

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth semester B.Tech degree examinations (S) September 2020

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

Max. Marks: 100

Duration: 3 Hours

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

Marks

- 1 a) What are the procedures to be carried out for preliminary and detailed ground investigation? (10)
- b) What are the criteria for fixing the number and spacing of boreholes? (5)
- 2 a) Differentiate between rotary drilling and auger boring. (7)
- b) Explain the steps involved in reconnaissance for soil investigation programme of a multi storeyed building. (8)
- 3 a) In a plate load test conducted on a cohesionless soil, a 550 mm square test plate settles by 10 mm under a load intensity of 0.2 N/mm². All conditions remaining the same, what will be the settlement of 1 m square footing? (5)
- b) List the disadvantages of plate load test. (5)
- c) Sketch the figure for a plate load test under reaction truss loading with all detailing. (5)

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

- 4 a) What are the precautions to be taken while conducting SPT test? (10)
- b) How does overburden pressure and dilatancy affect the measured Standard penetration number or N value? (5)
- 5 a) Explain dynamic cone penetration test with a neat diagram. (7)
- b) List the advantages and disadvantages of pressure meter test. (8)
- 6 a) With neat diagrams, explain electrical sounding and electrical profiling methods. (10)
- b) How is the thickness of subsurface layers computed using seismic refraction method? (5)

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) What is meant by undisturbed and disturbed samples? Mention the sampler which can be used to obtain undisturbed and disturbed samples? (6)
- b) An open drive sampler with an outside diameter 76 mm and inside diameter 72 mm was used to obtain soil sample. Calculate the area ratio and also mention the quality of sample obtained? (4)
- c) Explain the different features of a sampling device which controls the sample disturbance and ways to reduce them. (10)
- 8 a) During a sampling operation, a thin walled sampler was pushed into soft clay to a distance of 600 mm. The recovered length of the sample was found to be 589 mm. What is the recovery ratio? Also mention the sample quality. (5)
- b) Briefly explain the method of collecting sand samples from beneath the water table. (5)
- c) Define Rock quality designation and core recovery. How are core samples handled and transported to laboratory? (10)
- 9 a) Explain the procedure for separating skin friction and point resistance from a cyclic pile load test data. (10)
- b) A pile load test is conducted on a 30 cm diameter pile. The results are given in the table below: (10)

Load in tonnes	Settlement in mm
25	4
50	11.25
75	21
100	33.5
125	50.5
150	62

Plot the graph and determine the allowable load.

(Chart papers to be provided for this question)
