Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Third Semester

Civil Engineering

CE3303-Water Supply and Wastewater Engineering

Regulations - 2021

Duration : 3 Hrs *Maximum : 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	Outline the objectives of water supply scheme.	UN	1	2
2.	What are the factors governing the location of intake structure?	RE	1	2
3.	Distinguish between unit operations and unit process in context of water treatment.	AN	2	2
4.	List out the methods of Deflouridation.	RE	2	2
5.	Identify the requirements of water distribution system.	AN	3	2
6.	Discover the role of computer application in water supply system.	AP	3	2
7.	Classify the physical characteristics of waste water.	AP	4	2
8.	The average sewage flow from a city is 80 x 10^6 l/d.If the average 5 day BOD is 285mg/l, Identify the total daily 5 day oxygen demand in kg and the population equivalent of the sewage. Assume per capita BOD of sewage per day is 75g.	AP	4	2
9.	Distinguish between oxidation pond and oxidation ditch.	AN	5	2
10.	List out the unit process involved in sludge treatment.	AP	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)*

Q.No		*Questions*	*BLT*	*CO*	*Marks*
11.	a	Explain the laboratory procedure to find out physical, chemical and biological characteristics of water.	UN	1	13
		Or			
	b	Explain with neat sketch the various types of intake structures based on source.	UN	1	13
12.	a	Discuss in detail Lime-Soda process for water softening with its merits and demerits.	CR	2	13
		Or			
	b	Design a clariflocculator for a proposed water treatment plant with a capacity of 80ML/d and draw the neat sketch of it.	CR	2	13

13.	a	Illustrate with neat sketches the various types of layout of distribution system.	UN	3	13
		Or			
	b	In a water supply system to be designed for serving a population of 4 lakhs, the storage reservoir is situated at 8km away from city and the loss of head from source to city is 16meters.Calculate the size of supply main by using weisbach formula as well as by using Hazen Williams formula assuming a maximum daily demand of 200 litres per day per person and half of the daily supply to be pumped in 8 hours. Assume coefficient of friction for the pipe material as 0.012 in weisbach formula and C_H = 130 in Hazens formula.	UN	3	13
14.	a	Identify in detail any four sewer appurtenances of sewerage system.	AN	4	13
		Or			
	b	Analyze in brief the various characteristics and composition of sewage and state their environmental significance.	AN	4	13
15.	a	Explain with neat sketch the principle, construction and design aspects of trickling filter.	UN	5	13
		Or			
	b	Summarize the function and operation of UASB with its advantages and disadvantages.	UN	5	13

*PART – C (Marks 1*15 = 15)*

Q.No		*Questions*	*BLT*	*CO*	*Marks*
16.	a	What is disinfection? What are the factors affecting disinfection? Explain the chlorination process.	AP	2	15
		Or			
	b	A high rate trickling filter has the following data: (i) Sewage flow = 4.5 Mld (ii) Recirculation ratio = 1.5 (iii) BOD of raw sewage = 250mg/l (iv) BOD removal in primary tank =30% (v) Final effluent BOD desired = 30mg/l What is the dimension of the trickling filter?	AP	5	15