

**PRAGATI ENGINEERING COLLEGE: SURAMPALEM
(AUTONOMOUS)**

III B.Tech II Semester Regular/Supplementary Examinations, April - 2024

**ENVIRONMENTAL ENGINEERING
(Civil Engineering)**

Time: 3 hours

Max. Marks: 70 M

**Answer ONE Question from each Unit
All Questions Carry Equal Marks**

Q. No.		Questions	BTL	CO	Marks							
UNIT – I												
1.	a)	Define the terms: a) Fire Demand b) Design Period.	K1	CO1	7M							
	b)	List the various water borne diseases and explain the cause of any two of the diseases.	K2	CO1	7M							
OR												
2.	a)	What is population forecasting? Explain about any two methods of population forecasting.	K2	CO1	7M							
	b)	In a town, it has been decided to supply 150 litres per head per day. Estimate the domestic water requirements of this town in the year 2000 by incremental increase method from the data given below:	K3	CO1	7M							
		<table><tr><td>Year</td><td>1940</td><td>1950</td><td>1960</td><td>1970</td><td>1980</td></tr><tr><td>Population</td><td>2,48,000</td><td>4,90,500</td><td>5,49,200</td><td>6,39,600</td><td>6,80,200</td></tr></table>				Year	1940	1950	1960	1970	1980	Population
Year	1940	1950	1960	1970	1980							
Population	2,48,000	4,90,500	5,49,200	6,39,600	6,80,200							
UNIT – II												
3.	a)	Explain in detail about the characteristics of water.	K2	CO2	7M							
	b)	Define the terms BOD and COD.	K2	CO2	7M							
OR												
4.	a)	The BOD of a sewage incubated for one day at 30°C has been found to be 100 mg/L. What will be the 5-day 20°C BOD? Assume K=0.12 (base 10) at 20°C.	K3	CO2	7M							
	b)	Explain about turbidity and how it can be determined.	K2	CO2	7 M							
UNIT – III												
5.	Explain with neat sketch the design, construction and working of a sedimentation tank?		K2	CO3	14M							
OR												
6.	a)	Explain different methods used for water softening process.	K2	CO3	7M							
	b)	Explain various types of disinfection for water. Also explain Breakpoint Chlorination in detail.	K2	CO3	7M							
UNIT – IV												
7.	a)	Design a high rate trickling filter plant to treat settled domestic sewage having BOD of 200mg/L for an average flow of 22 MLD to satisfy an effluent BOD ₅ of 10mg/L. Adopt peak factor as 2.25.	K3	CO4	7M							
	b)	Explain in detail the systems of collection and conveyance of wastewater in detail. Mention advantages and disadvantages of each system.	K2	CO4	7M							

OR

8.	a)	Explain advantages and disadvantages of separate, combined and partially combined sewerage systems?	K2	CO4	7M
	b)	Explain the activated sludge process in waste water treatment plant.	K2	CO4	7M
UNIT – V					
9.	a)	Design a septic tank for 50 users. Assume suitable data.	K3	CO5	7M
	b)	What are various methods of sewage disposal, explain in detail?	K2	CO5	7M
OR					
10.	a)	Explain the self-purification of streams with the help of an oxygen sag curve.	K2	CO5	7M
	b)	Explain about Nitrification and Denitrification techniques.	K2	CO5	7M