

**VIT**

Vellore Institute of Technology

SOT: B1+TB1

**SCHOOL OF CIVIL ENGINEERING
CONTINUOUS ASSESSMENT TEST - II
WINTER SEMESTER 2024-2025**

Programme Name & Branch	: B. TECH. CIVIL ENGINEERING	
Course Code and Course Name	: BCLE216L (WATER RESOURCES MANAGEMENT)	
Faculty Name(s)	: DR. DILLIP KUMAR BARIK	
Class Number(s)	: 3461	
Date of Examination	: 17 TH MARCH 2025	
Exam Duration	: 90 minutes	Maximum Marks: 50

General instruction(s):

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyze, 5 - Evaluate, 6 - Create)
- Course Outcomes
 - 2: Understand the water resource potential in global, India scenario and explore the water resources using different technologies**
 - 4: Explain the concept of water in agricultural and economic aspects**

Q. No	Question	M	CO	BL																				
1.	At a particular section of the Pallar river, it is divided into 4 sub sections, the velocities measured at each sub-section are given below: <table><thead><tr><th>Sub-Sections</th><th>Width (m)</th><th>Depth (m)</th><th>Velocity (m/s)</th></tr></thead><tbody><tr><td>1</td><td>2</td><td>1.2</td><td>0.9</td></tr><tr><td>2</td><td>3</td><td>1.5</td><td>1.1</td></tr><tr><td>3</td><td>2</td><td>1.0</td><td>0.8</td></tr><tr><td>4</td><td>1</td><td>0.8</td><td>0.7</td></tr></tbody></table> Using the concept of Velocity-Area method, calculate: (i) the cross-sectional area of each sub- section; (ii) discharge for each sub-section;(iii) total discharge measured at that section of the Pallar river and (iv) state the two advantages and limitations of the Velocity-Area Method to measure stream flow.	Sub-Sections	Width (m)	Depth (m)	Velocity (m/s)	1	2	1.2	0.9	2	3	1.5	1.1	3	2	1.0	0.8	4	1	0.8	0.7	10	2	2
Sub-Sections	Width (m)	Depth (m)	Velocity (m/s)																					
1	2	1.2	0.9																					
2	3	1.5	1.1																					
3	2	1.0	0.8																					
4	1	0.8	0.7																					
2.	Discuss the application of remote sensing in water quality monitoring and flood management. Highlight the advantages and disadvantages of remote sensing in water resources assessment.	10	2	3																				
3.	How does virtual water trade impact global water security? Evaluate India's contribution and challenges in virtual water trade with supporting data.	10	4	2																				

4.	What are the key sources of freshwater pollution, and how do they affect the environment? Discuss their impact on environmental issues with a relevant case study.	10	4	4
5.	A farmer must use Sprinkler or Drip Irrigation. The efficiencies of both the systems are given as: Sprinkler Irrigation: Conveyance Efficiency (η_c) = 90%; Application Efficiency (η_a) = 75%; Storage Efficiency (η_s) = 80%. Drip Irrigation: Conveyance Efficiency (η_c) = 95%; Application Efficiency (η_a) = 90%; Storage Efficiency (η_s) = 85%. The farmer has a limited water supply of 5,000m³ and needs to irrigate a crop requiring 3,000m³ of water to meet its evapotranspiration needs. Find (i) The overall irrigation efficiency for both systems; (ii) Determine which system would be more effective in meeting the crop's water requirement with the given the limited water supply; (iii) If the farmer chooses Sprinkler Irrigation, how much additional water would be needed to ensure the crop receives 3,000m³?	10	4	5

