Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **18CE3071** | **Duration :** | **3hrs** |
| **Sub. Name :** | **GROUND IMPROVEMENT TECHNIQUES** | **Max. marks :** | **100** |

**ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Explain the basic concepts in Ground Improvement techniques. | CO1 | 8 |
| b. | Explain the Electro-Osmosis method in Ground Improvement. | CO2 | 8 |
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| 2. | a. | Explain Vibroflotation in densifying the soil. | CO2 | 8 |
| b. | How do the method of blasting and vibrocompaction help in improving the property of soil. | CO2 | 8 |
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| 3. |  | A 5 m thick highway embankment is to be constructed at a location where the soil profile is 6 m thick normally consolidated clay with sand lenses over rock. The undrained strength of the clay is 15 kPa. The unit weight of embankment material is 18 kN/m3. Stone columns 90 cm in diameter are proposed to be used in equilateral triangle grid pattern at 2.5 m center-to-center spacing. Determine: (a) the load carried by a single stone column, and (b) the safety of the stone column in load bearing. | CO5 | 16 |
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| 4. | a. | Explain the stabilization of soil using lime and its advantages. | CO6 | 8 |
| b. | Brief on the use of geopolymer and nano materials in the stabilization of soil. | CO6 | 8 |
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| 5. | a. | Compare suspension and solution grouts. | CO6 | 8 |
| b. | Bring out the different materials used in grouting and list out is characteristics. | CO2 | 8 |
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| 6. | a. | Explain the process of preloading and sand drains in controlling the settlement of soil. | CO3 | 8 |
| b. | Compare the relative merits and demerits of different methods of vibration in soils. | CO1 | 8 |
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| 7. | a. | How is preconsolidation pressure evaluated from Oedometer test. | CO4 | 8 |
| b. | How is dynamic consolidation effective in improvement of soil. | CO2 | 8 |
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| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | Compare the merits and demerits of sand dains and stone column in compacting the soil. | CO3 | 10 |
| b. | Explain the applications of synthetic fibres in soil reinforcement. | CO4 | 10 |