

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree Regular and Supplementary Examination December 2020

Course Code: CE363**Course Name: GEOTECHNICAL INVESTIGATION**

Max. Marks: 100

Duration: 3 Hours

*Graph sheets to be provided***PART A***Answer any two full questions, each carries 15 marks.*

Marks

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| 1 | a) Elaborately describe the sub surface exploration programme. | (10) |
| | b) List down the objectives of soil investigation. | (5) |
| 2 | a) Discuss on the guidelines laid down in IS 1892.1979 for fixing the number of boreholes and depth of exploration. | (10) |
| | b) Illustrate the test set up for a plate load test conducted under gravity loading. | (5) |
| 3 | a) Differentiate between wash boring, auger boring and percussion drilling. | (10) |
| | b) Discuss on the limitations of plate load test. | (5) |

PART B*Answer any two full questions, each carries 15 marks.*

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| 4 | a) Critically compare between Standard Penetration Test, Static Cone Penetration Test and Dynamic Cone Penetration Test. | (8) |
| | b) List the various factors affecting the value of Standard Penetration Number. | (7) |
| 5 | a) The observed SPT N value in a deposit of fully submerged fine silty sand was 40 at a depth of 6.5 m. The average saturated unit weight of soil is 19.5 kN/m ² . Find the corrected SPT number. | (3) |
| | b) List any two advantages of static cone penetration test. | (2) |
| | c) Differentiate between electrical profiling and electrical sounding. | (5) |
| | d) What are the advantages and disadvantages of pressure meter test? | (5) |
| 6 | a) Explain seismic refraction test with a neat sketch. What are the limitations of seismic refraction test? | (7) |
| | b) What is the significance of pressure meter modulus and limit pressure? Explain. | (8) |

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) Discuss on the different types of samplers classified based on the mode of operation. (10)
- b) Explain the method of obtaining sand samples below water table. (5)
- c) An open drive sampler with an outside diameter 76 mm and inside diameter 72mm was used to obtain soil sample. Calculate the area ratio and also mention the quality of sample obtained? (5)
- 8 a) Define a borelog and also sketch a typical borelog. (5)
- b) What are the important points to be included in a soil investigation report? (5)
- c) Following data was obtained in a vertical pile load test on a 300 mm diameter pile. (10)

Load (kN)	50	100	200	300	400	500	600
Settlement (mm)	2.5	4	9.5	16.5	27	40	61

Plot the load settlement curve and determine the allowable load as per IS Code

- 9 a) Explain the procedure of separating point resistance and skin friction from the results of cyclic pile load test. (10)
- b) Discuss on any two factors affecting sample disturbance and what are the ways to minimize them. (5)
- c) Differentiate between representative and non representative samples? (5)
