

Register No: Name:



SAINTGITS COLLEGE OF ENGINEERING KOTTAYAM, KERALA

(AN AUTONOMOUS COLLEGE AFFILIATED TO
APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIRST SEMESTER M.TECH. DEGREE EXAMINATION(R), MARCH 2021 GEOMECHANICS AND STRUCTURES

Course Code: 20CEGST111**Course Name:** SOIL EXPLORATION AND FIELD TESTING**Max. Marks:** 60**Duration:** 3 Hours

PART A

(Answer all questions. Each question carries 3 marks)

1. Explain working principle of Seismic Refraction method
2. Distinguish between representative and non-representative soil specimens.
3. A sampling tube has an outer diameter of 75mm and wall thickness of 1.7mm. Find the area ratio of the tube and comment on whether the tube could be used for obtaining undisturbed soil samples.
4. Give the correlation between “N” value with Shear Strength and Relative Density
5. Explain how to prepare a good soil report
6. Give the differences between a bore log and soil profile
7. Point out the possible difficulties while performing underwater sampling.
8. What is Lidar?

PART B

(Answer one full question from each module, each question carries 6 marks)

MODULE I

9. Propose a comprehensive site investigation programme for a multistoried building complex. Explain how it differs from an earth dam project. (6)

OR

10. Discuss IS guidelines for choosing spacing and depth of borings. (6)

MODULE II

11. Discuss possible ways of disturbances while collecting an undisturbed sample and remedial measures to minimize such disturbances (6)

OR

12. Piston sampler is considered to be very good method of sampling in soft clays. What are the features of this sampler which are specially designed for minimizing disturbance? (6)

MODULE III

13. Explain field vane shear test. A shear vane of 7.5cm diameter and 11cm length was used to measure the shear strength of clay. If a torque of 600Nm was required to shear the soil,

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calculate the shear strength. The vane was then rotated rapidly to cause remolding of soil. The torque required in the remolded state was 200 Nm. Determine sensitivity of clay. (6)

OR

14. Explain in detail about computing of Coefficient of Elastic Uniform Compression using Cyclic Plate Load Test. (6)

MODULE IV

15. Explain in detail how and why Seismic Crosshole and Downhole tests are performed. Compare the tests. (6)

OR

16. Explain block vibration test to determine the dynamic properties of soil. (6)

MODULE V

17. Explain the procedures adopted while performing the Back Analysis (6)

OR

18. Draw neatly a typical boring log incorporating all details in a subsoil investigation report. (6)

MODULE VI

19. Write notes on geotechnical instrumentation for measuring soil pressure, settlement and flow in the field. (6)

OR

20. Explain different types of underwater samplers. (6)
