

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION-2022

B.Tech-V Semester (Civil)

COURSE CODE (CREDITS): 18B11CE512 (3)

MAX. MARKS: 35

COURSE NAME: SEWAGE TREATMENT AND DISPOSAL

COURSE INSTRUCTORS: NIRAJ SINGH PARIHAR

MAX. TIME: 2 Hours

Note: All questions are compulsory. Marks are indicated against each question in square brackets. Assume suitable data wherever required.

1. Describe the various classifications of waste-water and their ill-effects on the surrounding environment. Discuss the significance of waste-water treatment and disposal. [4+3] (CO1,4)
2. Design a bar screen chamber for a population of 200000 and average sewage discharge of 100 lpcd clearly stating the design assumptions. [7] (CO3)
3. (a) A 4 MLD raw sewage flow has a BOD of 220 mg/l. It is to be treated using a single stage trickling filter with an organic loading of 10000 kg/hect-m/d and recirculation ratio of 1.2 after passing through a primary clarifier where 35% of BOD is removed. Determine the effluent BOD after this treatment.
(b) If it is proposed to use a 2-stage TF plant with same recirculation ratio for each filter and keeping the volume of each filter as 50% to that obtained in standard rate TF, determine the change in effluent BOD and overall efficiency. [4+5] (CO2,3)
4. The following data is given for conventional activated sludge plant:

Waste water flow	50000m ³ /d	Effluent suspended solids	40 mg/l
Volume of aeration tank	15500 m ³	Waste-sludge suspended solids	12000 mg/l
Influent BOD	200 mg/l	Wasted sludge	250 m ³ /d
Effluent BOD	25 mg/l	MLSS in reactor	3000 mg/l

Determine (a) Hydraulic Retention Time (b) F/M ratio (c) Sludge Age [6] (CO3,4)

5. Give a brief write-up on the following:
 - a. Oxidation Pond
 - b. Anaerobic digestion process [3+3] (CO3,4)