

GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. - SEMESTER – VII • EXAMINATION – WINTER 2012

Subject code: 170506**Date: 28/12/2012****Subject Name: Biochemical Engineering (Department Elective - I)****Time: 10.30 am - 01.00 pm****Total Marks: 70****Instructions:**

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

- Q.1 (a)** Explain the role of biochemical engineering with reference to cell as reactors? **07**
(b) Write in brief on Phases of growth of a microbial culture? **07**

- Q.2 (a)** Derive Michaelis-Menten equation? How are the kinetic parameters involved in it calculated? **07**
(b) Define Growth Yield and the other various Yield Coefficients used in cell culture? **07**

OR

- (b)** Explain cellular diversity and classify the organism based on cellular organization? **07**

- Q.3 (a)** Explain the importance of Fed batch reactor over CSTR? **07**
(b) Explain enzyme deactivation? **07**

OR

- Q.3 (a)** Discuss the various inhibited enzyme kinetics? **07**
(b) Derive Monod equation? **07**

- Q.4 (a)** Explain immobilization techniques in brief **07**
(b) Explain concept of washout and cell productivity in bioreactor? **07**

OR

- Q.4 (a)** Write in brief on recovery and purification of products obtained from bioreactor? **07**

- Q.4 (b)** Write in brief on sterilization and scale up of fermenter? **07**

- Q.5 (a)** Write in brief on common on-line instrumentation used on bioreactor? **07**
(b) Explain the method of manufacturing of industrial alcohols using biotechnology route? **07**

OR

- Q.5 (a)** Explain the method of manufacturing of biomethane and biohydrogen **07**
(b) Explain the method of manufacturing of vitamins **07**
