

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2026****First Semester****Environmental Engineering****PEVT2404-WATER TRANSMISSION, WATER DISTRIBUTION AND SEWERAGE SYSTEMS****Regulations -2024****Duration: 3 Hrs.****Maximum: 100 Marks****PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BTL	CO	Marks
1.	Differentiate between laminar and turbulent flow	L2	1	2
2.	A pipe of diameter 0.2 m carries water at 2 m/s. Calculate the discharge.	L2	1	2
3.	How do transmission mains differ from distribution mains?	L2	2	2
4.	List the factors that influence the selection of diameter for a transmission main.	L2	2	2
5.	What is meant by water distribution system?	L2	3	2
6.	List out factors are considered in designing a water distribution system?	L2	3	2
7.	Differentiate between sanitary sewers, storm sewers, and combined sewers.	L2	4	2
8.	Define "self-cleansing velocity" in sewer design.	L2	4	2
9.	Why storm water drainage important in urban areas?	L2	5	2
10.	Differentiate between a combined sewer system and a separate storm water drainage system.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11. a	Derive the expression for frictional head loss using the Darcy-Weisbach equation.	L3	1	16
Or				
b i	A pipe system consists of two pipes in series. Pipe 1: 100 m, 100 mm diameter, $f=0.02f$; Pipe 2: 200 m, 150 mm diameter, $f=0.025$. If flow rate is $0.02 \text{ m}^3/\text{s}$, compute the total head loss.	L3	1	12
ii	Discuss the challenges in wastewater transport in flat terrain areas.	L3	1	4
12. a i	Discuss the main parameters required for designing a transmission main.	L3	2	4
ii	Apply the concept for selecting pipe material in the design of a water transmission main? Include factors like durability, cost, and internal roughness.	L3	2	12

Or

	b	Design the diameter of a transmission main to carry 1.5 m ³ /s with a velocity not exceeding 2.5 m/s.	L3	2	16
13.	a	Interpret the role of storage reservoirs in balancing daily demand in a distribution network.	L3	3	16
		Or			
	b	Describe the step-by-step procedure for designing a water distribution network for a residential area.	L3	3	16
14.	a	i Explain the need for pumping stations in wastewater transmission systems.	L2	4	8
		ii Describe the role of ventilation in sewer lines and how it is achieved.	L2	4	8
		Or			
	b	Describe how to select a pipe material for a trunk sewer carrying 20 MLD.	L2	4	16
15.	a	i Estimate the peak runoff using the Rational Method for a 4 ha area with: Runoff coefficient = 0.6 Rainfall intensity = 75 mm/hr Time of concentration = 20 min	L3	5	12
		ii Explain how rainfall data is used in the design of storm sewers.	L3	5	4
		Or			
	b	Compare open channel and underground storm water drains in terms of cost, efficiency, and maintenance.	L3	5	16
