

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Seventh Semester

Civil Engineering

AI3404 - Hydrology and Water Resources Engineering
(Common to Fourth Semester Agricultural Engineering)

Regulations - 2021

Duration : 3 Hrs

Maximum: 100 Marks

PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	List down the various forms of precipitation.	RE	1	2
2.	Write down Horton's infiltration equation stating the meaning of each term.	RE	1	2
3.	What are the factors affecting runoff?	RE	2	2
4.	State the assumptions in unit hydrograph theory.	RE	2	2
5.	Determine the percentage chance that a 25years storm may occur in the next 10 years.	UN	3	2
6.	What are reasons for the recent flood occurred in your state capital?	UN	3	2
7.	Distinguish between storage reservoir and flood control reservoir.	UN	4	2
8.	Explain the significance of capacity curve.	UN	4	2
9.	Differentiate between steady and unsteady flow.	UN	5	2
10.	List any four software and their applications related to water resources engineering.	RE	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a With a help of a neat sketch, discuss the interaction between various components of a hydrological cycle.	UN	1	13
	Or			
	b Describe the various methods of analyzing rainfall data with suitable graphs.	UN	1	13
12.	a List the main factors on which the shape of the rising limb of a runoff hydrograph depends. Explain.	UN	2	13
	Or			
	b A 4 hour UH of a catchment is triangular in shape with base of 80hours. The area of the catchment is 720 km ² . The baseflow is 30 cumec and the Φ -index is 1 mm/hr. A storm of 4 cm occurs in 4hour over the catchment. Determine peak discharge of 4-hour Unit hydrograph and peak flood discharge due to the storm.	UN	2	13

13. a Discuss in detail about the various causes and effects of flood. Also suggest various methods of controlling flood with appropriate sketches. UN 3 13
- Or
- b Write short notes on IMD method of converting daily rainfall data. UN 3 13
14. a Discuss the factors to be considered in selection of site for a dam. UN 4 13
- Or
- b Describe about the sedimentation of reservoirs with a sketch. UN 4 13
15. a Derive an equation to determine the steady state discharge of a confined and unconfined aquifer. UN 5 13
- Or
- b Write a note on the available subsurface groundwater with a diagram UN 5 13

*PART – C (Marks 1*15 = 15)*

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
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16. a The ordinates of a 2-h unit hydrograph are given: AP 2 15

Time (h)	0	2	4	6	8	10	12	14	16	18	20	22
2-h unit Hydrograph ordinate (m ³ /s)	0	25	100	160	190	170	110	70	30	20	6	0

Determine the ordinate of an S-curve hydrograph and using this determine the ordinates of a 4-h unit hydrograph.

Or

- b In a water table aquifer of 50m thickness, a 20cm diameter well is pumped at a uniform rate of 0.05m³/s if the steady state drawdown measured in the observation wells located at 10m and 100m distance from the well are 6.5m and 0.25m respectively, determine the hydraulic conductivity and transmissivity of the aquifer. AP 5 15