APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

THIRD SEMESTER M. TECH DEGREE EXAMINATION

Civil Engineering

(Geomechanics & Structures)

04CE7311—Slope Stability

Max. Marks : 60 Duration: 3 Hours

PART A

Answer All Questions

Each question carries 3 marks

1. Explain the basic concept of slope stability.
2. Summarize Newmark's displacement method.
3. Explain the functioning of a tie-back wall while stabilizing a slope
4. How effective is a rip-rap in protecting surface slope of a river?
5. Explain features of a landslide with a neat sketch.
6. Explain the mechanism of rainfall induced landslides.
7. What are geosynthetic clay liners?
8. What are the various data used for the selection of a landfill site?

PART B

Each question carries 6 marks

9. Explain the various factors considered for slope stability analysis.

OR

10. Describe the major causes of slope failures.

11. A slope is to be constructed in a soil having c = 0 and φ = 36°. It is assumed that water level may occasionally reach the surface of a slope with seepage taking place parallel to the slope. Determine the maximum slope angle for a factor of safety of 1.5 assuming a potential failure surface parallel to the slope. What would be factor of safety of slope constructed at this angle if the water table is well below the surface? The saturated unit weight of soil is 19kN/m³.

OR

12. Explain friction circle method for slope stability analysis.
13. Enumerate on various subsurface drainage methods that can be adopted in soil slopes.

OR

14. Write short notes on (i) Micropiles (ii) Stone Columns (iii) Geosynthetically reinforced slopes.
15. Give critical comparison of Grouting and Lime injection for slope stabilization.

OR

16. Illustrate on various factors involved in the selection of most effective and economical stabilization method.
17. Write a note on landslide mitigation methods.

OR

18. Explain (i) Types of landslide movements (ii) Correlation between landslides and rainfall
19. Explain the basic sequence of construction of landfill.

OR

20. Discuss various landfill waste engineering properties.