

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI • EXAMINATION – SUMMER • 2014****Subject Code: 161304****Date: 05-12-2014****Subject Name: Biological Processes For Waste Water Treatment****Time: 10:30 am - 01:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q-1** (a) Enlist & Explain the Factors Affecting the BOD test. **07**
 (b) Write the Difference Between **07**
 (1) Suspended Growth & Attached Growth Process
 (2) Aerobic & Anaerobic Treatment Process.
- Q-2** (a) Describe in Brief Classification of Biological Treatment Processes. **07**
 (b) Write a short note on Root Zone Treatment. **07**
 OR
 (b) Explain in detail Anaerobic Sludge Digestion. **07**
- Q-3** (a) Derive the Relationship to Find the Amount of Methane per gram of COD. **07**
 (b) A sample of wastewater was incubated for 7 days at 20 °C and BOD result is 208 mg/l, **07**
 BOD rate constant $K = 0.15 \text{ day}^{-1}$. Calculate (i) 5 – day BOD (ii) 10– Day BOD
 OR
- Q-3** (a) With the help of neat Sketch Explain Working of Rotating Biological Contractor. **07**
 (b) Write a Short note on Bio Towers. **07**
- Q-4** (a) Write a Short note on **07**
 (1) Step Feed process
 (2) Contact Stabilization.
 (b) Enlist the Different types of Natural Treatment Systems & Describe any Two. **07**
 OR
- Q-4** (a) Differentiate between the Oxidation Ditch & oxidation Ponds. **07**
 (b) Enlist & Explain the Special Problems of Waste Water Treatment Specific to Small **07**
 Communities.
- Q-5** (a) Define : **07**
 (1) Yield Coefficient (2). Sludge Retention Time (SRT) (3). Specific Growth Rate (4).
 Endogenous decay of co-efficient (5). F/M Ratio (6). Half Velocity Constant
 (b) Write down the mass balance for CFSTR without recycle and hence **07**
 Derive the equation for finding biokinetic constant.
 OR
- Q-5** (a) Give the Classification of Trickling Filter & Application of each type. **07**
 (b) Determine the values of Co-efficient K, K_s, Y, k_d, μ_m From the following data. Derive **07**
 From a bench Scale activated Sludge Study using CFSTR Without Recycle.

Unit no.	S_o (mg/l)	S_e (mg/l)	$\Theta = \theta_c$ (days)	X (mg/l)
1	300	7	3.2	128
2	300	13	2	125
3	300	18	1.6	133
4	300	30	1.1	129
5	300	41	1.1	121
