



Fifth Semester B.E. Degree Examination, Dec.2023/Jan.2024 Hydrology and Water Resources Engineering

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain Hydrology – an Interdisciplinary Science. What are the practical application of hydrology? (10 Marks)
- b. The analysis of a storm yielded the following :

Isohyet Interval (mm)	70-80	80-90	90-100	100-110	110-120	120-130
Area (km) ²	10	85	113	98	136	67

Calculate the average depth of rainfall. (05 Marks)

- c. Explain Double Mass curve technique to test consistency of data. (05 Marks)

OR

- 2 a. With a neat sketch, explain Horton's Qualitative representation of Hydrologic cycle. List the different forms of precipitation. (08 Marks)
- b. The average rainfall in cm at four existing rain gauge stations in a basin are 105, 79, 70 and 66. If the average depth of rainfall over basin is to be estimated with 10% error, determine the additional number of rain gauge required. (07 Marks)
- c. Explain with a neat sketch, Syphon type recording Rain gauge. (05 Marks)

Module-2

- 3 a. What are the factors affecting Evaporation rate? Explain briefly. (08 Marks)
- b. What are the components of unit hydrograph? Write a note on its applications. (06 Marks)
- c. Define Unit hydrograph and what are assumptions made the unit hydrograph. (06 Marks)

OR

- 4 a. What are the factors affecting the Runoff and explain details. (08 Marks)
- b. What are the limitations of Unit hydrograph theory? (06 Marks)
- c. Following are the ordinate of a 3 hours unit hydrograph derive the plot the 3 hours flood hydrograph due to an excess rainfall of 4.5 cms. (06 Marks)

Time (Hours)	0	3	6	9	12	15	18	21	24
3 – Hrs UHG m ³ /sec	0	1.5	4.5	8.6	12	9.4	4.6	2.3	0.8

Module-3

- 5 a. Define Irrigation. What is the necessity of Irrigation? (06 Marks)
- b. Explain the surface irrigation methods of water application to the crops. (08 Marks)
- c. Compare Flow irrigation and Lift irrigation. (06 Marks)

OR

- 6 a. Define Duty, Delta and Base period and establish a relationship between them. (08 Marks)
- b. What are factors affecting duty? What are the methods to improve the duty? (06 Marks)
- c. Explain the following terms : i) Application efficiency ii) Conveyance efficiency
iii) Frequency of irrigation. (06 Marks)

Module-4

- 7 a. With neat sketch, explain the types of canal alignment. (10 Marks)
b. List the various factors to be considered in selecting a site for a reservoir. (10 Marks)

OR

- 8 a. Explain the Mass curve method to determine the storage capacity of Reservoir. (12 Marks)
b. What are the advantages of Lacey's theory compared to Kennedy's theory? (08 Marks)

Module-5

- 9 a. Which Indian rivers cause the most floods in India? (10 Marks)
b. Explain the importance of water harvesting and conservation along with basic principles involved in process. (10 Marks)

OR

- 10 a. What are the steps taken to control drought? (10 Marks)
b. Define the term "Rain Water Harvesting". Elaborate Rural technological system being adopted for water conservation. (10 Marks)

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