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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
T2 EXAMINATION (April - 2018)
B.Tech (VIII –SEM)/M. Tech. (II- SEM.)

COURSE CODE: 14M31CE213 MAX. MARKS: 25
COURSE NAME: Industrial Wastewater Treatment
COURSE CREDIT: 3 MAX. TIME: 1.5 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. Write short notes on (a) main reasons for providing an equalization basin, (b) With neat graphical sketches, explain the method for determining the optimum bed depth **(2+2) [CO-1, 2, 3]**

2. Explain the process of neutralization. In context of acidic waste management, with neat sketches discuss the process of neutralization using (a) Equalization basin (b) Limestone bed and (c) Limestone tower. Also briefly explain the neutralization technique for an alkaline waste. **(5) [CO- 2, 3, 4]**

3. In continuation of **Q4**, Also briefly explain the neutralization technique for an alkaline waste. With a neat graphical representation explain the role of pH in the neutralization process. **(2+3) [CO- 2, 3, 4]**

4. A highly acidic wastewater has a flow rate of 0.40 m^3/min and requires neutralization prior to secondary treatment. A two stage lime control process will be used with first stage lime usage of 2000 mg/l and second stage usage of 250 mg/l. Determine (a) the total lime requirement for the treatment process and (b) the volume of the neutralization tank if detention time is 15 minutes. **(3) [CO- 2, 3, 4]**

5. Explain the stepwise procedure for Dissolved Air Flotation (DAF) technique for removal of oily Wastes. **(5) [CO- 2, 3, 4]**

6. The influent oil concentration in an industrial waste is 120 mg/l with a flow rate of 570 m^3/min and is desired to have an effluent concentration of 20 mg/l. The A/S ratio is 0.03 and air solubility is 18.6 mg/l. The recycled pressure is 515 kg/cm^2. Assume f= 0.85. Assume the system reaches normal atmosphere pressure conditions (1 Atm) after release. Calculate the recirculation rate (R) **(3) [CO- 2, 3, 4]**