

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***M.E DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025***First Semester**Environmental Engineering***EV4104/PEVT2404 - Water Transmission, Water Distribution and Sewerage Systems***Regulations – 2021/2024***Duration : 3 Hrs****Maximum : 100 Marks****PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BLT	CO	Marks
1.	Define total energy line.	L2	1	2
2.	What is loss of head due to friction?	L2	1	2
3.	What are the advantages and limitations of RCC pipes?	L2	2	2
4.	Mention the basis for the selection of types and capacity of pumps.	L2	2	2
5.	How will you calculate the service capacity of the reservoir?	L2	3	2
6.	Mention the important components needed for the water distribution to buildings.	L2	3	2
7.	What is the use of manhole in sewerage system?	L2	4	2
8.	Distinguish between self-cleaning velocity and non-scouring velocity.	L2	4	2
9.	Discuss how do you estimate storm run-off.	L2	5	2
10.	Differentiate between dry weather flow and wet weather flow.	L2	5	2

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

Q.No	Questions	BLT	CO	Marks
11.	a i A 30 cm diameter pipe conveying water branches into two pipes of diameters 20 cm and 15 cm respectively. If the average velocity in the 30 cm pipe is 2.5 m/s, find the discharge in this pipe. Also determine the velocity in 15 cm pipe if the average velocity in 20 cm pipe is 2 m/s.	L4	1	8
	i The velocity of water in a pipe 200mm diameter is 5m/s. The length of the pipe is 50m. Calculate the loss of head due to friction, if $f=0.08$.	L4	1	8
	Or			
b i	Find the loss of head when a pipe of diameter 200 mm is suddenly enlarged to a diameter of 400 mm. The rate of flow of water through the pipe is 250 liters/sec.	L3	1	8

	i	Discuss the various minor energy losses in flow through pipes with their expressions.	L3	1	8	
12.	a	i	Discuss the requirements of a good piping material.	L4	2	8
	i	Quantity of water required by a town is 20,000m ³ /day. The pumps are working against a total head of 40m, for 8 hours. Total length of the main is 20km, f=0.075. Design the size of the main using Darcy-Weisbach formula. Assume any other data required.	L4	2	8	
		Or				
	b	i	Illustrate the different types of pipe appurtenances used in water supply project.	L3	2	8
	i	Illustrate the different types of pumps used in water supply systems.	L3	2	8	
13.	a	i	Discuss the functions of service reservoir and explain.	L2	3	8
	i	Discuss the role of computer applications in the water distribution system.	L2	3	8	
		Or				
	b	Interpret the leak detection and explain its methods. How to maintain the drinking water pipe line system.	L2	3	16	
14.	a	i	List out the characteristics and composition of sewage and state their environmental significance.	L3	4	8
	i	Enumerate and explain the various sewer appurtenances with neat sketches.	L3	4	8	
		Or				
	b	i	Discuss the choice available and the factors to be considered while selecting pumps and pipes for sewerage system and explain.	L3	4	8
	i	With help of neat sketch explain the location and functions of drop manhole 'Inverted Siphon'.	L3	4	8	
15.	a	i	A city with a population of 100,000 has an area of 50 km ² . Rate of water supply is 110 liters per capita per day of which 80% turns into sewer. The average run-off coefficient is 0.5 and intensity of rainfall is 14.5mm/hr. Estimate the quantity of combined sewage. Take peak factor as 2.5.	L4	5	8
	i	List out the factors influencing the dry weather flow and explain.	L4	5	8	
		Or				
	b	i	How will you compute peak storm water discharge by the use of	L4	5	8

empirical formulas?

- i How will you estimate storm water flow? Discuss the factors L4 5 8
- i influencing the storm water flow.