marks)
- c. Explain fly ash stabilization. (06 Marks)
- 6 a. Explain suitability and criteria for lime stabilization. (08 Marks)
- b. Explain stabilization with
  - i) sodium and calcium chlorides
  - ii) Lignin
  - iii) Asphalt
  - iv) Bitumen (12 Marks)
- 7 a. Define grouting. Explain applications of grouting. (08 Marks)
- b. Differentiate between solution and suspension grouts. (08 Marks)
- c. Explain with neat sketch – Jet grouting. (04 Marks)
- 8 Write short notes on following any Four :
  - a. Soil nailing
  - b. Thermal methods
  - c. Crib walls
  - d. Rock bolting
  - e. Gabions and mattresses. (20 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.