

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII • EXAMINATION – WINTER • 2014****Subject Code: 170506****Date: 29-11-2014****Subject Name: Biochemical Engineering****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) Explain cell as reactors in biochemical engineering? **07**
(b) A microbial culture undergoes various phases of growth. Explain the importance of each phase? **07**
- Q.2** (a) Derive Michaelis-Menten equation? Explain the method to determine the kinetic parameters involved in it? **07**
(b) Derive the equation for the material balance in continuous stirred tank fermenter stating all the assumptions involved in it? **07**
- OR**
- (b) Classify the organism based on cellular organization and write a brief note on its characteristics? **07**
- Q.3** (a) Write a brief note on protein denaturation? **07**
(b) List the types of different types based on the structure of proteins and explain its importance? **07**
- OR**
- Q.3** (a) Discuss the various inhibited enzyme kinetics? **07**
(b) Discuss the production of Single cell protein with a diagram? State the uses of single cell protein. **07**
- Q.4** (a) What is immobilization? Write on the various techniques used for immobilization in brief? **07**
(b) How is the secondary treatment carried out for waste water treatment? **07**
- OR**
- Q.4** (a) Write in brief on importance of instrumentation for bioreactor performance? **07**
(b) Explain with diagrams 'Lock and key model' and 'Induced fit model' for enzyme-substrate reactions
- Q.5** (a) Explain the method of manufacturing of any one vitamin using biotechnology route? **07**
(b) How is recovery and purification of products carried out using bioreactor? **07**
- OR**
- Q.5** (a) Explain the method of manufacturing of industrial alcohol production by using enzymes. **07**
(b) Write in brief on different types of sterilization? Why is it important? **07**
