Code: 20CE3401

II B.Tech - II Semester – Regular / Supplementary Examinations
MAY - 2023

ENVIRONMENTAL ENGINEERING
(CIVIL ENGINEERING)

Duration: 3 hours   Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level   CO – Course Outcome

			BL	CO	Max. Marks
		UNIT-I			
1	a)	Define per capita water demand. List any four major factors affecting the rate of demand of water and explain the concept of fluctuations in water demand.	L2	CO1	7 M
	b)	The population statistics pertaining to a town are given below. Estimate the population expected in the year 2020 by Geometrical and incremental increase method?	L4	CO1	7 M
		OR			
2	a)	List out the standards of drinking water and explain the characteristics of drinking water in detail.	L2	CO1	7 M
	b)	Write an account on the common water-borne diseases.	L2	CO1	7 M

Table for Question 1 b):

Year	1960	1970	1980	1990	2000
Population	70,000	1,00,000	1,50,000	2,10,000	2,50,000

UNIT-II

3	a)	Distinguish between slow sand and rapid gravity filters.	L3	CO2	7 M
	b)	A water treatment plant treating 50 MLD of water requires 20 mg/l of filtered alum. If this water has 5 mg/l of alkalinity as $CaCO_3$, determine the quantity of alum and quick lime required per day.	L4	CO2	7 M

OR

4	a)	With the help of sketches, discuss about the layouts of distribution systems.	L2	CO2	7 M
	b)	Explain about the analysis of a water distribution system using Hardy Cross method.	L3	CO2	7 M

UNIT-III

5	a)	Discuss the appurtenances in sewerage.	L2	CO3	7 M
	b)	What is sewage? Explain about the estimation of sewage flow.	L3	CO3	7 M

OR

6	a)	Write about the characteristics of Sewage.	L2	CO3	7 M
	b)	Explain BOD and derive the expression for it.	L3	CO3	7 M

UNIT-IV

7	a)	What is a Grit chamber? Describe the horizontal flow grit chamber with the help of a neat sketch.	L3	CO4	7 M
	b)	Design a circular sedimentation tank to treat 1 MLD of domestic waste water treatment plant. Make suitable assumptions.	L4	CO4	7 M

		OR			
8	a)	Explain the operational problems and remedies of high rate Trickling filters.	L3	CO4	7 M
	b)	Explain the concept of sludge bulking.	L3	CO4	7 M
		UNIT-V			
9	a)	What are the disposal methods of septic tank effluent?	L2	CO5	7 M
	b)	What is the significance of oxygen sag curve?	L2	CO5	7 M
		OR			
10	a)	Explain the design considerations and working principles of septic tank with sketch.	L3	CO5	7 M
	b)	Explain in detail about the sewage sickness and its remedial measures.	L2	CO5	7 M