Code No: **R204101J** **R20** **Set No. 1**

IV B.Tech I Semester Regular Examinations, January – 2024

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
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UNIT - I

1 a) What is a dam? Distinguish the general features of earth and rock-fill dams. [7]
b) Discuss the merits and demerits of earth dams. [7]

(OR)

2 a) How is pore-water pressure in the ground measured? [7]
b) Write the significance of seismic measurements in the location of earth and rock-fill dams. List out the various instruments to measure lateral deformation. [7]

UNIT - II

3 a) What is the necessity to analyze the nature of failure in an earth dam? [7]
b) What are upstream and downstream slope failures? Which are very serious and why? [7]

(OR)

4 a) What is a flow net? Derive equation to determine seepage through the earth embankment. [7]
b) Explain piping failure through the embankment and foundation of a dam. [7]

UNIT - III

5 a) What is meant by slope stability analysis? Explain its significance. [7]
b) Distinguish between short-term and long-term stability of slopes. [7]

(OR)

6 a) What is a slope failure? Explain the types of failure of slopes. [7]
b) Briefly discuss the checks that are required to be made to investigate the stability of an earthen dam. [7]

UNIT - IV

7 a) Explain in detail with steps the 'Simplified Bishops' method for stability analysis of earth dams. Support your answer with the necessary equations and calculations. [7]
b) Explain Spencer's analysis of slope stability. [7]

(OR)

8 a) What is surface protection in the case of earthen dams? What is its purpose? [7]
b) What are the various measures taken for the surface protection of earthen dams? [7]

UNIT - V

9 a) What are rockfill dams and what are their advantages over earthen dams? Draw a neat sketch showing the cross-section of a rock-fill dam. [7]
b) Explain the design requirements for (i) Control of cracking and (ii) Stability in earthquake regions and at junctions. [7]

(OR)

10 a) What are the basic requirements for the rock-fill dam design to ensure safety against overtopping, stability and internal erosion? [7]
b) What are rockfill embankments? How are they constructed? [7]