

1. Explain trickling filters methods of wastewater treatment. (5)
2. A completely mixed activated sludge process is used to treat wastewater flow of 500 m³/hr having a soluble BOD of 300 mg/l. The concentration of soluble BOD₅ escaping treatment is 10 mg/l. Considering the following design parameters: $Y = 0.5$, $k = 5 \text{ day}^{-1}$, $K_s = 100 \text{ mg/l}$, & Concentration of MLSS(X) = 2000 mg/l. Compute:
(i) The treatment efficiency (ii) The mean cell residence time, θ_c , (iii) The hydraulic retention time (iv) The volume of aeration tank. (5)
3. Explain fundamental principle of membrane filtration technology method of wastewater treatment. (5)
4. Write note on the following:
(i) Sludge Management (ii) Wetland System. (5,5)