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



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **18CE3081** | **Duration :** | **3hrs** |
| **Sub. Name :** | **PROFESSIONAL PRACTICES IN DESIGN OF GEOTECHNICAL STRUCTURES** | **Max. Marks :** | **100** |

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| **Q. No.** | **Sub Div.** | **Questions** | **Course Outcome** | **Marks** |
| **ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)** | | | | |
| 1. | a. | Differentiate between the woven and non-woven type of geosynthetics. | CO1 | 4 |
| b. | Briefly explain the properties of geosynthetics materials in all aspects. | CO1 | 6 |
| c. | Name the different types of retaining wall with its applications. | CO1 | 6 |
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| 2. |  | Design a cantilever retaining wall to retain an earth embankment with a horizontal top 4m above ground level.  Density of earth = 16kN/m3, Angle of internal friction φ=28º,  SBC of soil = 250kN/m2, Coefficient of friction between soil and concrete = 0.5. Adopt M20 grade and Fe500 steel. | CO2 | 16 |
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| 3. | a. | Elaborate the step by step procedure for the design of box culvert. | CO2 | 6 |
|  | b. | Discuss the various components of pneumatic caisson with the help of a sketch. | CO3 | 6 |
|  | c. | Draw the sketch of an open caisson. How the various components are designed? | CO3 | 4 |
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| 4. | a. | What are the various types of foundations used for transmission line towers? Explain the method of selecting a proper type of foundation. Illustrate your answer with neat sketches. | CO3 | 8 |
|  | b. | Brief the safety of a tower foundation checked against  (i) Uplift (ii) Overturing (iii) Lateral thrust. | CO4 | 8 |
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| 5. |  | Design a pile group consisting of RCC piles for a column of size 450mmx450mm carrying load of 2500kN. The soil exploration data reveal that the sub-coil consists of deposit of soft clay extending to a great depth. Take the saturated unit weight 18kN/m3, Unconfined compression strength 60kN/m2. Take the proportion the pile group for the permissible settlement of 40mm. Design piles and pile cap. | CO4 | 16 |
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| 6. | a. | Explain the step by step prodeure for the design of abutments and pier. | CO4 | 4 |
|  | b. | Differentiate between low-strain and high strain tests used for the measurement of dynamic soil properties. | CO5 | 6 |
|  | c. | Discuss about the under reamed pile foundation with neat sketch. | CO5 | 6 |
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| 7. | a. | Briefly explain about the shoring systems. | CO5 | 4 |
|  | b. | Discuss the design concept of floating foundations. | CO5 | 6 |
|  | c. | Estimate the load carrying capacity of pile in (i) cohesionless soil (ii) cohesive soil. | CO5 | 6 |
|  | | **COMPULSORY QUESTION (1 x 20 = 20 Marks)** |  |  |
| 8. | a. | Discuss the applications of Finite Element Analysis software package PLAXIS. | CO6 | 10 |
|  | b. | Discuss about the project planning and quality control in construction management. | CO6 | 10 |