Roll No.

B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014

CIVIL ENGINEERING BRANCH
Semester 6
CE 9049 Industrial wastewater pollution prevention and control

(Regulation 2008)

Time: 3 Hours   Answer ALL Questions   Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Write the permissible limits of zinc and arsenic disposed in to water bodies.
2. Mention the significant of BOD/COD ratio.
3. List the chemical characteristics of wastewater.
4. Differentiate suspended growth and attached growth treatment.
5. Give the names of any four primary neutralizing agents.
6. Write the role of lime in coagulation process.
7. Differentiate nitrification and denitrification.
8. Write the use of steam stripping.
9. Write the typical characteristics of dairy industry raw effluent.
10. Write short note on lignin.

PART-B(5 x 16 = 80 Marks)

11. Explain the manufacturing process, characteristics of wastewater and wastewater treatment of sugar cane industry.

12. (a).(i) Define industrial waste survey. Also describe the general procedure to be followed in industrial waste survey.   (8)

    (ii) Draw the simplified process selection flow chart for biological treatment.   (8)

(OR)

(b). (i) Discuss the various waste constituents may have to be removed from industrial wastewater before discharge.   (10)

    (ii) Write short note on measurement of organic content in wastewater.   (6)

13. (a). Explain the waste minimization techniques used in industries to reduce waste and to reuse the waste.

(OR)

(b). Discusses the purpose of equalization in industrial wastewater treatment. Also Find the storage volume of equalization tank for an industrial wastewater using the following data.

Time period	M-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-N
Flow rate during the time period (m^3/s)	2.1	2	2.5	3	3.1	4.1	5.2	7	7.5	6.8	6	5.8

Time period	N-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-M
Flow rate during the time period (m^3/s)	5	4.9	4.7	5.2	5.8	6.2	7	7.1	6.7	5.4	4	3.1

M= Mid night (12AM)   N=Noon (12PM)

14. (a) With neat sketch explain the working principle of Air stripping process.

(OR)

(b) Define hazardous waste. Also discuss the different hazardous waste treatment methods.

15. (a) (i) Discuss the textile industry wastewater treatment methods.   (10)

(ii) What are the typical characteristics of pulp and paper mills?   (6)

(OR)

(b). Explain the manufacturing process, characteristics of wastewater and wastewater treatment of tannery industry.