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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

July 2023 Semester End Main Examinations

Programme: B.E.

Branch: Civil Engineering

Course Code: 20CV6PEGIT

Course: Ground Improvement Techniques

Semester: VI

Duration: 3 hrs.

Max Marks: 100

Date: 17.07.2023

Instructions: Answer FIVE full questions choosing one full question from each unit.

Assume any missing data suitably. Draw sketches wherever necessary.

UNIT - I			CO	PO	Marks
1	a)	Briefly explain the classification of ground improvement techniques	<i>CO2</i>	<i>PO1</i>	6
	b)	Briefly explain the factors to be considered in the selection of best soil improvement technique	<i>CO2</i>	<i>PO1</i>	6
	c)	What are the effects of compaction on stress-strain characteristics and shear strength of soils on fine grained soil.	<i>CO1</i> <i>CO2</i>	<i>PO2</i>	8
UNIT - II					
2	a)	Explain in detail with neat sketches the vibroflotation technique of densification of deeper layers of granular soils and its quality control.	<i>CO2</i>	<i>PO2</i>	10
	b)	What is the difference between shallow compaction and deep compaction?	<i>CO1</i>	<i>PO2</i>	5
	c)	What are the merits of dynamic compaction technique	<i>CO1</i>	<i>PO2</i>	5
OR					
3	a)	Explain the difference between vibro-compaction and vibro-displacement compaction	<i>CO2</i>	<i>PO2</i>	5
	b)	Briefly explain the principle of intelligent compaction	<i>CO3</i>	<i>PO1</i>	5
	c)	Explain various types of vibratory and impact compactors used for compaction	<i>CO2</i>	<i>PO12</i>	10
UNIT - III					
4	a)	Discuss with neat sketches the following pre-drainage methods: (i) Well points and (ii) Vacuum wells.	<i>CO3</i>	<i>PO2</i>	10
	b)	Explain with a sketch the technique of preloading for cohesive soils. Also explain that the inclusion of sand drains increases the rate of settlement	<i>CO2</i> <i>CO3</i>	<i>PO2</i>	10

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

UNIT - IV					
5	a)	Explain the principle and application of soil-lime stabilization	<i>CO2</i>	<i>PO2</i>	8
	b)	Briefly explain the stabilization of soil by flyash	<i>CO2</i>	<i>PO2</i>	6
	c)	Explain the effect of cement stabilization on permeability, swelling and shrinkage	<i>CO2</i>	<i>PO1</i>	6
UNIT - V					
6	a)	Explain any four engineering application of reinforced earth with sketches	<i>CO2</i>	<i>PO2</i>	8
	b)	Defining grouting, discuss various fields of applications of grouting in soil engineering.	<i>CO1 CO2</i>	<i>PO2</i>	8
	c)	Briefly explain how gabion walls are constructed	<i>CO2</i>	<i>PO2</i>	4
OR					
7	a)	Why grouting is important in soil engineering? Explain in detail the methods of grouting.	<i>CO2</i>	<i>PO2</i>	8
	b)	Briefly explain soil nailing.	<i>CO2</i>	<i>PO1</i>	5
	c)	What are the advantages and disadvantages of ground heating and freezing?	<i>CO1</i>	<i>PO1</i>	7
