

GUJARAT TECHNOLOGICAL UNIVERSITY**M. E. Sem – IV Examination May 2011****Subject code: 741801****Subject Name: Anaerobic Biotechnologies****Date: 16/05/2011****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) Prepare a list of different anaerobic sludge blanket processes and with the help of a neat sketch explain UASB reactor. **07**
- (b) Explain the environmental conditions which affect the performance of anaerobic processes. **07**

- Q.2** (a) With the help of a neat sketch explain anaerobic treatment as three step process. **07**
- (b) List down the different types of mixing equipments for anaerobic digesters and explain any two, with diagram. **07**

OR

- (b) An anaerobic reactor, operated at 35⁰C processes wastewater stream with a flow of 1500m³/d and BOD concentration of 2500mg/L. If the removal efficiency is 90% and a net biomass yield is 0.05 g VSS/g BOD used, estimate the amount of methane produced in m³/d ? **07**

- Q.3** (a) Enlist and explain advantages of anaerobic treatment.(at least eight points) **07**
- (b) Write a note on BMP test , highlighting its applications and advantages. **07**

OR

- Q.3** (a) Write a note on Anaerobic Toxicity Assay Test. **07**
- (b) Enlist the different treatability parameters for anaerobic treatment and explain any two. **07**

- Q.4** (a) With the help of neat sketches , explain the difference between Standard Rate and High Rate sludge digesters. **07**
- (b) Write a note on “Waste Stabilization Ponds”. Draw a neat sketch to explain its working. **07**

OR

- Q.4** (a) Enlist the different types of anaerobic Attached Growth Processes and with the help of a neat sketch explain any one. **07**
- (b) Write a note on Expanded Granule Sludge Blanket Reactor. **07**

- Q.5** (a) Differentiate between Anaerobic Suspended Growth and Attached growth processes. **07**
- (b) Enlist and explain the factors affecting the design considerations for anaerobic treatment processes. **07**

OR

- Q.5** (a) Highlight the role of acid fermentation and methane fermentation in anaerobic treatment processes. **07**
- (b) Enlist and explain the biochemical pathways in anaerobic treatment of waste. **07**
