Enrolment No.

### **GUJARAT TECHNOLOGICAL UNIVERSITY** ME – SEMESTER IV (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2741801

Subject Name: Anaerobic Biotechnologies

# Date:04/05/2016

**Total Marks: 70** 

## Time:10:30 am to 01:00 pm

#### Instructions:

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1 (a) Enlist and explain the important design, operating and performance parameters 07 of UASB.
  - (b) What are the environmental parameters which affect the performance of 07 anaerobic processes?
- Q.2 (a) Enlist and explain the biochemical pathways in anaerobic treatment of waste. 07
  - (b) Explain how acetic acid is the most important volatile acid in anaerobic reactor. 07 OR
    - (b) Explain the rate limiting steps in anaerobic system. 07
- Q.3 (a) Enlist the physical components of UASB along with their purpose. 07
  - (b) Write a brief note on stuck reactors along with the causes and corrective 07 measures.

#### OR

- Q.3 (a) What is BMP test? Explain its procedure along with its advantages and 07 applications.
  - (b) Enlist and explain the different treatability parameters for anaerobic treatment. 07
- Q.4 (a) Compare and contrast between suspended growth process, hybrid system and 07 attached growth process for anaerobic treatment.
  - (b) An anaerobic digestion process is to give 90% BOD removal to 100 m<sup>3</sup>/d of 07 slaughter house effluent with an ultimate BOD of 3500mg/L .If the net biomass yield is 0.05 g VSS/g BOD used, estimate the amount of biogas generated.

#### OR

- Q.4 (a) Enlist the different types of anaerobic attached growth processes and explain 07 any one with the help of a neat sketch.
  - (b) Differentiate between fluidized bed and expanded bed anaerobic reactor. 07
- Q.5 (a) Discuss the important waste characteristics for evaluation of anaerobic 07 treatment.
  - (b) Differentiate between high rate and low rate anaerobic reactors along with 07 suitable examples.

#### OR

Q.5	<b>(a)</b>	Give a detailed description of the steps in anaerobic treatment.	07
	<b>(b)</b>	Highlight the merits and demerits of anaerobic treatment.	07

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