Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations –MAY 2025

Date: 30-05-2025 **Time:** 01.00 pm – 04:00 pm

School: SOE	**Program:** B. Tech-CIV	
Course Code: CIV2010	**Course Name:** Hydrology and Irrigation Systems	
Semester: IV	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	6	26	26	42	-

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1.	list any four types of precipitation	**2 Marks**	**L1**	**CO1**
2.	Name the three important phases of hydrological cycle	**2 Marks**	**L1**	**CO1**
3.	Define the following a) Rain gauge b) precipitation	**2 Marks**	**L1**	**CO1**
4.	List any four factors affecting evapotranspiration	**2 Marks**	**L1**	**CO2**
5.	Define the following terms related to infiltration a) Infiltration rate b) Infiltration capacity	**2 Marks**	**L1**	**CO2**
6.	Name any two methods to control evaporation from lakes	**2 Marks**	**L1**	**CO2**
7.	Define the following a) Direct run off b) Surface runoff	**2 Marks**	**L1**	**CO3**
8.	Define unit hydrograph	**2 Marks**	**L1**	**CO3**
9.	Define the following terms related to runoff a) inter flow b) Base flow	**2 Marks**	**L1**	**CO3**

10.	Define the following terms related to Irrigation a) Crop period b) Base period	**2 Marks**	**L1**	**CO4**

Part B

Answer the Questions. **Total Marks 80M**

11.	**a.**	With the help of neat sketch, explain the method of measurement of infiltration using Double ring Infiltro-meters	10 Marks	**L2**	**CO2**
	b.	The infiltration capacity in a basin is represented by Horton's equation as $f_p=3+e^{-2t}$ Where f_p is in cm/h and t is in hours. Assuming infiltration to take place at capacity rate in as storm of 60 minutes duration, estimate the depth of filtration in the (i) First 30 minutes and (ii) Second 30 minutes of the storm.	10 Marks	**L3**	**CO2**
		Or			
12.	**a.**	Explain the following ,methods of measurement of infiltration a) Φ-index b) W-Index	10 Marks	**L2**	**CO2**
	b.	Following is the set of data for successful 15 minutes period of 90 minutes storm in a catchment Duration (minutes): 15, 30, 45, 60, 75, 90 Rainfall (cm/hr): 2, 2, 8, 7, 1.25, 1.25 If the value of Φ-index is 3 cm/hr, calculate the value of W-index	10 Marks	**L3**	**CO2**

13.	**a.**	List and explain the factors affecting hydrograph	10 Marks	**L2**	**CO3**
	b.	Given below are the ordinates of a 6-h unit hydrograph for a catchment. Calculate the ordinates of the DRH due to a rainfall excess of 3.5 cm occurring in 6 h. Time (h): 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66 UH ordinate (m^3/s): 50, 125, 185, 160, 110, 60, 36, 25, 16, 8, 0	10 Marks	**L3**	**CO3**
		Or			
14.	**a.**	With the help of a neat sketch explain the Components of a Hydrograph.	8 Marks	**L2**	**CO3**
	b.	Given the ordinates of a 4-h unit hydrograph as below derive the ordinates of a 12-h unit hydrograph for the same catchment using Method of Superposition	12 Marks	**L3**	**CO3**

		Time (h)	0	4	8	12	16	20	24	28	32	36	40	44			
		Ordinate of 4-h UH	0	20	80	130	150	130	90	52	27	15	5	0			

15.	**a.**	Irrigation is defined as the process of artificial supply of water to soil for raising crops. Explain drip and sprinkler method of irrigation and also mention the merits and demerits	12 Marks	**L2**	**CO4**
	b.	List and Explain the Classification of canal based on Purpose	8 Marks	**L2**	**CO4**
		Or			
16.	**a.**	Explain Furrow and border method of Irrigation method with the help of neat sketch.	12 Marks	**L2**	**CO4**
	b.	Explain Lined canal and Unlined canal with example	8 Marks	**L2**	**CO4**

17.	**a.**	Explain the causes of water logging and also mention any two methods to control water logging	12 Marks	**L2**	**CO4**
	b.	The duty means the area of land that can be irrigated with the unit volume of irrigation water. Explain the methods to Improve Duty	8 Marks	**L2**	**CO4**
		Or			
18.	**a.**	Explain the Effects of water logging on agricultural las and also suggest suitable remedial measures for water logging	10 Marks	**L2**	**CO4**
	b.	With help of neat sketch explain the classification of Water present in the soil	10 Marks	**L2**	**CO4**