

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Backlog), Dec 2023

B. Tech Civil Engineering, Semester V

Roll No.....

Course Code: CE1213 Hydrology and Water
Resources Engineering

Time: 3.0 hours

Max. Marks: 40

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.
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Q. 1 The total catchment area of Mej River is 2000 Sq km. For this catchment 2 Hr Unit hydrograph is given below. After a 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 this 6 hr 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. 2 Draw a neat sketch for showing the various zones of storage in a reservoir. (4)

Q. 3 What are the various methods to prevent sedimentation in the reservoirs? (4)

Q. 4 With a neat sketch, explain confined and unconfined aquifers. Draw a neat sketch and derive the expression for finding the coefficient of permeability by pumping out test for the unconfined aquifer. (Write the basic assumption of the derivation). (2+6)

Q. 5 A 30 cm well completely penetrates an unconfined aquifer of saturated depth 45 m. After a long period of pumping at a steady rate of 2000 litre per minute, the drawdown in two observation wells 25 and 75 m from the pumping well was found to be 3.5 m and 2.0 m respectively. Determine the transmissibility of the aquifer. What is the drawdown at the pumping well? (8)

Q. 6 What do you understand by water logging? What are the different measures to minimize it? (4)

Q. 7 What are the different types of drains? (4)