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



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

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| **Code :** | **18CE3062** | **Duration :** | **3hrs** |
| **Sub. Name :** | **SUBSURFACE 1NVESTIGATIONS AND FIELD TESTING** | **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. | List the objectives of soil exploration. | CO1 | 2 |
| b. | Discuss the different stages in soil exploration. | CO1 | 4 |
| c. | For a commercial building G+3 floors and the soil investigation has been done covering a land area of 2000sqm.Discuss about the no of bore holes its spacing and the depth of investigation to be undertaken for this project. | CO6 | 10 |
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| 2. | a. | Infer the use of bentonite in drilling of bore hole. | CO2 | 2 |
| b. | Sketch an open pit used for soil investigation and list its advantages. | CO1 | 4 |
| c. | Explain the method of wash boring with a neat sketch of an investigation up to 10m depth along with field bore log report. | CO6 | 10 |
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| 3. | a. | Distinguish between disturbed and undisturbed soil sample. | CO3 | 2 |
| b. | Define sample disturbance, how does the inside and outside clearance affect the sample disturbance. | CO3 | 4 |
| c. | Explain in detail the steps to be taken in the preservation and handling of the undisturbed samples used for laboratory test. | CO3 | 10 |
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| 4. | a. | The observed ‘N’ value on a saturated silty sand at a depth of 2m was 37.Calculate the corrected ‘N’ value. | CO2 | 2 |
| b. | The settlement obtained from plate load test conducted at the depth of 2m on sandy soil is 25mm.If a footing of size 2m X 2m is to be provided on the same soil. Calculate the probable settlement. | CO4 | 4 |
| c. | Standard penetration test was conducted at a depth of 1.5m on a sandy soil in Perur. The ‘N’ value was observed to be 23.The permissible settlement for an isolated footing is 25mm. Calculate the safe bearing capacity of the soil ,if a foundation measuring 1.5m wide is provided on the soil, whose saturated unit weight of soil is 19.8 kN/m3. | CO4 | 10 |
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| 5. | a. | Distinguish between thin walled and thick walled sampler. | CO3 | 4 |
| b. | Explain the monotonic plate load test with neat sketch. | CO4 | 12 |
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| 6. | a. | Interpret the principle involved in electrical resistivity method in soil investigation. | CO2 | 2 |
| b. | List the advantages of geophysical methods in soil exploration. | CO5 | 4 |
| c. | Explain the electrical resistivity method in identifying the different soil layers, hard stratum and water table with a neat sketch. | CO2 | 10 |
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| 7. | a. | State the importance of instrumentation in soil structures. | CO5 | 2 |
| b. | Sketch a helical auger and describe its relevance in soil investigation. | CO5 | 4 |
| c. | Describe the insitu vane shear test and show how it is used to evaluate the strength parameters of soil. | CO5 | 10 |
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| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. |  | Summarize in detail the following geophysical methods   1. Electrical Profiling. 2. Seismic Refraction method. | CO5 | 20 |