

GANPAT UNIVERSITY**B. Tech. Semester – VI (CIVIL)****Regular Examination – April - June : 2015****2CI- 605: Environmental Engineering - II****Time: 3 Hours****Total Marks: 70****Instructions:** - (1) Answer to the two sections must be written in **separate** answer books.(2) Figures to the right indicate **full** marks.

(3) Assume suitable data if required.

Section - I

- 1 (A) Assuming suitable criteria, design a complete mix activated sludge process unit and SST (12)
to treat 20 MLD of domestic wastewater. BOD_5 of settled wastewater to the reactor is 200mg/L and desired BOD_5 of treated effluent is 30mg/L.
MLVSS in the reactor, $X = 3500\text{mg/L}$
Concentration of recycled sludge, $X_r = 10000\text{mg/L}$
MLVSS is 80% of MLSS
MCRT = 10 days
Effluent contains 25 mg/L of biological solids of which 65% is biodegradable.
 BOD_5 is 68% of ultimate BOD and BOD rate constant = 0.1/day

OR

- 1 (A) Design a Trickling Filter Unit with rotary system for treating 10MLD of wastewater (12)
having a 5 day BOD of 250 mg/L. Assume suitable design criteria wherever required.
(Exclude under-drainage system)
- 2 (A) Assuming suitable data, design a circular primary sedimentation tank to treat domestic (11)
wastewater flow of a town having 10,00,000 population.

OR

- 2 (A) Assuming suitable design criteria, design a grit chamber with a proportional weir for the (9)
wastewater having average flow of 7 MLD.
- (B) Define : (a) Specific Growth Rate (b) Yield Coefficient (2)
- 3 (A) The 7 days 20°C BOD of a sample of sewage is 300 ppm and its 3 days 37°C BOD is (4)
500 ppm. Find out the value of de-oxygenation constant K_D , and then estimate its 5 day 30°C BOD.
- (B) Explain with neat figure sludge dewatering by the use of sludge drying beds. (4)