



**PRESIDENCY UNIVERSITY
BENGALURU**

**SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2023**

Semester : Semester V - 2020

Course Code : CIV3029

Course Name : Sem V - CIV3029 - Ground Improvement Techniques

Program : B.Tech. Civil Engineering

Date : 18-JAN-2023

Time : 9.30AM - 12.30PM

Max Marks : 100

Weightage : 50%

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.

PART A

ANSWER ALL THE FIVE QUESTIONS

5 X 3 = 15M

1. Geotechnical engineers face lot of problems with problematic soil. Explain collapsible soil, which is one of the problematic soil.
(CO1) [Knowledge]
2. Rollers are used to compact field soil. Explain sheepfoot roller which is one of the type of roller.
(CO2) [Knowledge]
3. Dewatering is removal or draining of water from the construction site, List the various dewatering techniques.
(CO3) [Knowledge]
4. Explain the principles of rock mass modification by bolting.
(CO4) [Knowledge]
5. Geosynthetics are generally polymeric products used to solve various civil engineering problems. Explain the various applications of geosynthetics.
(CO4) [Knowledge]

PART B

ANSWER ALL THE THREE QUESTIONS

3 X 15 = 45M

6. Loose soils are a well documented problem, common in the construction industry. Such loose soils are compacted with vibroflotation technique. Explain vibroflotation technique with a neat diagram.
(CO2) [Comprehension]

7. Wellpoint Dewatering is a simple yet efficient method of lowering the water table in excavations. Explain well point method with a neat sketch.
(CO3) [Comprehension]
8. Stone column ground improvement involves adding stones as the vertical column approximately 4m below the ground surface, Explain its design parameter and failure mechanism with a neat sketch.
(CO4) [Comprehension]

PART C

ANSWER ALL THE TWO QUESTIONS

2 X 20 = 40M

9. When highly compressible, normally consolidated clayey soil layers lie at limited/large depths, large consolidation settlements are expected as the result of the loads from large buildings, highway embankments, or earth dams etc. Pre-compression and provision of vertical drains in soft soil may be used to minimize post construction settlement. Explain conventional and vacuum preloading techniques
(CO3) [Application]
10. Geosynthetics are polypropylene materials. They have wide applications to solve various geotechnical engineering problems. Explain various functions of gesynthetics.
(CO4) [Application]
