



**K. K. Wagh Institute of Engineering Education & Research, Nashik**  
(An Autonomous Institute From A.Y. 2022-23)

WINTER-2025	
Exam Seat No.:	
Academic Year:2025-2026	Semester:V
Class:TY	Program:B.Tech
Branch Code: CIV	Pattern:2023
Name of Course:Hydrology & Water Resources Engineering	Course Code:2304303
Max. Marks:60	Duration:2.30 Hrs.

**Instructions:** Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains 02 page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

**Marks CO**

**Question No. 1**

- 1a) Which are 3 factors considered in deciding the rain gauge network ? Explain each of them. (6) CO1

**Question No. 2**

- 2a) Differentiate between Direct Runoff Hydrograph and Unit hydrograph. (6) CO2

**Question No. 3**

- 3a) Which investigations are carried out for a reservoir planning? Explain any 4 investigations. (8) CO3

**OR**

- 3b) What are the measures to control the reservoir sedimentation? Explain any 4 measures. (8) CO3

- 3c) Differentiate between Reservoir storage, Valley storage, Dead Storage and Live storage. (8) CO3

**OR**

- 3d) With the help of sketch, explain different key levels in Reservoir Planning. (8) CO3

**Question No. 4**

- 4a) Derive Darcy's Law of Permeability (8) CO4

**OR**

- 4b) A confined aquifer of depth of 40 m has a discharge of 0.04 m<sup>3</sup> /sec. If a drawdown of 3m and 0.50 m was observed under steady state of pumping at the wells located at 15 and 90 m, respectively, Find permeability of aquifer. (8) CO4

- 4c) Derive the equation for discharge of Confined aquifer by Dupuit's method. (8) CO4

**OR**

- 4d) What is Water Logging? What are its causes? What are its ill effects ? How the problem of Water Logging can be reduced? (8) CO4

**Question No. 5**

5a) What is Delta? What is equation for Delta? Which are 5 factors that governs the Delta? (8) CO5

**OR**

5b) Explain the necessity of the Irrigation with help of any 4 factors . Also, state any 4 advantages of Irrigation. (8) CO5

5c) The Wheat was sown on a land of 500 ha. Water of 50 cm was supplied to the Sugarcane for 120 days. Calculate the Duty and discharge with which the water was supplied to wheat. (8) CO5

**OR**

5d) What is piped distribution network for irrigation (PDN) ? (8) CO5

State any 4 Types of Pipe Distribution Network

..... End of question paper.....