

**PRAGATI ENGINEERING COLLEGE: SURAMPALEM  
(AUTONOMOUS)**

**III B.Tech II Semester Regular/Supplementary Examinations, April - 2024**

**WATER RESOURCE ENGINEERING  
(Civil Engineering)**

Time: 3 hours

Max. Marks: 70M

**Answer ONE Question from each Unit  
All Questions Carry Equal Marks**

Q. No.	Questions	BTL	CO	Marks
<b>UNIT – I</b>				
1.	a) Discuss briefly the three important methods, which are used for determining the mean rainfall over a drainage basin.	K2	CO1	7M
	b) Define the terms: Design storm, applications of Engineering Hydrology, frequency of rainfall.	K1	CO1	7M
<b>OR</b>				
2.	a) Explain in brief the significance of Depth-Area-Duration (DAD) curves and also Probable Maximum Precipitation	K2	CO1	7M
	b) By means of neat sketch, explain in detail about Float and Tipping type automatic rain gauge.	K2	CO1	7M
<b>UNIT – II</b>				
3.	a) Explain in detail the factors affecting the infiltration capacity.	K2	CO2	7M
	b) How do you control the evapotranspiration? Explain in detail along with the significance of the term Interception.	K2	CO2	7M
<b>OR</b>				
4.	a) Explain in detail the process involved in the measurement of infiltration by single ring infiltrometer and rainfall simulators.	K2	CO2	7M
	b) Explain in detail various methods adopted for estimation of Evapotranspiration.	K2	CO2	7 M
<b>UNIT – III</b>				
5.	a) Explain the use of unit hydrograph in the construction of flood hydrograph resulting from two or more periods of rainfall.	K2	CO3	7M
	b) During a storm event an average depth of 10cm of rain fell over a watershed with a land use of pasture in good condition and soils from hydrologic soil group C. Estimate the direct runoff.	K3	CO3	7M
<b>OR</b>				
6.	a) State the rules to be observed in developing Unit hydrograph from gaged watersheds	K1	CO3	7M
	b) Calculate peak discharges using Rational method and the "Runoff Curve Numbers for Urban Areas." For 10 year, $C_f = 1.0$ and for 100 year, $C_f = 1.25$ .	K3	CO3	7M
<b>UNIT – IV</b>				
7.	a) For a date of maximum recorded flood of a river, the mean and standard deviation are $4500\text{m}^3/\text{s}$ and $1700\text{m}^3/\text{s}$ , respectively. Using Gumbel's extreme value distribution, estimate the return period of a design flood of $9500\text{m}^3/\text{s}$ . Assume an infinite sample size.	K3	CO4	7M

	b)	Explain flood routing through reservoirs. Describe the stepwise procedure adopted for flood routing computations by trial and error method.	K2	CO4	7M
<b>OR</b>					
8.	a)	Differentiate between hydrologic routing and hydraulic method of flood routing.	K4	CO4	7M
	b)	Explain the procedure involved in flood analysis by using Log Pearson type-III distribution method.	K2	CO4	7M
<b>UNIT – V</b>					
9.	a)	Illustrate the following: (i) storage coefficient and (ii) yield of a open well-recuperation.	K2	CO5	7M
	b)	Give detailed classification of types of wells and explain them in detail.	K2	CO5	7M
<b>OR</b>					
10.	a)	Illustrate on Recuperation test and aquifer parameters.	K2	CO5	7M
	b)	Explain in detail various types of aquifers.	K2	CO5	7M