

5E1744	Roll No. XXXXXXXXXX	Total No. of Pages : 2
5E1744		
B.Tech. V-Sem. (Main&Back) Examination, November/December - 2025 Civil Engineering SCE4-05 Water Resource Engineering		

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

Attempt all Ten questions from Part A, Five questions out of seven questions from Part B and Three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

(Mentioned in form No. 205).

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory.

(10×2=20)

- ~~1.~~ Name two major benefits of irrigation.
- ~~2.~~ What is meant by irrigation efficiency?
- ~~3.~~ List different types of canals based on alignment.
4. What is the difference between distributary and minor canals?
5. What is the function of a diversion headwork in an irrigation system?
6. Differentiate between weir and barrage.
7. What is a silt excluder? Why is it required?
8. Distinguish between embankment dam and gravity dam.
9. What is a cross-drainage structure?
10. Define a shallow well.

PART - B

(Analytical / Problem Solving Questions)

Attempt any Five questions.

(5×4=20)

- ~~1.~~ Explain the necessity of irrigation in India. Discuss various types of irrigation systems along with their advantages and limitations.

2. Describe the types, functions and components of a gravity dam.
3. Explain the layout and functions of different components of a typical diversion headwork with neat sketches.
4. Define hydrology. Explain the hydrological cycle with a neat diagram.
5. Explain the factors affecting runoff in a catchment area.
6. Explain the types of wells used for irrigation. Discuss the suitability and advantages of tube wells over open wells.
7. What is meant by "regime channel"? Explain the characteristics and conditions of regime channel as per Lacey's theory.

PART - C

(Descriptive/Analytical/Problem Solving / Design Questions)

Attempt any Three questions.

(3×10=30)

1. Compare Kennedy's and Lacey's theories of canal design highlighting their assumptions, derivations and applicability to practical canal design.
 2. Explain Bligh's Creep theory for seepage under hydraulic structures. Derive an expression for creep length and discuss the limitations of their method.
 3. Discuss the modifications made by Khosla's to Bligh's Creep theory. Explain how Khosla's corrections help in safer design.
 4. Describe Khosla's method of independent variables for seepage analysis under weirs and barrages.
 5. Define unit hydrograph. State the assumptions of unit hydrograph theory. Derive the method for converting a storm hydrograph into a unit hydrograph and explain its applications.
-