

# School of Civil Engineering

Civil Engineering  
ETE - Jun 2023

Time : 3 Hours

Marks : 50

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

*Your answer should be specific to the question asked*

*Draw neat labeled diagrams wherever necessary*

1. Define areal distribution factor K2 CO3 (2)
2. Explain how various coagulants used and its benefits of usage and its respective dosage in the sewage treatment. K2 CO4 (2)
3. Compare and contrast the characteristics of conventional and high rate trickling filter K2 CO5 (2)
4. Define activated sludge process. K1 CO1 (2)
5. Discuss about nitrogen cycle with flow chart K1 CO2 (2)
6. Describe about the bulking and foaming sludge in an activated sludge treatment plant K3 CO1 (5)
7. Infer the recirculation process of treated sewage with respective flow charts K4 CO6 (6)
8. Interpret the constructional details of contact beds for biological filtration in sewage treatment K3 CO2 (5)
9. The surface water from airport road is drained to the longitudinal side drain from across one half of a bituminous pavement surface of total width 7m shoulder and adjoining land of width 8m on one side of the drain. On the other side of the drain water flow across from reserve land with the average turf and 2% cross slope towards the side drain, the width of this strip of land being 25m. The inlet time may be assumed to be 10min for these conditions. The runoff coefficients of the pavement, shoulder and reserve land with turf are 0.8, 0.25 and 0.35. The length of the stretch of land parallel to the road from where the water is expected to the side drain is 400m. Estimate the quantity of runoff flowing in the drain assuming 10 year frequency. The side drain will pass through the clayey soil with allowable velocity of flow as 1.33m/s.  
Duration (min)      Intensity(mm/hour)  
5                      160  
10                     150  
15                     125  
20                     110  
30                     95  
K4 CO3 (8)
10. Explain in detail about the stormwater regulators and describe its kinds with appropriate figures K5 CO4 (8)
11. Derive the design consideration for the construction of septic tanks with neat sketches K5 CO5 (8)