

Register No.: ..... Name: .....

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**FIRST SEMESTER M.TECH DEGREE EXAMINATION (Regular), FEBRUARY 2022****CIVIL ENGINEERING (GEOMECHANICS AND STRUCTURES)****(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. Discuss IS guidelines for depth of Exploration.
2. Differentiate between disturbed and undisturbed soil samples
3. Explain briefly the pressure meter test.
4. What are the limitations of the seismic method of investigation?
5. What is the significance of the method of back analysis in geotechnical engineering?
6. Write any 5 guidelines for forensic investigation of geotechnical failures
7. What is drill ship method of sampling
8. Explain briefly about Bathymetry

**PART B***(Answer one full question from each module, each question carries 6 marks)***MODULE I**

9. What are the different stages of subsurface soil exploration (6)

**OR**

10. Differentiate between auger and wash boring. (6)

**MODULE II**

11. A given sample tube has the following dimensions. Inside diameter-38mm, outside diameter 50mm. The sample tube has a cutting shoe of internal diameter 35mm and external diameter of 52mm attached to it. Compute inside clearance ratio and outside clearance ratio of the sampling assembly. Do you recommend the sampler for obtaining undisturbed soil samples? (6)

**OR**

12. Explain with a neat sketch thin walled sampler. (6)

**MODULE III**

13. Explain IS code provision to calculate safe load in static pile load test. (6)

**OR**

14. What are the precautions for obtaining reliable results in SPT? (6)

**MODULE IV**

15. A SPT was conducted in a dense sand deposit of 20m and a value of 46 was observed for N. The density of the sand was  $15\text{kN/m}^2$ . What is the value of N corrected for overburden pressure. (6)

**OR**

16. Explain the significance of overburden correction in SPT. Describe the objectives of sounding and penetration tests. (6)

**MODULE V**

17. What is the importance of borelog in site investigation? (6)

**OR**

18. Explain forensic analysis of foundation failure. (6)

**MODULE VI**

19. What are the differences between onshore and offshore soil investigation (6)

**OR**

20. Briefly explain the steps of subsoil investigation below sea or riverbed (6)

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