

School of Engineering

**B.TECH Civil Engineering
Semester End Examination - Jun 2024**

**Duration : 180 Minutes
Max Marks : 100**

Sem VI - G1UA602T- BCE01T3603 - Waste Water Treatment and Disposal Systems

General Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

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|-----|---|--------|
| 1) | Why is it necessary to treat wastewater before disposal? | K1(2) |
| 2) | Illustrate the adverse effects on the receiving water body when pollutants are discharged along effluents in water . | K2(4) |
| 3) | Explain the use of alum as coagulant in treating water. | K2(6) |
| 4) | Identify when a pumping station will be required in the sewerage scheme. | K3(9) |
| 5) | Explain nutritional requirements for bacterial metabolism. | K3(9) |
| 6) | Describe different types of bacteria and their role in anaerobic degradation of organic matter to final end product. | K5(10) |
| 7) | Discuss the process of Nitrification and Denitrification | K4(12) |
| 8) | The population of a city in three consecutive years i.e. 1991, 2001 and 2011 is 80,000; 250,000 and 480,000, respectively. Determine (a) The saturation population, (b) The equation of logistic curve, (c) The expected population in 2021. | K5(15) |
| 9) | Design secondary sedimentation tank for the industrial effluent treatment plant employing completely mixed ASP. The MLVSS in aeration tank is 3500 mg/L and average annual wastewater flow rate is 500 m ³ /d. However in summer the wastewater generation is 1.5 times the annual average. Consider MLVSS/MLSS 0.8. | K5(15) |
| 10) | Predict the population for the years 2021, 2031, and 2041 from the given table. Use Geometric Mean Method. | K6(18) |

Year	1961	1971	1981	1991	2001	2011
Population	8,58,545	10,15,672	12,01,553	16,91,538	20,77,820	25,85,862