

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER-IV • EXAMINATION – SUMMER • 2014

Subject Code: 741801**Date: 04-06-2014****Subject Name: Anaerobic Biotechnologies****Time: 02:30 pm - 05:00 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) Define and explain the following terms: 7
 (i) Digestion (ii) Putrefaction (iii) Decomposition (iv) Degradation
 (v) Stabilization (vi) Refractory organics (vii) Anoxic treatment.
- (b) Enlist and Explain the different Environmental Conditions to maintain the Anaerobic Process. 7
- Q-2** (a) Give the applications of the Buswell Equation. 7
 (b) “Acetic acid is the most important intermediate volatile acid in the methane fermentation”. Explain it with neat sketch. 7
- OR**
- (b) Write a short note on Biochemical Methane Potential. 7
- Q-3** (a) Write a short note on Sources of Methane in Anaerobic Treatment. 7
 (b) Differentiate between High Rate and Low Rate anaerobic treatment process. 7
- OR**
- Q-3** (a) Why anaerobic systems are most suitable for the strong wastewater? 7
 (b) Explain the rate limiting steps in anaerobic systems. 7
- Q-4** (a) Draw the neat sketch indicating conversion of different organic substances into gaseous end products. 7
 (b) Give the Classification of High rate anaerobic reactors based on the 7
 (i) Attached Growth Process
 (ii) Suspended Growth Process
 (iii) Hybrid Process
- OR**
- Q-4** (a) Write the merits and demerits of following anaerobic reactors: 7
 (i) UASB
 (ii) ASBR
- Q-4** (b) Draw a neat sketch, working principle, merits and demerits of internal circulation reactor.
- Q-5** (a) Give the difference between Expanded Bed Reactor and Fluidized Bed Reactor 7
 (b) Enlist and explain different types of toxicity prevail in the anaerobic reactors. 7
- OR**
- Q-5** (a) Write a short note on indicators of unbalanced anaerobic reactor based on different parameters increasing and/or decreasing. 7
 (b) Enlist and explain the each step to control the unbalanced condition of anaerobic reactor. 7
