R20 Regulation *Subject code:3P6AD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VI Semester Regular/Supplementary Examinations, July 2024

WATER RESOURCE ENGINEERING-I

(CIVIL ENGINEERING)

Maximum Marks: 70 Date:26.07.2024 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)		CO	Bloom Tx
1	Define precipitation.	1	1
2	Define Runoff.	1	1
3	Define Storage coefficient.	2	1
4	Define unit hydrograph.	2	1
5	List different types of aquifers.	3	1
6	State Darcy's law and its assumptions.	3	1
7	Define Crop Rotation and list its uses.	4	1
8	List different types of irrigation.	4	1
9	Write down Lacey's formula?	5	1
10	List different types of Canal lining.	5	1

Part-B

Answer All the following questions. (5X10M=50Marks)			
11	A. Classify types of rain gauges. Explain about non-automatic rain gauge with neat sketch. [5] B. Define infiltration indices. what is the purpose of evaporimeters and explain about any one of the evaporimeter. [5]	1	2
	OR		
12	Compare the Penman and Blaney & Criddle methods for estimating evapo-transpiration, discussing their applicability, accuracy, and limitations. [10]	1	3
13	A. What assumptions are made when deriving a unit hydrograph? what are its limitations and uses. [5] B. What are the steps to derive a unit hydrograph from a direct runoff hydrograph? [5]	2	3
	OR		
14	Rainfall of magnitude 3.8 cm and 2.8 cm occurring on 2 consecutive 4hr durations on a catchment of area 27 km^2 produced the following hydrograph of flow at the outlet of catchment if the base flowis 5 m^3/s. Estimate rainfall excess and φ index. [10]	2	4

	Time (hrs)	0	6	12	18	24	30	36	42	48	
	Discharge ($m^3/s.$)	5	13	26	21	16	12	9	7	5	
15	A.A well of diameter 30cm fully penetrates a confined aquifer of thickness 15m. When pumped at a steady rate 30 l.p.s. the drawdown's observed in wells at radial distances of 10m and 40m. are 1.50 and 1.0 m, respectively. Compute the radius of influence, the permeability, the transmissibility, and the drawdown at the well. [4] B. Derive the equation for equilibrium equation for the confined aquifer. [6]										3	3
	OR											
16	Explain what are different types of wells along with its construction and uses. [10]										3	3
17	A. Derive relationship between Duty and Delta. [5] B. Explain the factors effecting Duty and Delta. [5]										4	3
	OR											
18	A. Write a short note on Methods of Improving Soil Fertility? [5] B. Explain the Advantages and ill Effects of Irrigation. [5]										4	3
19	Briefly explain Assumptions, Design Steps and limitations of Kennedy's theory for designing of canals. [10]										5	2
	OR											
20	A. Explain in detail IS Standards for a Canal Design. [5] B. Write a short note on Canal Lining? [5]										5	2