CBCS SCHEME

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21CV51

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.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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 cannel alignment. **(10 Marks)**

b. List the various factor to be considered in selecting a site for a reservoir. **(10 Marks)**

OR

8 a. Explain Mars 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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02-04-2024 01:31:20pm - AY - AY - AY - AY - AY - AY - AY