

Code: 20CE3405

**II B.Tech - II Semester – Regular / Supplementary Examinations
MAY - 2023**

**WATER RESOURCES ENGINEERING
(CIVIL ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level

CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Explain with the help of a diagram the hydrological cycle with components.	L2	CO1	7 M
	b)	Explain how the rainfall is measured using Syphon type of raingauge along with advantages and disadvantages.	L2	CO1	7 M
OR					
2	a)	Explain the factors which affect the rate of evaporation.	L2	CO1	7 M
	b)	Explain elaborately about Φ -index and W-index.	L2	CO1	7 M
UNIT-II					
3		The ordinates of a 12-hr unit hydrograph are given below. Compute 6-hr unit hydrograph ordinates using S-curve technique.	L3	CO2	14 M

	Time (hr)	0	6	12	18	24	30	36	42	48	54	60	72			
	12-hr UH (cumec)	0	1	4	8	16	19	15	12	8	5	3	0			

OR

4	a)	What are the various factors affecting the runoff? Explain.	L2	CO2	5 M
	b)	Explain in detail about the synthetic unit hydrograph method.	L2	CO2	9 M

UNIT-III

5	a)	Define Porosity, specific yield, specific retention. Write the relation between them.	L2	CO3	9 M
	b)	State and derive Darcy's law.	L2	CO3	5 M

OR

6	a)	Explain in detail about the different types of aquifers with neat sketch.	L2	CO3	9 M
	b)	A tube well of 30cm diameter penetrates fully in a artesian aquifer. The thickness of the aquifer is 15 m. Calculate the yield from the well under a drawdown of 3 m. The aquifer consists of sand of effective size of 0.2mm having co-efficient of permeability equal to 50m per day. Assume radius of drawdown is 150m.	L2	CO3	5 M

UNIT-IV

7	a)	Interpret the relationship between duty, delta and base period with appropriate explanations.	L2	CO4	9 M
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	b)	Explain the necessity and importance of Irrigation.	L2	CO4	5 M
OR					
8	a)	Define consumptive use of water. Explain the Factors affecting consumptive use of Water.	L2	CO4	7 M
	b)	Illustrate various methods of assessment of quality standards of irrigation water.	L2	CO4	7 M
UNIT-V					
9	a)	Why should lining be provided in canals? What are the merits and demerits of canal lining?	L3	CO5	8 M
	b)	Compare Kennedy's Theory and Lacey's Theory.	L2	CO5	6 M
OR					
10		Design an irrigation channel for the following data using Kennedy's theory: Full Supply Discharge = 14.16 cumec, Slope $S = 1/5000$, Kutter's rugosity coefficient $N=0.0225$, Critical Velocity ratio $m=1$, Side slope $Z= 1/2$.	L5	CO5	14 M