

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

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2017**

**Course Code: CE363**

**Course Name: GEOTECHNICAL INVESTIGATION**

Max. Marks: 100

Duration: 3 Hours

*Graph sheet is supplied on request.*

**PART A**

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

Marks

- 1
  - a) List the objectives of soil exploration (5)
  - b) What are the guide lines provided in IS code on fixing the spacing of bore holes? (5)
  - c) What is significant depth ? (5)
- 2
  - a) Explain wash boring with the help of a sketch. (7)
  - b) A plate load test was conducted on a uniform deposit of sand and the following data were obtained. (8)

Pressure (kN/m <sup>2</sup> )	5	100	200	300	400	500	600
Settlement(mm)	1.5	2.0	4.0	7.5	12.5	20.0	40.0

Size of the plate is 75 cm\*75 cm and that of the pit is 3.75m\*3.75mm \*1.5 m. Plot the pressure settlement curve and determine the safe pressure corresponding to footing settlement of 15mm.

- 3
  - a) Explain the major steps involved in reconnaissance for a geotechnical investigation of a multi storied building. (7)
  - b) What are the different types of augers? Draw neat sketches. (8)

**PART B**

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

- 4
  - a) What are the corrections to be applied to SPT values? Explain. (7)
  - b) Differentiate between electrical profiling and electrical sounding. (8)
- 5
  - a) Give a critical comparison of CPT, SPT and DCPT. (8)
  - b) The observed SPT value (N) in a deposit of fully submerged fine silty sand was 45 at a depth of 6.5m. The average saturated unit weight of soil is 19.5 kN/m<sup>3</sup> Find the corrected SPT number. (7)
- 6
  - a) Write down the procedure and the limitations of seismic refraction method. (7)
  - b) Explain in detail pressure meter test. (8)

**PART C**

*Answer any two full questions, each carries 20 marks.*

- 7
  - a) Define i) Area ratio, ii) Inside clearance iii) Outside clearance iv) Recovery ratio. (6)
  - b) Explain with a neat sketch Piston sampler and a Split spoon sampler. (7)
  - c) Compute the area ratio of a thin walled tube sampler of external diameter 6.0 cm and wall thickness 2.25mm and comment on the type of soil sample obtained using this sampler. (7)
- 8
  - a) Differentiate between bore log and soil profile. (8)
  - b) Explain IS code provision to calculate safe load in static pile load test on a single pile. (8)
  - c) Draw a typical bore log chart. (4)
- 9
  - a) Explain the factors affecting sample disturbance. What are the precaution to be taken in handling and transporting soil samples? (10)
  - b) What is rock quality designation ? (4)
  - c) Differentiate between static and cyclic pile load test. (6)