

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIRST SEMESTER M.TECH DEGREE EXAMINATION (Regular), DECEMBER 2023

(2021 Scheme)

Course Code: 21GS104-A

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 the codal provisions for selecting depth and lateral extent of exploration.
2. Discuss the preservation and transportation of samples.
3. Explain pressure meter test with figure. Narrate limitations.
4. Explain the method to measure K_0 in field.
5. State the significance of estimating depth of water table.
6. Compare onshore and offshore investigations.
7. Explain the significance of forensic analysis of geotechnical failures
8. Explain the limitations of lidar investigation method.

PART B

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

MODULE I

9. Find the velocity of compression wave and depth of change in layer from the following data, obtained during seismic refraction test.

Distance of geophones (m)	20	30	40	60	800	1000	1200	(6)
Time taken by waves(min)	33	50	66	100	450	500	550	

OR

10. a) Discuss electrical resistivity method with figure. (3)
- b) Explain the merits and demerits of the above method. (3)

MODULE II

11. a) Compare representative and non-representative samples. (2)
- b) Narrate various samplers and methods to fetch the representative (4)

samples.

OR

12. a) Describe piston sampler with figure. (3)
b) Discuss the advantages of thin walled sampler and the circumstances under which it is used. (3)

MODULE III

13. a) Compare static and dynamic cone penetration test. (3)
b) Narrate pressure meter with necessary figures. (3)

OR

14. Explain pile load test and the procedure for the determination of safe load with the help of diagram. (6)

MODULE IV

15. Discuss (i) Seismic cross hole test (6)
(ii) Block vibration test (iii) Cyclic pile load test.

OR

16. a) Discuss the correlation of N value with CPT value. (2)
b) Narrate the correlation of N value with shear strength and relative density. (4)

MODULE V

17. a) Draw neatly a typical boring log incorporating all details in a subsoil investigation report. (4)
b) Explain limitations of back analysis to analyze geotechnical failures. (2)

OR

18. a) Explain the method of locating water table in a bore hole for soil exploration. (3)
b) Explain most common causes of geotechnical failures. (3)

MODULE VI

19. Describe bathymetry and various instruments used for the collection of data to make bathymetric maps. (6)

OR

20. a) Explain various offshore investigation methods. (3)
b) Explain different types of underwater samplers. (3)
