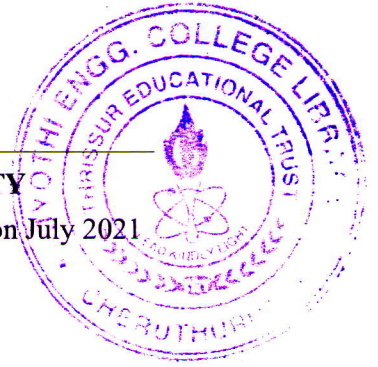


Reg No.: _____

Name: _____

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree Regular and Supplementary Examination July 2021



Course Code: CE372

Course Name: ENGINEERING HYDROLOGY

Max. Marks: 100

Duration: 3 Hours

Any missing data can be suitably assumed

PART A

Answer any two full questions, each carries 15 marks.

Marks

- 1 a) Define Infiltration capacity. Describe various factors affecting the infiltration through the soil. (7)
- b) Explain double mass curve. How it is applied to check the consistency of rainfall data? (8)
- 2 a) Describe the term Stream Order. (5)
- b) Explain the application of current meters. How rating of current meter is done? (5)
- c) Explain stage –discharge curve. (5)
- 3 a) Define Catchment. Explain the characteristics of a catchment. (7)
- b) Compute the Potential evapotranspiration for rice crop in an area of latitude 25° N. (8)
The average K value for rice is 1.10. The monthly temperatures are given in the following table. Use Blaney-Criddle formula.

Month	June	July	August	September
Temperature($^{\circ}$ C)	32	31	30.0	28
Monthly day time hour percentage	9.23	9.45	9.09	8.32

PART B

Answer any two full questions, each carries 15 marks.

- 4 a) How runoff from the catchment is calculated? Explain any two methods. (6)
- b) What is an IUH? Explain the characteristics of IUH. (5)
- c) Define unit hydrograph. What are the basic assumptions involved in the unit hydrograph theory? (4)

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- 5 a) Derive the basic differential equation of unsteady groundwater flow in a confined aquifer. (10)
- b) Explain the electrical resistivity method and its uses. (5)
- 6 a) Write a note on groundwater pollution. List different sources that make the groundwater contaminated. (5)
- b) The 4 hr unit hydrograph for a basin has the following ordinates. Using S-curve method, determine the 2 hr unit hydrograph ordinates of the basin. (10)

Time (h)	0	2	4	6	8	10	12	14	16	18	20	22
4hr UH ordinates (m ³ /s)	0	8	20	43	80	110	130	146	150	142	130	112
Time (h)	24	26	28	30	32	34	36	38	40	42	44	
4hr UH ordinates (m ³ /s)	90	70	52	38	27	20	15	10	5	2	0	

PART C

Answer any two full questions, each carries 20 marks.

- 7 a) What are envelope curves? How are envelop curves used to estimate peak flood? (6)
- b) Distinguish between Recurrence interval and Frequency of flood. (4)
- c) Find the probability of a flood occurring in the river within next 5 years. The magnitude of flood can be assumed as 1000 m³/s. The mean annual flood of a river is 600 m³/s and the standard deviation of the annual flood series is 120 m³/s. Use Gumbel's method. (10)
- 8 a) Define flood routing. What are the different types of flood routing? (8)
- b) Explain the procedure for the Muskingham method of routing. (12)
- 9 a) Explain the rainfall – runoff correlation using linear regression analysis. How the coefficient of correlation is calculated? (10)
- b) Explain the components of flood forecasting and warning system. (5)
- c) Write the basic equation representing the hydrologic flood routing. Explain the terms. (5)
