

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM
IV B. Tech I Semester Advanced Supplementary Examinations March 2025

EARTH & ROCK FILL DAMS

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

UNIT-I

1. a) How are inclinometers used to monitor the potential movement or displacement of the dam structure? [7M]
b) Discuss the key factors that need to be considered when selecting a site for constructing an earth dam. [7M]

(OR)

2. a) Explain the primary causes of failure in earth and rockfill dams [7M]
b) Classification of earth dams based on different parameters such as design, materials, and construction methods. [7M]

UNIT-II

3. a) Explain the concept of drainage control in earth dams. [7M]
b) Discuss the importance of filter embankment and foundation. [7M]
- (OR)
4. a) What are the factors considered in filter design, and how does proper filter selection and placement prevent erosion and internal instability within the dam? [7M]
b) Discuss the treatments or measures employed to stabilize the upstream and downstream slopes of earth dams. [7M]

UNIT-III

5. a) Explain the use of Bishop's pore pressure parameters in slope stability analysis. [7M]
b) An embankment is inclined at an angle 35° and its height is 15m. The angle of shearing resistance is 15° and the cohesion intercept is 40kN/m². The unit weight of soil is 18kN/m³. Examine the factor of safety with respect to cohesion. Consider Taylor's stability number = 0.06. [7M]

(OR)

6. a) Discuss the Stability of downstream slope under steady seepage from the considerations of horizontal shear at base under the downstream slope of the dam. [7M]
b) Discuss the difference between short-term and long-term stability in slopes. [7M]

UNIT-IV

7. a) Explain the use of Taylor Charts in slope stability analysis. [7M]
b) Describe the method of slices used in slope stability analysis. [7M]
- (OR)
8. a) Discuss the differences between Bishop's analysis and Morgenstern's analysis for non-circular failure surfaces. [7M]
b) Explain the design requirements for (i) control of cracking (ii) stability in earthquake regions and at junctions. [7M]

UNIT-V

9. a) Discuss the key requirements of compacted rock fill for use in rock fill dams. [7M]
b) What are the basic design requirements for the design of rock fill dam to ensure safety against overtopping, stability and internal erosion [7M]
(OR)
10. a) Explain the construction and design of rock fill embankments in dams. [7M]
b) Discuss the factors that affect the stability of rock fill dams. [7M]
