

**GIET UNIVERSITY, GUNUPUR – 765022**

B. Tech (Fifth Semester Regular) Examinations, December – 2023

**21BCVPC35002 – Water Resources Engineering**

(Civil)

Time: 3 hrs

Maximum: 70 Marks

**Answer all questions****(The figures in the right hand margin indicate marks)****PART – A****(2 x 5 = 10 Marks)**Q.1. Answer **ALL** questions

	CO #	Blooms Level
a. What do you mean by average rainfall over a catchment area?	CO1	K1
b. List the different factor effecting infiltration?	CO2	K1
c. What is synthetic unit hydrograph?	CO1	K1
d. State the different method of flood control?	CO1	K1
e. Differentiate convective and orographic precipitation.	CO1	K4

**PART – B****(15 x 4 = 60 Marks)**Answer **ALL** questions

Marks	CO #	Blooms Level
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2. a. Find out the 12 hour unit hydrograph from 4 hour unit hydrograph ordinates 0,24,84,159,184,151,103,64,36,17,6,0	7	CO1	K2
b. What are the design parameter for canal design in open channel flow? (OR)	8	CO3	K1
c. Derive the DRH from the catchment due to storm duration of 4 hr and having a rainfall excess of 5cm, The coordinates of TUH are 0,8,35,50,47,40,31,23,15,10,6,3,0	7	CO1	K1
d. Explain about storm hydrograph.	8	CO1	K2
3.a. Explain about tripling bucket rain gauge?	7	CO1	K1
b. Explain about the single ring and double ring infiltration? (OR)	8	CO1	K1
c. What are the factor effecting the runoff water balance?	7	CO3	K1
d. What are the different hydrograph properties?	8	CO1	K1
4.a. The ordinates of 6 hr unit hydrograph are given ,a storm has 3 successive 6 hr interval of rainfall of magnitude 3cm, 5cm, 4cm respectively .Assume a phi index of 0.2 cm/hr and a base flow of 30 cubic meter /sec .determine the resulting hydrograph of flow?	7	CO1	K2
b. Explain the different types of flooding. (OR)	8	CO1	K1

c.	What are the different approaches and measurement for long, short term protection flood? Discuss in brief.	7	CO1	K1
d.	A 4hr interval unit hydrograph is given. Find out how many unit hydrograph will be needed to plot the s curve The ordinates are -0,10,20,30,35,20,10,0	8	CO2	K2
5.a.	Find the bed width and bed slope of a channel with the following data 1-discharge of canal=40 cubic meter/sec 2-mean velocity=0.95m/sec 3-N=0.02255 4-S:S=1:1 5-B/D=6.3	7	CO2	K2
b.	What are the different formula to find the chezy's constant in mean velocity? (OR)	8	CO2	K1
c.	What is unit hydrograph? List the assumptions involved in the unit hydrograph theory	7	CO1	K1
d.	What are the different structural and non-structural measures for flood management?	8	CO1	K1

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