**BCV304** 

Semester B.E./B.Tech. Degree Examination, June/July 2024

Water Supply and Waste Water Engineering

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M: Marks, L: Bloom's level, C: Course outcomes.

3 hrs.

	Module – 1	M	L	C
a.	Discuss the need of protected Water Supply.	10	L1	CO1
b.	List the various types of Water demand. Explain any three only.	10	L1	CO1
	OR			
9.		10	T 1	CO1
1				
b.	Calculate probable population in the year 1980 , 1990 and 2000 by using arithmetical increase method.            1940         1950         1960         1970           8000         12000         17000         22500	10	L3	CO1
	Modulo 2			
2		10	12	CO2
	1	10	L2	CO2
b.	Explain the theory of Sedimentation tank. What are the types of Sedimentation tank? Explain any one.	10	L1	CO2
	OR	•		
a.	Draw the neat sketches of Rapid sand filters. Explain working and cleaning of filters.	10	L2	CO2
b.	Design the approximate dimensions of a set of rapid gravity filters for treating water required for a population of 50,000. The rate of water supply being 180/Liters/day/person. The filters are rated to work 5000 Lit/hr/Sqm.	10	L3	CO2
	Module – 3			
a.	What is Disinfection? What are the minor methods of disinfection? Explain any two methods.	10	L1	CO3
b.	What is Chlorination? What are the types of chlorination? Explain any two methods.	10	L1	CO3
	4 OR			
a.	What are the types of Sewerage System? Explain their suitability in detail.	10	L1	CO3
b.	Explain any two Waste water physical , chemical and biological characteristics in detail.	10	L1	CO3
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	a. b. a. b. a. b.	a. Discuss the need of protected Water Supply.  b. List the various types of Water demand. Explain any three only.  OR  a. What are the factors affecting per capita demand? Explain in detail.  b. Calculate probable population in the year 1980, 1990 and 2000 by using arithmetical increase method.  1940 1950 1960 1970 8000 12000 17000 22500  Module - 2  a. Draw unit flow diagram of water treatment plant, explain each unit in brief.  b. Explain the theory of Sedimentation tank. What are the types of Sedimentation tank? Explain any one.  OR  a. Draw the neat sketches of Rapid sand filters. Explain working and cleaning of filters.  b. Design the approximate dimensions of a set of rapid gravity filters for treating water required for a population of 50,000. The rate of water supply being 180/Liters/day/person. The filters are rated to work 5000 Lit/hr/Sqm.  Module - 3  a. What is Disinfection? What are the minor methods of disinfection? Explain any two methods.  b. What is Chlorination? What are the types of chlorination? Explain any two methods.  OR  a. What are the types of Sewerage System? Explain their suitability in detail.  b. Explain any two Waste water physical , chemical and biological	a. Discuss the need of protected Water Supply.  Discuss the need of protected Water Supply.  OR  a. What are the factors affecting per capita demand? Explain in detail.  Discuss the need of protected Water demand. Explain any three only.  OR  a. What are the factors affecting per capita demand? Explain in detail.  Discuss the need of protected Water demand. Explain in detail.  Discuss the various types of Water demand. Explain in detail.  Discuss the various types of Water demand. Explain in detail.  Discuss the various types of Water demand. Explain in detail.  Discuss the various types of Water demand. Explain in detail.  Discuss the various types of Water demand. Explain in detail.  Discuss the various types of Water demand. Explain in detail.  Discuss the various types of Water demand. Explain in detail.  Discuss the various types of Water demand. Explain any three only.  Module - 2  a. Draw unit flow diagram of water treatment plant, explain each unit in brief.  Discuss the need schedule.  Draw unit flow diagram of water treatment plant, explain each unit in brief.  Discuss the nead 2000 by using 10  Module - 2  a. Draw unit flow diagram of water treatment plant, explain each unit in brief.  Discuss the nead 2000 by using 10  Draw unit flow diagram of water treatment plant, explain each unit in brief.  Discuss the nead 2000 by using 10  Draw unit flow diagram of water treatment plant, explain each unit in brief.  Discuss the nead 2000 by using 10  Draw unit flow diagram of water treatment plant, explain each unit in brief.  Discuss the neat sketches of Rapid sand filters. Explain working and cleaning 10  Discuss the neat sketches of Rapid sand filters. Explain working and cleaning 10  Discuss the neat sketches of Rapid sand filters. Explain working and cleaning 10  Discuss the neat sketches of Rapid sand filters. Explain working and cleaning 10  Discuss the neat sketches of Rapid sand filters. Explain working and cleaning 10  Discuss the neat sketches of Rapid sand filters. Explain working and cleaning 10	a. Discuss the need of protected Water Supply.  b. List the various types of Water demand. Explain any three only.  OR  a. What are the factors affecting per capita demand? Explain in detail.  b. Calculate probable population in the year 1980, 1990 and 2000 by using arithmetical increase method.  10 L3  Module - 2  a. Draw unit flow diagram of water treatment plant, explain each unit in brief.  Draw unit flow diagram of water treatment plant, explain each unit in brief.  OR  a. Draw the neat sketches of Rapid sand filters. Explain working and cleaning of filters.  Design the approximate dimensions of a set of rapid gravity filters for treating water required for a population of 50,000. The rate of water supply being 180/Liters/day/person. The filters are rated to work 5000 Lit/hr/Sqm.  Module - 3  a. What is Disinfection? What are the minor methods of disinfection? Explain any two methods.  DR  a. What is Chlorination? What are the types of chlorination? Explain any two methods.  OR  a. What are the types of Sewerage System? Explain their suitability in detail.  10 L1  b. Explain any two Waste water physical , chemical and biological 10 L1

b. Explain the working of conventional Activated Sludge Process (ASP) with flow diagram.  b. What is Suspended growth process? What are the examples of suspended growth process units? Explain any one.  Module -5  2.9  a. Explain the constructional details of a conventional trickling filters, with a neat sketch.  b. The sewage flows from a primary settling tank to a standard rate trickling filter at a rate of 5 million liter per day having a 5 — day BOD of 150mg/lit. Determine the depth and the volume of the filter, adopting a surface loading of 2500t/m²/day and an urgent loading of 165/g/m²/day. Also determine the efficiency of the filter unit, using NRC formula.  OR  Q.10  a. Explain the Rotating biological contactors, with neat sketch.  10  L2  ******			N/I - 1 - 1 - 1			
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the efficiency of the filter unit, using NRC formula.  OR  Q.10 a. Explain the Rotating biological contactors, with neat sketch.  10 L2  b. Write a short note on: i) Oxidation ditch ii) Stabilization Ponds.			Cocool 2/1-2 and an amount loading of 165/g/m <sup>3</sup> /day. Also determine			
Q.10 a. Explain the Rotating biological contactors, with neat sketch.    Description			of 2500t/m <sup>-</sup> /day and an urgent loading of 105/g/m <sup>-</sup> /day. Also determine			
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