Code No: **RT41016** **R13** **Set No. 1**

IV B.Tech I Semester Regular Examinations, November - 2016

GROUND IMPROVEMENT TECHNIQUES

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A*(22 Marks)*

1. a) Name any three methods for in situ densification of cohesive soil. [3]
   b) Write a short note on electro osmosis. [4]
   c) Write a short note on soil bitumen stabilization. [4]
   d) What are the components of reinforced earth? [4]
   e) What are the types of geo-textiles? [3]
   f) What are the objectives of grouting? [4]

PART–B*(3x16 = 48 Marks)*

2. a) Describe the vibroflotation technique of densifying granular soil. [8]
   b) Explain the impact at ground surface method of densifying granular soils. [8]

3. a) Explain the open sumps and vacuum well dewatering systems. [8]
   b) What are the filter requirements of a filler material around the drains? [8]

4. a) Explain the principle and application of soil-lime stabilization. [8]
   b) Discuss the various foundation techniques adopted in expansive soils. [8]

5. a) What do you understand by reinforced earth? Enumerate various applications of reinforced earth. [8]
   b) Explain the design principles of reinforced earth walls. [8]

6. a) Describe with illustrations the differences between geotextiles and geomembranes. [8]
   b) What are the practical applications of geotextiles? [8]

7. a) What is a grout? Explain in detail the applications of grouting. [8]
   b) Describe briefly different grouting techniques. [8]

Code No: **RT41016** **R13** **Set No. 2**

IV B.Tech I Semester Regular Examinations, November - 2016

GROUND IMPROVEMENT TECHNIQUES

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A*(22 Marks)*

1. a) What are various methods of in situ densification of cohesive soils? [3]
   b) What is dewatering? What are various methods of dewatering? [4]
   c) Name any three industrial wastes used in stabilization of soils. [3]
   d) Name the stability checks that are to be applied for reinforced earth walls. [4]
   e) What are the four major applications of geotextiles? [4]
   f) Define grouting. List any two applications of grouting. [4]

PART–B*(3x16 = 48 Marks)*

2. a) Explain in detail the advantage of using vertical drains along with preloading? [8]
   b) What is a stone column? What are the methods of installing a stone column? [8]

3. a) Explain single and multistage well point system of dewatering. [8]
   b) How are sumps and ditches used in dewatering? [8]

4. a) Discuss cement, lime and bitumen stabilization along with its merits and demerits. [8]
   b) Explain in detail mechanical stabilization of soils. [8]

5. a) Write a short note on soil nailing. [8]
   b) What is reinforced earth? What are the applications of soil reinforcement? [8]

6. a) How does the use of a geosynthetic as a filler differ from that of drainage? [8]
   b) Explain in detail the use of geosynthetics as a reinforcement. [8]

7. a) Explain in detail with the help of a neat sketch the different stages of grouting. [8]
   b) Explain in detail the post grout tests. [8]

Code No: **RT41016** **R13** **Set No. 3**

IV B.Tech I Semester Regular Examinations, November - 2016

GROUND IMPROVEMENT TECHNIQUES

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A*(22 Marks)*

1. a) What do you understand by preloading? [3]
   b) What is the application of dewatering in ground improvement? [4]
   c) What are the various methods of soil stabilization? [4]
   d) Name the components of reinforced earth. [4]
   e) Write a short note on geogrids. [3]
   f) What is jet grouting? [4]

PART–B*(3x16 = 48 Marks)*

2. a) Explain sand drains with a neat sketch. [8]
   b) Explain impact at depth method of soil densification. [8]

3. a) Explain the electro osmotic method of dewatering for ground improvement. [8]
   b) Explain in detail the vacuum well point system of dewatering. [8]

4. a) Discuss the applicability of industrial wastes in soil stabilization. [8]
   b) Explain in detail the mechanical soil stabilization. [8]

5. a) What are the design principles of reinforced earth wall? [8]
   b) What are the different stability checks that are to be applied on reinforced earth walls? [8]

6. a) Explain the properties and applications of geotextiles. [8]
   b) Explain different functions of geotextiles with neat sketches. [8]

7. a) Define grouting. What are the objectives of grouting? [8]
   b) Discuss in detail all the methods of grouting. [8]

Code No: **RT41016** **R13** **Set No. 4**

IV B.Tech I Semester Regular Examinations, November - 2016

GROUND IMPROVEMENT TECHNIQUES

(Civil Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any THREE questions from Part-B

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PART–A*(22 Marks)*

1. a) Write a short note on vertical drains. [3]
   b) What are the criteria for the choice of filler material? [4]
   c) What is the possible reaction that may take place in soil-lime stabilization? [4]
   d) What are the components of soil nailing? [4]
   e) Discuss regarding geotextiles as separators. [3]
   f) What is meant by displacement grouting? [4]

PART–B*(3x16 = 48 Marks)*

2. a) With neat sketch explain in situ densification methods in cohesive soil. [8]
   b) Discuss how the stress history of a soil deposit affects its suitability for preloading with vertical drains. [8]

3. a) Explain in detail about the dewatering techniques used in cohesive soils. [8]
   b) What are the salient features of sand drains and geodrains? [8]

4. a) What do you understand by bituminous stabilization? [8]
   b) Explain how the engineering properties of soil are changed by the process of bituminous stabilization. [8]

5. a) What are the factors governing the design of reinforced earth walls? [8]
   b) Explain the procedure of soil nailing. [8]

6. a) Explain with clear illustrations, the principle involved in geotextile materials reinforcement for improving the bearing capacity of soil. [8]
   b) Write a short note on geomembranes and gabions. [8]

7. a) Explain in detail the stages of grouting with neat sketch. [8]
   b) Explain in detail about post grout techniques. [8]