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GIET UNIVERSITY, GUNUPUR – 765022
B. Tech (Third Semester – Regular) Examinations, December – 2022
21BBSSES23001 – Environmental Science and Engineering
 (Civil Engineering)

Time: 3 hrs

Maximum: 70 Marks

Answer ALL Questions**The figures in the right hand margin indicate marks.****PART – A****(2 x 5 = 10 Marks)**Q.2. Answer ALL questions

- | | [CO#] | Bloom Level |
|--|-------|-------------|
| a. What is Recirculation Ratio in Wastewater Treatment Process? | CO3 | 2 |
| b. Classify the Microorganism based on oxygen requirement and energy requirement. | CO3 | 2 |
| c. Enlist various accessories of sewer system. | CO3 | 2 |
| d. What is AQI? Explain. | CO3 | 2 |
| e. What is measure to check the quality of air? Write the range of safe value which define good air quality. | CO4 | 3 |

PART – B**(15 x 4 = 60 Marks)**Answer ALL questions

- | | Marks | [CO#] | Blooms Level |
|--|-------|-------|--------------|
| 3. a. Define intake as referred in a water supply system and also write the different parameters for the site selection of an Intake. | 7 | CO1 | 2 |
| b. What Is Pump? Define its function and write merits and demerits of different pumps. | 8 | CO1 | 3 |
| (OR) | | | |
| c. Enlist and explain the different types of water distribution networks with their merits
And demerits? | 7 | CO1 | 2 |
| d. The population statistics pertaining to a town are given below. Estimate the population expected in the year 2020 by Geometrical and incremental increase method? | 8 | CO1 | 3 |

Year	1960	1970	1980	1990	2000
Population	70000	100000	150000	210000	250000

- | | | | |
|--|---|-----|---|
| 4. a. Write the different biological treatment process of waste water. Explain the Activated sludge process in details | 7 | CO2 | 2 |
| b. Write short notes on (a) Slow sand filter (b) Equalization Tank | 8 | CO3 | 3 |
| (OR) | | | |
| c. Discuss the purpose and methods of aeration in water treatment. | 7 | CO2 | 2 |
| d. What is Sewage? Write about the characteristics of sewage. | 8 | CO3 | 1 |
| 5. a. Explain UASB Process for Anaerobic treatment system. Write the Advantages and Disadvantages of UASB Reactor. | 7 | CO4 | 3 |

b.	What is noise pollution? Write short notes on problem caused due to Noise Pollution	8	CO4	2
(OR)				
c.	Define the process chlorination and De-chlorination in details.	7	CO3	1
d.	Name any three commonly used coagulant in water treatment. What are the factors which affect coagulant dosage?	8	CO2	1
6. a.	What is air pollution? Explain different types and sources of air pollution in details?	7	CO2	1
b.	What is Trickling Filter? Explain the working of tricking filter. Draw flow diagram of a Trickling Filter.	8	CO1	2
(OR)				
c.	What is Grit? Write the short notes on Grit Chamber.	7	CO2	2
d.	Design a high-rate single stage circular tricking filter for treating domestic sewage flow of 8 MLD. Where influent BOD to trickling filter is 168 mg/litre, Organic loading rate = 0.8 kg/m ³ /day, Hydraulic loading rate = 15 m ³ /m ² /day, recirculation ratio (r) = 2	8	CO3	4

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