COURSE CODE:10B11CE613   MAX. MARKS: 35
COURSE NAME: Sewage Treatment and Disposal
COURSE CREDIT: 4MAX. TIME: 2.0 HRS

Note: Attempt all Questions. Carrying of mobile phones during exams will be treated as case of unfair means. Assume suitable data if required.

1.   Design a completely mixed ASP system to treat a flow of 10MLD with an influent BOD concentration of 300 mg/l and with a desired effluent concentration of 15mg/l. The following data is made available (a) primary treatment of wastewater will be done (b) F/M = 0.5 (c) MLVSS = 3200 mg/l (d) RAS = 12000 mg/l and MLVSS/MLSS = 0.9 (7)

2.A small community has a population of 1000 persons with an assumed water supply of 150 lpcd. The BOD of the generated wastewater from community is 100 mg/l. Design the most suitable treatment system for the community (without the use of any power supply unit). (3)

3.Design a high rate trickling filter for a flow of 12MLD with an influent BOD of 350 mg/l and the desired effluent being suitable enough for disposal in stream as per CPCB guidelines. Assume peak factor of 2.5, depth of filter as 5 m and recirculation ratio as 2(7)

4.   Write short notes on (a) gravitational method of thickening of sludge (b) self cleansing and non scouring velocities for design of sewers(c) importance of recirculation in trickling factor and ASP process (d) sludge drying beds(10)

5.   A town has a population of 70,000 spread over an area of 60 hectares. The rate of water supply is 150 lpcd, overall runoff coefficient of 0.68 and time of concentration to be 40 minutes, calculate the design discharge (3)

6.   Design a sewer section for d/D of 0.8 for a town having a population of 1, 20,000. The rate of water supply is 160lpcd. Assume n = 0.012 for the pipe material and maximum permissible slope is 1/300. Also check for maximum and minimum velocity assuming minimum flow 0.25 times of average flow and maximum flow is 4 times the average flow conditions (5)