Code No: **R204101E** **R20** **Set No. 1**

IV B.Tech I Semester Regular Examinations, January – 2024

GROUND IMPROVEMENT TECHNIQUES

(Civil Engineering)

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

Answer any FIVE Questions
ONE Question from Each unit
All Questions Carry Equal Marks

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UNIT - I

1	a)	Explain in detail the advantage of using vertical drains along with preloading?	[7]
	b)	What is a stone column? What are the methods of installing a stone column?	[7]
		(OR)	
2	a)	Explain the impact at ground surface method of densifying granular soils.	[7]
	b)	What are various methods of in situ densification of cohesive soils?	[7]

UNIT - II

3	a)	Explain single and multistage well point system of dewatering.	[7]
	b)	How are sumps and ditches used in dewatering?	[7]
		(OR)	
4	a)	Explain the open sumps and vacuum well dewatering systems.	[7]
	b)	What are the filter requirements of a filler material around the drains?	[7]

UNIT - III

5	a)	Discuss cement, lime and bitumen stabilization along with its merits and demerits.	[7]
	b)	What is Liquefaction? Explain its effects & applications.	[7]
		(OR)	
6	a)	Explain in detail with the help of a neat sketch the different stages of grouting.	[7]
	b)	Explain in detail the post grout tests.	[7]

UNIT - IV

7	a)	Write a short note on soil nailing with an example.	[7]
	b)	What is reinforced earth? What are the applications of soil reinforcement.	[7]
		(OR)	
8		What do you understand by reinforced earth? Enumerate various applications of reinforced earth.	[14]

UNIT - V

9	a)	How does the use of a geosynthetic as a filler differ from that of drainage?	[7]
	b)	Explain in detail the use of geosynthetics as a reinforcement	[7]
		(OR)	
10	a)	Describe with illustrations the differences between geotextiles and geomembranes.	[7]
	b)	What are the practical applications of geotextiles?	[7]

Code No: **R204101E** **R20** **Set No. 2**

IV B.Tech I Semester Regular Examinations, January – 2024

GROUND IMPROVEMENT TECHNIQUES

(Civil Engineering)

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

Answer any FIVE Questions

ONE Question from Each unit

All Questions Carry Equal Marks

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UNIT - I

1	a)	Explain sand drains with a neat sketch.	[7]
	b)	Explain impact at depth method of soil densification.	[7]
		(OR)	
2	a)	What is vertical drain explain the design of vertical drain?	[7]
	b)	What are the factors affect the mechanical stability of a mixed soil?	[7]

UNIT - II

3	a)	Write the application of dewatering in ground improvement?	[7]
	b)	What is dewatering? What are various methods of dewatering?	[7]
		(OR)	
4	a)	Explain horizontal well point system of dewatering.	[7]
	b)	How are sumps and ditches used in dewatering?	[7]

UNIT - III

5	a)	Explain the principle and application of soil-lime stabilization.	[7]
	b)	Discuss the various foundation techniques adopted in expansive soils.	[7]
		(OR)	
6	a)	What is a grout? Explain in detail the applications of grouting.	[7]
	b)	Describe briefly different grouting techniques.	[7]

UNIT - IV

7	a)	Explain the mechanism of reinforced earth and its application.	[7]
	b)	Write about the stability checks that are to be applied for reinforced earth walls.	[7]
		(OR)	
8	a)	What are the factors governing the design of reinforced earth walls?	[7]
	b)	Explain the procedure of soil nailing	[7]

UNIT - V

9	a)	Discuss the four major applications of Geogrids?	[7]
	b)	What are the different types of geotextiles? Discuss the differences between geogrids and geocells.	[7]
		(OR)	
10		Discuss with neat sketches how effective the geocells in transferring the load onto the soft subgrade soil and also controlling the settlements.	[14]

Code No: **R204101E** **R20** **Set No. 3**

IV B.Tech I Semester Regular Examinations, January – 2024

GROUND IMPROVEMENT TECHNIQUES

(Civil Engineering)

