Dr Rajiv Ganguly

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST I EXAMINATION (February- 2016)
M. Tech. (II- SEM.)

COURSE CODE: 14M31CE213　　　　　　　　　　　　　　　MAX. MARKS: 15

COURSE NAME: Industrial Wastewater Treatment

COURSE CREDIT: 3　　　　　　　　　　　　　　　　　　MAX. TIME: 1 HR

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 an equalization tank for an industrial wastewater flow rate of 20000 m^3/d. The average and maximum BOD concentrations are 875 mg/l and 1300 mg/l respectively. The effluent from equalization basin should be less than 1000 mg/l. Statistically; it has been found that 84.1% probability of BOD occurs at 1200 mg/l and 15.9% probability of BOD concentration occurs at 575 mg/l. The 50% probability of BOD is 875 mg/l. Design at 95% probability conditions. Assume (Z = 1.65) **(3)**

2. Explain the concept of grab sampling and composite sampling. In this context, explain the suitability of using a grab sampling or composite sampling on when they should be conducted. Also describe the different steps that needs to be followed for conducting a composite sampling process **(1+1+2)**

3. Explain how the volume reduction of wastes generated is minimized and thereby accomplished in an industry **(3)**

4. Design an equalization tank from the following data. Also determine the time at which the equalization tank is empty. Use graphical method. **(5)**

Time Period	Average flow rate during the period (l/s)
01	275
02	221
03	164
04	130
05	105
06	99
07	119
08	204
09	354
10	411
11	425
12	430
13	425

14	405
15	385
16	351
17	326
18	326
19	328
20	365
21	399
22	399
23	379
24	345