

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER M.TECH DEGREE EXAMINATION

Civil Engineering
(Geomechanics & Structures)

04 CE 7311 – SLOPE STABILITY

Use Taylors Stability, Newmarks Charts are permitted

Maximum Marks: 60

Duration: 3 Hours

PART A

Answer all Questions

Each question carries 3 marks

1. Explain how pore water pressure can influence stability of slopes.
2. Estimate the factor of safety with respect to cohesion for a submerged embankment of 20m height and having a slope of 55° . ($c = 35\text{kN/m}^2$, $\gamma_{\text{sat}} = 19\text{kN/m}^3$ and $\phi = 20^\circ$)
3. Explain the functioning of a tie-back wall while stabilizing a slope.
4. What are the various rock slope stabilization methods?
5. Explain features of a landslide with sketches.
6. Explain the mechanism of rainfall induced landslides.
7. What are anchor trenches.
8. What are the various engineering properties of landfill waste?

PART B

Each Question Carries 6 marks

9. Explain various factors considered for slope stability analysis.

OR

10. Explain the planning of an exploration program for slope stability.
11. Determine the factor of safety of the slope shown in figure 11. The slope angle is 45° . Use Friction Circle Method. Assume any missing data

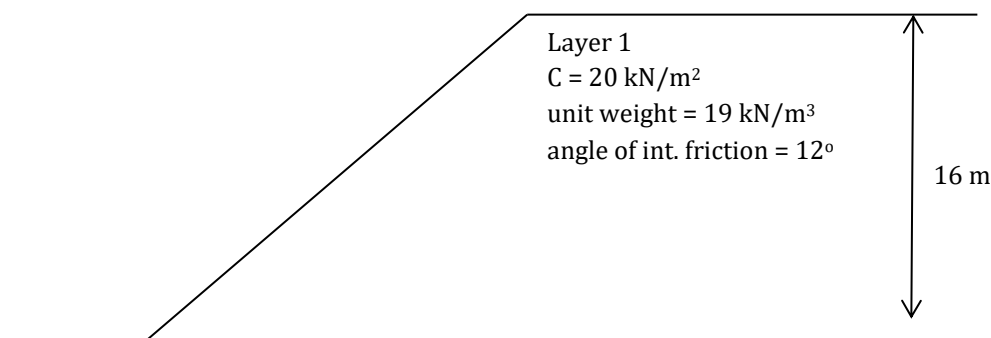


Figure 11

OR

12. An embankment has a slope of 1H to 1V with a height of 25m. It is made of soil having cohesion of 30 kN/m^2 and an angle of internal friction of 20° and unit weight of 18 kN/m^2 . Consider any failure circle passing through the toe. Use Method of Slices to find the factor of safety. Assume any missing data.
13. Explain in detail:
- Stone Columns.
 - Micropiles.

OR

14. Explain :
- Gravity Retaining walls.
 - Subsurface drainage.
15. Explain how electroosmosis and preconsolidation can be clubbed to improve slope stability.

OR

16. Explain the methods which are alternative to slope stabilization.
17. Explain:
- Landslide rates and types of movement.
 - Correlation between landslide and slope stability.

OR

18. Explain types of landslides and its mechanism.
19. Comment on stability of landfills under following pretext:
- Cover system stability.
 - Waste fill stability.

OR

20. Comment on usage of Geogrids and Geomembranes in landfills.