Question Paper Code: R18A32CE01

R18

ANURAG Engineering College

(An Autonomous Institution)

III B.Tech II Semester Supplementary Examinations, December-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.	List out the factors effecting of infiltration.	CO1	L1	2M
2.	Explain briefly about hydrological cycle with a neat sketch? Also explain each component?	CO1	L2	3M
3.	Distinguish between the S-hydrograph and Synthetic Unit Hydrograph.	CO2	L1	2M
4.	What are the assumptions of unit hydrograph theory?	CO2	L2	3M
5.	Differentiate between Specific Retention and Coefficient of Transmissibility.	CO3	L1	2M
6.	How does deep well differ from a tube well in confined aquifer?	CO3	L2	3M
7.	Explain briefly about the Benefits of irrigation?	CO4	L1	2M
8.	Derive a relation between duty and delta for a given base period?	CO4	L2	3M
9.	What do you understand by balancing depth and draw neat sketch?	CO5	L1	2M
10.	List out the types of canal? and write the function of the canal.	CO5	L2	3M

Section B (Essay Questions)

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

11. A)	Explain about non-recording and recording type of rain-gauges with sketches	CO1	L3	10M
	OR			
B)	For a storm of 2-hour durations, the rainfall rates are as follows. If φ – index is 3 cm/hr, estimate the surface runoff. Also determine W – index.	CO1	L3	10M

Time period (minutes)	20	20	20	20	20	20
Rainfall Rate (cm/hr)	2.5	3.5	9.0	7.5	5.1	1.25

12. A)	Explain with sketches the factors that affect the runoff from the catchment area	CO2	L3	10M
	OR			
B)	What do you understand by Unit Hydrograph? How is it derived? Explain its views in construction of flood hydrograph resulting from two or more periods of rainfall?	CO2	L3	10M
13. A)	State Dupuit's assumptions for obtaining general equations governing ground water flow. Derive an expression for the un-confined aquifer.	CO3	L3	10M
	OR			

B) i) Explain Recuperation test and derive equation for yield of a well CO3 L3 5M
ii) Design a tube well for the following data. 5M

a) Thickness of confined aquifer=30m.
b) Yield required =0.08 cumec.
c) Radius of circle of influence= 300m

coefficient of permeability= 60 m/day. Drawdown=5m.

14. A) Explain various methods of irrigations with neat sketches CO4 L3 10M

OR

B) The base period, the intensity of irrigation and duty of various crops under a canal system are given in table below. CO4 L3 10M

Crop	Base Period(days)	Duty (hect/Cumec)	Area under the crop(Hectares)
Wheat	120	1800	4800
Sugar cane	360	800	5600
Cotton	200	1400	2400
Rice	120	900	3200

Find reservoir capacity if the canal losses are 15 % and reservoirs losses 8 %.

15. A) Design a regime channel for a discharge of 60 cumecs and silt factor 1.1, using Lacey's theory. Also determine the bed slope of the canal. CO5 L3 10M

OR

B) Utilize the Stream Gauging, and brief explain about different type's measurement and estimation of stream flows? CO5 L3 10M