

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: M.TECH
BRANCH: CIVIL**

**SEMESTER : II
SESSION : SP/19**

SUBJECT: CE558 GROUND IMPROVEMENT

TIME: 3.00 HOURS

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) Identify the situations of concern which summons the need for engineered ground improvement. [5]
Cite the factors affecting the selection of the ground improvement technique.
- Q.1(b) Analyze the improvement in soil due to the confining effect achieved as a result of the introduction of reinforcement in it. [5]
- Q.2 Illustrate (i) Volumenometer method & (ii) Rubber balloon method to demonstrate the determination of relative compaction in the field. Depict the difference in the principle of these methods as against the non destructive ones deployed for achieving the same purpose. [10]
- Q.3(a) Electrokinetic stabilization is a technique particularly suited to weak clayey soils possessing a low hydraulic conductivity that require strengthening - Assess to justify. [5]
- Q.3(b) Summarize the process of pre-compression. [5]
- Q.4(a) Establish the role of lime as a beneficial admixture in stabilization of soil. [5]
- Q.4(b) Examine ground treatment using grouting technology. [5]
- Q.5(a) Make use of (i) Heat capacity of a soil & (ii) Heat of vaporization of water, in the context of ground thawing. [5]
- Q.5(b) Compare between indirect & direct freezing process. [5]

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