Seat No.:	Enrolment No.

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII • EXAMINATION - WINTER • 2014

Date: 29-11-2014 Subject Code: 170506 **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. 0.1(a) Explain cell as reactors in biochemical engineering? 07 A microbial culture undergoes various phases of growth. Explain the importance of 07 each phase? **Q.2** Derive Michaelis-Menten equation? Explain the method to determine the kinetic **07** (a) parameters involved in it? (b) Derive the equation for the material balance in continuous stirred tank fermenter 07 stating all the assumptions involved in it? (b) Classify the organism based on cellular organization and write a brief note on its 07 characteristics? **Q.3** (a) Write a brief note on protein denaturation? 07 List the types of different types based on the structure of proteins and explain its 07 importance? **07 Q.3** Discuss the various inhibited enzyme kinetics? (a) **(b)** Discuss the production of Single cell protein with a diagram? State the uses of single **07** cell protein. **Q.4** What is immobilization? Write on the various techniques used for immobilization in 07 (a) brief? **(b)** How is the secondary treatment carried out for waste water treatment? **07 07 Q.4** Write in brief on importance of instrumentation for bioreactor performance? (a) Explain with diagrams 'Lock and key model' and 'Induced fit model' for enzyme-**(b)** substrate reactions Explain the method of manufacturing of any one vitamin using biotechnology route? Q.5 **07 (b)** How is recovery and purification of products carried out using bioreactor? **07** Explain the method of manufacturing of industrial alcohol production by using **07** Q.5 (a) enzymes. Write in brief on different types of sterilization? Why is it important? **07 (b)** 

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