Code No: **R41016** **R10** **Set No. 1**

**IV B.Tech I Semester supplementary Examinations, November - 2016**

# GROUND IMPROVEMENT TECHNIQUES

**(Civil Engineering)**

**Time: 3 hours** **Max. Marks: 75**

**Answer any FIVE Questions**
**All Questions carry equal marks**
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1. a) What are the Freezing Applications?
   b) What is the Principle behind the Electro-osmosis method of dewatering? Explain in detail about the Electro-Osmosis theory with neat sketches.

2. a) What is hydraulic fracturing? What are its uses? Where it can be used?
   b) Differentiate between the compaction grouting and displacement grouting.

3. a) What is meant by dynamic compaction?
   b) Discuss briefly how laboratory calibration chart can be prepared for the proctor needle and how it can be used in field compaction control.

4. a) Explain the construction procedure of stone columns?
   b) In what site conditions stone columns are preferred? If the soil is very soft clay would you recommend the stone column methods.

5. a) Explain the principle behind the stabilization with sodium silicate.
   b) Describe any one method of chemical stabilization and list out the advantages and disadvantages of this method?

6. a) What is reinforced earth?
   b) Using geogrid as reinforcement, design a reinforced earth wall for retaining 6 m high cohesionless soil. The soil in the wall and back fill has a density of 18 $kN/m^3$ with angle of internal friction of $36^0$. The allowable soil pressure is 150 $kN/m^2$. Use galvanized strips as reinforcement.

7. a) Explain how geotextiles are used in slope stabilization and in embankment construction in soft soils.
   b) Explain the principle behind the use of Geogrid as reinforcement material at the base of the embankment.

8. a) What are the various problems that are encountered for foundations constructed on expansive soils?
   b) Discuss the foundation practices in expansive soils.