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

Answer any FIVE Questions

ONE Question from Each unit

All Questions Carry Equal Marks

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UNIT - I

1	a)	With neat sketch explain in situ densification methods in cohesive soil.	[7]
	b)	Discuss how the stress history of a soil deposit affects its suitability for preloading with vertical drains	[7]
		(OR)	
2	a)	What are the salient features of sand drains and geodrains?	[7]
	b)	Explain the importance of stone column technique.	[7]

UNIT - II

3	a)	Explain the electro osmotic method of dewatering for ground improvement.	[7]
	b)	Explain in detail the vacuum well point system of dewatering.	[7]
		(OR)	
4	a)	Write the criteria for the choice of filler material?	[7]
	b)	Explain the need of dewatering techniques and their practical applications.	[7]

UNIT - III

5	a)	Explain in detail with the help of a neat sketch the different stages of grouting.	[7]
	b)	Discuss any three industrial wastes used in stabilization of soils.	[7]
		(OR)	
6	a)	Discuss the applicability of industrial wastes in soil stabilization.	[7]
	b)	Explain in detail the mechanical soil stabilization.	[7]

UNIT - IV

7	a)	Explain about the mechanism involved in soil nailing with a neat sketch.	[7]
	b)	Differentiate Soil Nailing and reinforced earth techniques with neat sketches.	[7]
		(OR)	
8		What are the components of reinforced earth wall? Discuss the load transfer mechanisms of reinforced earth walls. Also discuss the requirements of soil which can be used in reinforced earth wall constriction.	[14]

UNIT - V

9	a)	Write about the four major applications of geomembranes?	[7]
	b)	Discuss regarding geotextiles as separators.	[7]
		(OR)	
10	a)	Explain with clear illustrations, the principle involved in geotextile materials reinforcement for improving the bearing capacity of soil.	[7]
	b)	Write about geomembranes and gabions.	[7]

Code No: **R204101E** **R20** **Set No. 4**

IV B.Tech I Semester Regular Examinations, January – 2024

GROUND IMPROVEMENT TECHNIQUES

(Civil Engineering)

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

Answer any FIVE Questions

ONE Question from Each unit

All Questions Carry Equal Marks

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UNIT - I

1	a)	Explain the objectives of densification in cohesion less soils.	[7]
	b)	Discuss about blasting technique used in in-situ densification. Give an expression for calculating the radius of influence of a blasting technique.	[7]
		(OR)	
2	a)	Explain the advantages of geo drains when compared with sand drains	[7]
	b)	What is stone columns. How it is differ from normal drains.	[7]

UNIT - II

3	a)	What do you know about drainage of soils?	[7]
	b)	Differentiate single stage and multi stage well point methods of dewatering in terms of mechanism and applications with neat sketches.	[7]
		(OR)	
4	a)	Discuss in brief about open sumps and inspector ditches with a neat sketch	[7]
	b)	Discuss the importance of Dewatering, merits and demerits.	[7]

UNIT - III

5	a)	Explain the procedure for soil stabilization using granulated blast furnace slag with applications.	[7]
	b)	Write the possible reaction that may take place in soil-lime stabilization?	[7]
		(OR)	
6	a)	Discuss in detail all the methods of grouting.	[7]
	b)	Explain about displacement grouting?	[7]

UNIT - IV

7	a)	Discuss the importance of soil nailing.	[7]
	b)	Explain reinforced earth wall with an neat sketch	[7]
		(OR)	
8	a)	What is soil reinforcement and list out different types of reinforcement and explain principle of reinforcement	[7]
	b)	What is soil Nailing? List out the applications of soil nailing.	[7]

UNIT - V

9	a)	Explain the basic functions of geosynthetics, with neat sketches.	[7]
	b)	Explain different functions of geotextiles with neat sketches.	[7]
		(OR)	
10	a)	Explain about the properties of geo-membranes.	[7]
	b)	Explain functions, properties and applications of geotextile and gabions in detail with sketch.	[7]

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