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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.

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| 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 - I | CO | PO | Marks |
| | 1 | a) | Briefly explain the classification of ground improvement techniques | CO2 | PO1 | 6 |
| | | b) | Briefly explain the factors to be considered in the selection of best soil improvement technique | CO2 | PO1 | 6 |
| | | c) | What are the effects of compaction on stress-strain characteristics and shear strength of soils on fine grained soil. | CO1 CO2 | PO2 | 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. | CO2 | PO2 | 10 |
| | | b) | What is the difference between shallow compaction and deep compaction? | CO1 | PO2 | 5 |
| | | c) | What are the merits of dynamic compaction technique | CO1 | PO2 | 5 |
| | | | OR | | | |
| | 3 | a) | Explain the difference between vibro-compaction and vibro-displacement compaction | CO2 | PO2 | 5 |
| | | b) | Briefly explain the principle of intelligent compaction | CO3 | PO1 | 5 |
| | | c) | Explain various types of vibratory and impact compactors used for compaction | CO2 | PO12 | 10 |
| | | | UNIT - III | | | |
| | 4 | a) | Discuss with neat sketches the following pre-drainage methods: (i) Well points and (ii) Vacuum wells. | CO3 | PO2 | 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 | CO2 CO3 | PO2 | 10 |

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