

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular), Dec 2021

B. Tech Civil Engineering, Semester V

Roll No.....

Course Code: CE1213 Hydrology and Water
Resources Engineering

Time: 2 hours

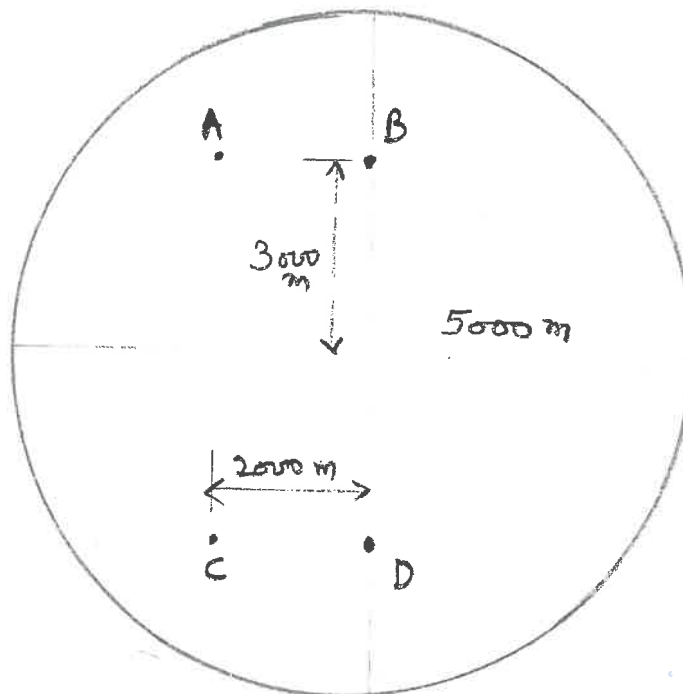
Max. Marks: 30

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q. 1 The location of 4 rain gauge stations in a catchment is given in Fig. 1. On a particular date rainfall at these stations is observed as 30 mm, 46mm, 42 mm and 29 mm respectively. Find the average rainfall for the catchment.

(8)



Diameter 10 km

Q. 2 The total catchment area of Mashri River is 2000 Sq km. For this catchment 2 Hr Unit hydrograph is given below. After few years of measurement of this hydrograph it is required to develop a 6 hr unit hydrograph. Write the assumptions used in the derivation of unit hydrograph.

(8)

Time (hr)	0	2	4	6	8	10	12	14	16
4 hr UH (m^3/s)	0	13	25	32	30	27	24	21	18
Time (hr)	18	20	22	24	26	28	30	32	34
4 hr UH (m^3/s)	16	14	11.5	9.5	7.5	5.5	3.5	1.5	0

Q. 3 An uncontrolled spillway reservoir is existing on the Mashi River near Jaipur city. Due to the rainfall on 15 August following inflow flood hydrograph enters in the reservoir. Time interval between two consecutive values is 6 hrs.

42	52	62	94	157	222
295	350	370	345	322	300
277	250	210	180	155	135

The elevation area and elevation outflow from this reservoir is shown in Table 2.

Elevation (m)	100.0	100.3	100.6	100.9	101.2	101.5	101.8	102.1	102.4	102.7
Area (ha)	420	445	470	495	515	549	585	630	688	745
Outflow (cumecs)	0	14.9	43	79	121	173	225	278	340	422

Find the resultant outflow hydrograph for the following inflow hydrograph.

Q. 4 What are the different type of geological formation which hold the water and available as ground water? Draw a neat sketch and derive the expression for finding coefficient of permeability by pumping out test for unconfined aquifer. (Write basic assumption of the derivation) (4)