

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY  
FIRST SEMESTER M. TECH DEGREE EXAMINATION**

**Civil Engineering**

**(Geomechanics & Structures)**

**04CE6309 – SOIL EXPLORATION & FIELD TESTING**

Max. Marks : 60

Duration: 3 Hours

**PARTA**

*Answer All Questions*

*Each question carries 3marks*

1. Explain working principle of Seismic Refraction method
2. How to collect Representative soil samples?
3. Differentiate between Static and Dynamic Cone Penetration tests
4. Give the correlation between “N” value with Shear Strength and Relative Density
5. State the significance of estimating depth of water table.
6. How is a bore log useful while designing a structure?
7. Define Bathymetry
8. State the merits and demerits of a grab sampler.

**PARTB**

*Each question carries 6marks*

9. Comment on the necessity of undisturbed soil sampling. Discuss any two means for undisturbed soil sampling in cohesive soil deposits.

OR

10. How do you decide the depth and spacing of a borehole? Indicate the spacing and depth of exploration for
  - a. A multistoried Apartment Project
  - b. Very Large are covering Industrial and Residential Complexes
  - c. Dams
  - d. Road Cuts and Fills
  - e. Residential Project
11. What is the effect of sample disturbance on the test results of clay in the following tests
  - a. Compression Index
  - b. Shear strength parameters
  - c. Shear modulus

OR

12. Write in detail regarding preservation and transportation of soil samples.
13. Derive the expression to calculate shear strength by using a Vane Shear Apparatus. Assume uniform pressure distribution and both ends involved in shearing.

OR

14. Explain with necessary sketches, about how Point Resistance and Skin Friction are computed by using Cyclic Pile Load Test.
15. Explain how Damping Coefficient and Coefficient of Attenuation is measured on site.

OR

16. What is Hydraulic Fracture? What is it used for and How is it Performed?

17. Explain the procedures adopted while performing the Back Analysis

OR

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

19. Explain Geotechnical Instrumentation for

- a. Soil Pressure
- b. Settlement
- c. Pore water Pressure

OR

20. Discuss the difficulties faced in Underwater Soil Sampling. Explain any two method for the same.