ASSIGNMENT 3 – WATER TREATMENT PROCESS

1) What objectives are achieved by aeration of water? Sketch and discuss different types of aerators.
2) What is Sedimentation? Explain Sedimentation type-1 for discrete particles and derivation of equation of settling velocity of discrete particles.
3) Explain Coagulation and Flocculation process. Discuss any one type of coagulant and its application for water treatment.
4) Draw a neat sketch of a clariflocculator and show its various parts.
5) Discuss various Rapid and Slow mixing devices.
6) Sketch and explain working of a rapid sand filter.
7) Give comparison between slow sand filter and rapid sand filter.
8) Discuss disinfection of water
9) Discuss the methods of removal of hardness of water.
10) What do you understand by super chlorination? What are different method of dechlorination ?

ASSIGNMENT 5 – COLLECTION & ESTIMATION OF SEWAGE

1) Explain daily variation of sewage flow. How will you estimate the waste water discharge for design of a waste water treatment plant ?
2) Explain different types of sewers used for sanitary work.
3) Explain the estimation of design sanitary sewage discharge.
4) Write short note on:-
   (i) Asbestos cement (A.C.) sewers
   (ii) R.C.C. sewers
   (iii) Joints in sewers

ASSIGNMENT 6 – UNITS PROCESSES FOR WASTE WATER TRETMENT

1) Draw typical flow sheet of municipal W.W.T.P.
2) State the approximate BOD & SS removal efficiencies of different treatment unit for domestic W.W.
3) Enlist type of grit chamber. Explain horizontal flow grit chamber.
4) Draw W.W.T.P. showing position of activated sludge plant
5) Why sludge is recycled in activated sludge plant ? What is wasted sludge?
6) Write short note on Biological Unit Processes.
7) Write short note on Trickling Filtration.
8) Differentiate between Trickling & Activated sludge plant.
9) Write short note on sludge digestion. Draw location.
10) Write a short note on sludge Dewatering.
11) Write short note Septic tank.

ASSIGNMENT 7 – DESIGN OF WASTE WATER TRETMENT UNITS

1) Design bar screen for a peak flow of 60 MLD.
2) Design a rectangular grit chamber for treating 5 MLD of sewage.
3) Design a plain sedimentation tank for treating 15 MLD of water.
4) Design a clarifloculator for out flow of 250 m^3/hr.
5) Design a high rate trickling filter using the following data.
   (i) Sewage flow = 12 MLD
   (ii) Recirculation rato = 1.5
   (iii) BOD of raw sewage = 300 mg/l
   (iv) BOD removal in primary clarifier = 30%
   (v) Final effluent BOD desired = 20 mg/l