

CBCS SCHEME



21CV51

Fifth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025 Hydrology and Water Resource Engineering

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain hydrologic cycle (Horton's) with process involved in it. (10 Marks)
- b. What are the importance of hydrology with emphasis of global water availability. (10 Marks)

OR

- 2 a. Define rain gauge. Describe with a neat sketch the principle of working of Symon's non-recording gauge. (10 Marks)
- b. A 12 – hour storm rainfall with the following depth in cm occurred over a basin :
2.0, 2.5, 7.6, 3.8, 10.6, 5.0, 7.0 10.0, 6.4, 3.8, 1.4 and 1.4.
The surface run – off resulting from the above storm is equivalent to 25.5 cm of depth over the basin. Determine the average infiltration index for the basin (10 Marks)

Module-2

- 3 a. What is runoff? List and explain Factor's affecting it. (10 Marks)
- b. Define the following :
i) Basin recharge
ii) Direct run off
iii) Drainage density
iv) Over land flow. (10 Marks)

OR

- 4 a. Define "unit hydrograph" with the help of neat sketch explain various components of a flood hydrograph. (10 Marks)
- b. The hourly ordinates of a two-hour unit hydrograph are given below. Derive a 6 hour unit hydrograph for the same catchment :

Time hours	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Discharge cumecs	0.0	1.0	2.7	5.0	8.0	9.8	9.0	7.5	6.3	5.0	4.0	2.9	2.1	1.3	0.5	0.0

(10 Marks)

Module-3

- 5 a. Discuss the benefits and ill effects of irrigation. (10 Marks)
- b. Explain with a neat sketch Bondhar's irrigation. List out advantages and disadvantages. (10 Marks)

OR

- 6 a. Define duty and delta. Derive the relation between them. (08 Marks)
- b. What is irrigation efficiency? Define different efficiencies of irrigation water. (06 Marks)
- c. What are flow irrigation and lift irrigation. Explain briefly. (06 Marks)

Module-4

- 7 a. What is canal? List its types and explain with a neat sketch its classification based on alignment. (10 Marks)
b. What is meant by design of canal? Bring out the difference between Kennedy's and Lacey's theory. (10 Marks)

OR

- 8 a. With sketch explain different zones of a storage reservoir. (10 Marks)
b. Explain hydrological investigations of reservoir planning. List the points to be considered for selection of a site for a reservoir. (10 Marks)

Module-5

- 9 a. Explain causes of floods and what are the methods adopted to flood alleviation. (control of floods). (10 Marks)
b. Explain how flood damage analysis is estimated. (10 Marks)

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- 10 a. Explain the Drought? Explain the causes of drought and measures for water conservation. (10 Marks)
b. Explain the different methods of rainwater harvesting. (10 Marks)
