Reg No.:_____ Name:_____

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 25^0 N. The average K value for rice is 1.10. The monthly temperatures are given in the following table. Use Blaney-Criddle formula. (8)

Month	June	July	August	September
Temperature(^{0}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)

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 m^3/s. The mean annual flood of a river is 600 m^3/s and the standard deviation of the annual flood series is 120 m^3/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)

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