**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, April 2023**

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|  | **3BT6156** | Roll No. | Total Printed Pages: 2 |
| **3BT6156** |  |
| B. Tech. III Year VI- Semester (Back) End Semester Examination, April 2023  **(CV)** | |
| **BCV06110 : Ground Improvement Technique** | | | |

# Max. Time: **3** Hours. Max. Marks: **60**

Min. Passing Marks: **21**

Attempt **five** questions selecting one question from each Unit. There is internal choice from Unit I to Unit V. Marks of each question or its parts are indicated against each question / parts. Draw neat sketches wherever necessary to illustrate the answer. Assume missing data suitably (if any) and clearly indicate the same in the answer.

Use of following supporting material is permitted during examination for this subject.

# **1.----------------------------------------------** **2.-----------------------------------------**

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|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** | **(a)** | Enumerate the objectives of the ground improvement techniques | **(6)** | **R** |
|  |  |  |  |  |
|  | **(b)** | Explain the principle and function of ground improvement techniques. | **(6)** | **R** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.2** |  | The density of a 10 m deep loose sand deposit is to be increased by compaction piles. Estimate the amount of extra material that will have to be added to the soil per square meter of plan area if the dry density of the soil to be increased from 14 kN/m3 to 16 kN/m3. If the material to be added cost Rs. 300/ per m3, and the cost of constructing the compaction pile is 100% the cost of material, what is the cost of treatment per square meter of plan area. | **(12)** | **A** |
|  |  |  |  |  |
|  |  | **UNIT-II (CO2)** |  |  |
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| **Q.3** | **(a)** | Compare (at least five points) the different methods of in-situ densification of sandy soil. | **(6)** | **C** |
|  |  |  |  |  |
|  | **(b)** | Which type of improvement of ground is best suitable for the construction of foundation of dam, Explain in details? | **(6)** | **R** |
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|  |  | **OR** |  |  |
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| **Q.4** | **(a)** | Explain the dynamic compaction method in detail. | **(6)** | **R** |
|  |  |  |  |  |
|  | **(b)** | What are the different features governed by vibroflotation. | **(6)** | **A** |
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|  |  | **UNIT-III (CO3)** |  |  |
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| **Q.5** | **(a)** | State the two main reasons that do not allow the techniques used for in situ densification of sands to be successful for in situ densification of clays | **(6)** | **R** |
|  |  |  |  |  |
|  | **(b)** | List the factor that have to be considered while selecting an in situ densification technique for clayey soil. | **(6)** | **R** |
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|  |  | **OR** |  |  |
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| **Q.6** | **(a)** | Discuss in detail about the stone column techniques for improvement in soft soil. . | **(6)** | **R** |
|  |  |  |  |  |
|  | **(b)** | Elucidate the differences in stone column and compaction pile. | **(6)** |  |
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|  |  | **UNIT-IV (CO4)** |  |  |
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| **Q.7** | **(a)** | Explain the concept of soil reinforcement in ground improvement techniques. | **(6)** | **R** |
|  |  |  |  |  |
|  | **(b)** | Elucidate the effectiveness of reinforcement-soil interaction. | **(6)** | **R** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
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| **Q.8** | **(a)** | What are the advantages of geo-synthesis for the improvement of week soil? | **(6)** | **R** |
|  |  |  |  |  |
|  | **(b)** | Explain the functions of geo-synthesis on the geotechnical engineering. | **(6)** | **C** |
|  |  |  |  |  |
|  |  | **UNIT V (CO5)** |  |  |
|  |  |  |  |  |
| **Q.9** | **(a)** | Enumerate the definition, principle and need of soil stabilization. | **(6)** | **R** |
|  |  |  |  |  |
|  | **(b)** | Explain in detail about the mechanical stabilization of soil. | **(6)** | **R** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
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| **Q.10** | **(a)** | Describe the principles and method to improve the soil by lime. | **(6)** | **R** |
|  |  |  |  |  |
|  | **(b)** | Explain in detail about the fly ash stabilization of soil. | **(6)** | **R** |