

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

THIRD SEMESTER M.TECH DEGREE EXAMINATION (Regular), FEBRUARY 2022**CIVIL ENGINEERING (GEOMECHANICS AND STRUCTURES)****(2020 Scheme)****Course Code :** 20CEGST233**Course Name:** Slope Stability**Max. Marks :** 60**Duration: 3 Hours***Use of stability charts are permitted***PART A***(Answer all questions. Each question carries 3 marks)*

1. List the factors contributing to slope failures.
2. With a neat sketch, briefly write a note on stability analysis of Infinite slope in dry sand.
3. What is meant by biotechnical stabilization? Can it be implemented for a natural slope?
4. List any three methods to increase the resisting forces that help stabilize a slope.
5. What are the classification of landslides based on rate of movement?
6. Write a note on the Mechanism of rainfall-induced landslides.
7. Write a brief note of various landfill configurations.
8. Write a brief note on three geosynthetics used in landfills.

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

9. Explain wetting band approach in slope stability (6)

OR

10. a) List the advantages and limitations of a pneumatic piezometer (3)
b) Briefly explain how seismicity is a factor considered for slope stability analysis (3)

MODULE II

11. Explain the friction circle method for slope stability analysis (6)

OR

12. a) A slope is to be constructed at an inclination of 30 degrees with the horizontal. Find the safe height of the slope. Consider FoS as 1.5 and Cohesion is 15kPa, the Unit weight of soil is 19kN/m³ and the angle of internal friction is 22.5 degrees. (4)
b) Find the factor of safety of a slope of infinite extent having a slope angle = (2)

25°. The slope is made of cohesionless soil with the angle of internal friction = 30°.

MODULE III

13. Buttrressing is a technique used to counter the driving force of a slope. Explain with a neat sketch. (6)

OR

14. a) Explain how Stone Columns are effective in stabilizing slopes (3)
b) Explain how Geosynthetic reinforcement is effective in stabilizing slopes (3)

MODULE IV

15. Explain surface slope protection of electro-osmosis. What type of soil do you prefer this method (6)

OR

16. a) Explain rock slope stabilization methods (4)
b) Write a brief note of shotcrete method (2)

MODULE V

17. a) Write a short note on weathering induced landslides (3)
b) Unscientific works done by engineers and contractors can trigger landslides. Elaborate how. (3)

OR

18. a) Explain the Seepage flow mechanism due to infiltration. (3)
b) Explain the Correlation between landslides and rainfall. (3)

MODULE VI

19. With a suitable diagram, explain the construction of a landfill. (6)

OR

20. Write a note on slope stability considerations. (6)
