

Code No: 157BV**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech IV Year I Semester Examinations, February/March - 2022****GROUND IMPROVEMENT TECHNIQUES****(Civil Engineering)****Time: 3 Hours****Max. Marks: 75****Answer any Five Questions
All Questions carry equal marks**

- 1.a) List the objectives of compacting soil and explain the purpose of compaction.
- b) What are the strategies developed for optimizing the densification process of ground? [8+7]
- 2.a) Discuss the instances when do we recommend ground improvement?
- b) Write the objectives and scope of ground improvement. [8+7]
3. Discuss the method of vibroflotation for compacting the granular soils under the head, vibration at depth. In what respects the compaction piles differ from this. [15]
4. What are the in situ conditions which seek ground improvement in clays? Discuss the following ground improvement methods with clear mechanisms:
 - a) Stone columns
 - b) Lime columns. [15]
- 5.a) Sand drains, sand wicks and geo-drains are used under similar soil conditions for ground improvement. Compare their relative merits and demerits. Which one do you prefer?
- b) What is preloading? Discuss its objective. [9+6]
- 6.a) Explain the method of improvement of soft soils by preloading along with vertical drains with neat sketches.
- b) Explain in detail with neat sketch the electro-kinetic approach of dewatering. [8+7]
- 7.a) What is grouting? Explain in detail the method of compaction grouting.
- b) Explain in detail various field of applications of grouting. [8+7]
- 8.a) Discuss the practical relevance of (i) Ground anchors and (ii) Rock bolting.
- b) Discuss the effectiveness of reinforcement with strip and geogrid reinforced soil. [8+7]

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