Question Paper Code: R18A32CE01

R18

ANURAG Engineering College

(An Autonomous Institution)

III B. Tech II Semester Supplementary Examinations, Dec–2023/Jan-2024

WATER RESOURCES ENGINEERING

(CIVIL ENGINEERING)

Time: 3 Hours **Max. Marks: 75**

Section – A (Short Answer type questions) (25 Marks)

Answer All Questions

		Course Outcome	B.T Level	Marks
1.	State the application of hydrology in civil engineering projects.	CO1	L1	2M
2.	What is precipitation? Describe the various forms of precipitation.	CO1	L2	3M
3.	What are the factors that's affect the run-off from a catchment area?	CO2	L1	2M
4.	Explain the method of determining direct run-off from a given storm hydrograph.	CO2	L2	3M
5.	Describe various types of tube wells.	CO3	L1	2M
6.	Define the following terms: i) Aquifer ii) water table iii) perched aquifer.	CO3	L2	3M
7.	Derive relation between duty and delta.	CO4	L1	2M
8.	Explain the different types of irrigation efficiency in detail.	CO4	L2	3M
9.	What is canal lining?	CO5	L1	2M
10.	Explain Lacey's silt theory.	CO5	L2	3M

Section B (Essay Questions)

Answer all questions, each question carries equal marks. **(5 x 10M = 50M)**

11. A)	What are the different types of rain gauge? Explain non-recording type rain gauge with neat sketch.	CO1	L3	10M
	OR			
B)	Define rain gauge density. The average annual rainfall in cm at 8 existing rain gauge station in a catchment are 93, 58, 116, 105, 85, 97, 82 & 78. The permissible error in the mean rainfall estimating (e) is 8%. Calculate the optimum number of rain gauge in a catchment area.	CO1	L1&L3	10M
12. A)	What do you understand by catchment area and runoff? Explain the various factors that influence the runoff from a catchment.	CO2	L3	10M
	OR			
B)	For a storm of 2hr. duration the rates are as given below	CO2	L3	10M

Time period (mins)	20	20	20	20	20	20
Rainfall rate (cm/hr)	2.5	3	10	7.5	5.1	1.15

If ϕ index is 2.8 cm/hr. Calculate the surface runoff and total precipitation.

13. A)	Calculate the diameter of the well have a discharge of 200liter/sec with a drawdown of 6.5m in a confined aquifer of thickness of 40m and the radius of influence is 300m and the coefficient of permeability is 8m/day.	CO3	L3	10M
	OR			
B)	Derive an expression for discharge from a well fully penetrating confined aquifer.	CO3	L3	10M

14. A)	Explain water logging-process, causes and preventive measures.	CO4	L3	10M
	OR			
B)	What do you mean by duty, delta & base period? Explain briefly various factors affecting duty.	CO4	L4	10M
15. A)	What do you understand by i) regime channel ii) initial and permanent regime of channels.	CO5	L3	10M
	OR			
B)	Explain the procedure of designing a channel with Kennedy's theory.	CO5	L2	10M