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Code No: M0130 **R07** **Set No. 1**

IV B.Tech. I Semester Regular Examinations, November, 2012

GROUND IMPROVEMENT TECHNIQUES

(CIVIL ENGINEERING)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
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1. a) What is dewatering ? What are the objectives of dewatering?
   b) Describe with neat sketches about Well points Dewatering method.

2. a) Describe the post grout test? What is the use of this test?
   b) List out four physical characteristics of grouting liquid relevant to engineering applications.

3. a) Explain the objectives of densification in cohesionless soils.
   b) Describe Vibroflotation Technique used in densification of granular soils with neat sketches.

4. a) Explain the ground modification by thermal method.
   b) Explain the principle behind the ground modification with lime columns? Explain the advantages and disadvantages of this method.

5. Describe the different steps involved in the process of soil stabilization using lime as additive. What are the different types of limes? Discuss the various factors that affect the soil-lime stabilization.

6. a) Explain the advantages and disadvantages of reinforced earth walls over the traditional retaining walls.
   b) Explain the various modes of failure of a reinforced earth walls and the methods of calculating the factors of safety against them.

7. a) What is a Geogrid? Explain its functions and applications.
   b) Distinguish between "Drainage" and "Filtration" function of Geotextiles. Give applications based on each function.

8. a) What are the measures to be taken to prevent the swelling of expansive soils?
   b) Why the soils become expansive soils? What are the typical range of values of Atterberg limits, percentage of clay fraction and colloid content?

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Code No: M0130 **R07** **Set No. 2**

IV B.Tech. I Semester Regular Examinations, November, 2012

GROUND IMPROVEMENT TECHNIQUES

(CIVIL ENGINEERING)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
****

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

2. a) What are the Freezing Applications?
   b) Describe with neat sketches about the dewatering by vaccum well points. What are the advantages and disadvantages of this system?

3. Explain the terms Vibro-Compaction and Vibro-Replacement, highlighting the typical characteristics and the relative effectiveness of both the terms.

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. Describe soil-cement stabilization. What are the actions involved in soil - cement stabilization? Explain what are the factors affecting strength of soil-cement mixes?

6. a) What are the components of reinforced earth? Illustrate with neat sketches the various practical applications where reinforced earth is used.
   b) How can the horizontal spacing of reinforcing strips be derived for the material in a retaining wall.

7. a) Explain how geotextiles are used in slope stabilization and in embankment construction in soft soils.
   b) Describe the functions and applications of geogrids.

8. a) What is Cohesive-Non Swelling layer? When do you use it and what are its limitations?
   b) Discuss the principle and functioning of under-reamed piles.

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Code No: M0130 **R07** **Set No. 3**

IV B.Tech. I Semester Regular Examinations, November, 2012

GROUND IMPROVEMENT TECHNIQUES

(CIVIL ENGINEERING)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
****

1. a) What is dewatering ? What are the objectives of dewatering?
   b) Describe with neat sketches about the dewatering by Sumps and Ditches? What are the advantages and disadvantages?

2. a) What are the different types of Grouts available and what are its properties?
   b) What aspects would you consider in deciding on the spacing and depth of injection holes for a grout curtain below a dam?

3. a) What are the different insitu densification methods available for granular soils?
   b) Explain the Impact at the ground surface method of densification and also list out its advantages and disadvantages.

4. Explain any one method of calculating the bearing capacity of the floating Stone columned Soft ground.

5. a) Explain the different applications of mechanical stabilization.
   b) Describe the Rothfuch's method for proportioning of different material.

6. a) What is reinforced earth? How does it differ in action from reinforced cement concrete?
   b) Explain the design considerations involved in reinforced earth retaining walls.

7. a) Explain the advantages and disadvantages of woven and non-woven geotextiles.
   b) Explain the various tests conducted on geotextiles to assess their properties.

8. Explain briefly various methods that are to be used to improve the expansive soils for foundations.

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Code No: M0130 **R07** **Set No. 4**

IV B.Tech. I Semester Regular Examinations, November, 2012

GROUND IMPROVEMENT TECHNIQUES

(CIVIL ENGINEERING)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
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1. a) Describe with neat sketches about the dewatering by Eductor System? What are the advantages and disadvantages?
   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 are the objectives of Grouting ?
   b) What is the role of grouting in ground improvement? Distinguish between suspension grouts and solution grout.

3. a) Describe the method of densification by Blasting? Explain its effectiveness.
   b) Describe the impact at depth densification method for granular soils . Explain its effectiveness.

4. What are the different in-situ densification methods available for cohesionless soils? Explain the preloading method and also list out its advantages and disadvantages.

5. a) What is 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. Explain the principle behind the soil reinforcement. What are the components of a reinforced earth wall and their functions? Describe the construction of a reinforced earth wall with the help of neat sketches for different stages.

7. a) List out the applications of Geotextiles based on separation and reinforcement functions.
   b) Describe the different forms of Geogrids and state their functions in the stabilization of soils.

8. a) What are the various problems that are encountered for foundations constructed on expansive soils?
   b) What are the factors influencing the swelling behavior of soil?

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