



**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR  
(AUTONOMOUS)**

Siddharth Nagar, Narayanavanam Road – 517583

**QUESTION BANK (DESCRIPTIVE)**

**Subject with Code:** Ground Improvement Techniques (20CE0144) **Course & Branch:** B.Tech & CE  
**Year & Sem:** IV-B.Tech & I-Sem **Regulation:** R20

**UNIT –I**

**DEWATERING & GROUTING**

1	What is dewatering? Explain the following terms (i) Deep wells. (ii) Vacuum wells.	[L1][CO1]	[12M]
2	List various well point dewatering systems and explain their suitability for different soils.	[L1][CO1]	[12M]
3	What are the objectives of dewatering? Explain the various types of drains along with neat sketches.	[L1][CO1]	[12M]
4	Explain the electro osmosis method to control ground water in low permeable soil?	[L2][CO1]	[12M]
5	What is grouting? Explain in detail various field of applications of grouting.	[L1][CO1]	[12M]
6	Explain compaction grouting, penetration grouting and fracture grouting with neat sketches.	[L2][CO1]	[12M]
7	Explain the following grouting methods: (i) Compaction grouting (ii) Jet grouting	[L2][CO1]	[12M]
8	Explain Post Grout Test with neat sketch.	[L2][CO1]	[12M]
9	Discuss in details various well point techniques for dewatering soils. Explain the criteria for the selection of a particular fill material around the drains.	[L2][CO1]	[12M]
10	Explain briefly various methods of grouting.	[L2][CO1]	[12M]

**UNIT –II****DENSIFICATION METHODS IN GRANULAR SOILS & COHESIVE SOILS**

<b>1</b>	Discuss the principles of ground improvement in cohesion less soils.	[L2][CO2]	[12M]
<b>2</b>	Discuss the effectiveness of both vibro flotation and compaction piles for compacting the granular soils.	[L2][CO2]	[12M]
<b>3</b>	(a) What is Dynamic compaction ? write its benefits and limitations of dynamic compaction.	[L1][CO2]	[6M]
	(b) Discuss how the stress history of a soil deposit affects its suitability for preloading with vertical drains.	[L2][CO2]	[6M]
<b>4</b>	(a) Compare vibratory probe compaction and dynamic compaction.	[L2][CO2]	[6M]
	(b) Explain the vibro compaction method for cohesionless soils.	[L2][CO2]	[6M]
<b>5</b>	(a) Explain with a neat sketch sand drain to accelerate the drainage of impervious soils.	[L2][CO2]	[6M]
	(b) What are the advantages of using Sandwich geo drains?	[L1][CO2]	[6M]
<b>6</b>	(a) Discuss the need of ground improvement and write the principles of ground improvement in cohesionless soils	[L2][CO2]	[6M]
	(b) Briefly explain about methods of impact at ground surface and at depth used in densification of granular soil deposits.	[L1][CO2]	[6M]
<b>7</b>	(a) Write short notes on densification of cohesive soils by Lime columns.	[L1][CO2]	[6M]
	(b) Discuss the important formulae used in the improvement of soft clay deposits using stone columns.	[L2][CO2]	[6M]
<b>8</b>	(a) Explain briefly with a neat sketch the vibro compaction method of densifying deep granular deposits.	[L2][CO2]	[6M]
	(b) Explain the impact at ground surface method to densify granular soils.	[L2][CO2]	[6M]
<b>9</b>	(a) Explain in detail the in-situ densification of cohesive soils by using pre-loading with vertical drains.	[L2][CO2]	[6M]
	(b) What is a sand drain? How is it constructed and is useful in densifying cohesive soil deposits?	[L1][CO2]	[6M]
<b>10</b>	Explain various in-situ densification methods for cohesive soils.	[L2][CO2]	[12M]

