Total Pages: 1

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^2)	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^3 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)