**UNIT –III**  
**STABILIZATION OF SOILS**

<b>1</b>	What are the different chemicals used in stabilization of soil?	[L1][CO3]	[12M]
<b>2</b>	(a) Discuss on suitability and applications of lime stabilization.	[L2][CO3]	[6M]
	(b) Explain the proportioning techniques of mechanical soil stabilization.	[L2][CO3]	[6M]
<b>3</b>	Discuss cement, lime and bitumen stabilization along with its merits and demerits.	[L2][CO3]	[12M]
<b>4</b>	Write a short note on: (i) Sodium silicate stabilization. (ii) Gypsum stabilization	[L2][CO3]	[12M]
<b>5</b>	Discuss the gradation limits for soil-cement stabilization and explain its construction procedure.	[L2][CO3]	[12M]
<b>6</b>	(a) What are the factors affecting mechanical stabilized soil properties?	[L1][CO4]	[6M]
	(b) Explain the mechanics of soil stabilization.	[L2][CO4]	[6M]
<b>7</b>	Write short notes on the following: (a) Bituminous stabilization. (b) Mechanical stabilization.	[L2][CO4]	[12M]
<b>8</b>	Describe the properties of calcium chloride that are beneficial in stabilization of soils?	[L1][CO4]	[12M]
<b>9</b>	Explain soil-lime reactions. What are the engineering benefits of lime stabilization of soils?	[L2][CO4]	[12M]
<b>10</b>	(a) What is the necessity of soil stabilization?	[L1][CO4]	[6M]
	(b) Explain mechanical methods of soil stabilization. What are the different types test for soil stabilization?	[L2][CO4]	[6M]

**UNIT –IV**  
**REINFORCED EARTH**

<b>1</b>	(a) Write the advantages and applications of reinforced earth structures with neat sketches.	[L2][CO5]	[6M]
	(b) Discuss the external stability aspects in the design of reinforced earth wall.	[L2][CO5]	[6M]
<b>2</b>	What do you understand by reinforced earth ? Enumerate the various applications of reinforced earth	[L2][CO5]	[12M]
<b>3</b>	(a) What is the objective of soil reinforcement?	[L2][CO5]	[6M]
	(b) What are the factors governing the design of reinforced earth walls?	[L2][CO5]	[6M]
<b>4</b>	(a) What is reinforced earth ? what are the applications of soil reinforcement	[L2][CO5]	[6M]
	(b) Write short notes on soil nailing.	[L2][CO5]	[6M]
<b>5</b>	What are the design principles of reinforced earth wall ?	[L2][CO5]	[12M]
<b>6</b>	(a) Explain any four engineering applications of reinforced earth with Sketches	[L2][CO5]	[6M]
	(b) Describe the procedure of designing a reinforced earth wall.	[L2][CO5]	[6M]
<b>7</b>	What are the factors governing the design of reinforced earth walls ?	[L2][CO5]	[12M]
<b>8</b>	(a) What are the stability checks that are to be applied on reinforced earth walls ?	[L2][CO5]	[6M]
	(b) What is reinforced earth ? what are components involved it	[L2][CO5]	[6M]
<b>9</b>	(a) What is reinforced earth? How does it differ from reinforced cement concrete and mechanically stabilized soil?	[L2][CO5]	[6M]
	(b) With a neat sketch explain the various components of reinforced earth structure.	[L2][CO5]	[6M]
<b>10</b>	(a) Explain clearly the functions of Geotextiles.	[L2][CO5]	[6M]
	(b) Compare geotextiles and geomembrane.	[L2][CO5]	[6M]

**UNIT –V**  
**GEOSYNTHETICS**

<b>1</b>	(a) Distinguish between geo textiles and geo grids.	[L2][CO6]	[6M]
	(b) Explain the applications of geo-textiles based on their separation and drainage functions.	[L2][CO6]	[6M]
<b>2</b>	(a) Distinguish between woven and non woven geotextiles. How they are manufacture and what functions they can perform?	[L2][CO6]	[6M]
	(b) What is a geo-grid? Explain different types of geo grids. How do they differ from geotextiles functionally?	[L2][CO6]	[6M]
<b>3</b>	(a) What are geotextiles? Write a note on common nomenclature of geosynthetics.	[L2][CO6]	[6M]
	(b) Explain with suitable examples the principles involved in geo-textile material as reinforcement for improving the bearing capacity of soil.	[L2][CO6]	[6M]
<b>4</b>	(a) What are geomembranes? How geomembranes differ from geo textiles?	[L2][CO6]	[6M]
	(b) What are the applications of geotextiles?	[L2][CO6]	[6M]
<b>5</b>	Explain the properties and applications of geotextiles	[L1][CO6]	[12M]
<b>6</b>	Explain different functions of geotextiles with neat sketches	[L2][CO6]	[12M]
<b>7</b>	Write short notes on geomembranes and gabions	[L2][CO6]	[12M]
<b>8</b>	(a) Explain clearly the functions of Geotextiles.	[L2][CO6]	[6M]
	(b) Compare geotextiles and geomembrane.	[L2][CO6]	[6M]
<b>9</b>	Describe with illustrations the difference between geotextiles and geomembranes	[L1][CO6]	[12M]
<b>10</b>	What are different types of geotextiles ? Discuss the difference between geogrids and geocells.	[L2][CO6]	[12M]

**Prepared by:**  
**Mr. G. HEMADRI**  
**Assistant Professor/CE**