

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII(OLD) • EXAMINATION – WINTER 2016

Subject Code: 170506

Date: 18/11/2016

Subject Name: Biochemical Engineering (Department Elective-I)

Time: 10:30 AM to 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) Discuss primary, secondary and tertiary structure of proteins. What is protein denaturation? **07**
- (b) Explain various methods of cell disruption for product recovery operation. **07**
- Q.2** (a) Write the important differences between prokaryotes and eukaryotes. Classify bacteria based on morphology and gram staining? **07**
- (b) Discuss difference between 'lock and key model' and 'Induced fit model' of enzyme – substrate reaction with diagram. Define Enzyme inhibition. **07**
- OR**
- (b) Derive Michaelis-Menten equation and discuss the application of the equation **07**
- Q.3** (a) Discuss the different types of fermenter used in batch and continuous process. Explain the fed-batch process and its application **07**
- (b) State the various techniques for measurement of microbial cell growth and discuss the typical cell growth curve with different phases involved. **07**
- OR**
- Q.3** (a) Discuss various challenges faced during the scale-up process at different level and explain in brief how to overcome them **07**
- (b) Explain the importance of dissolved oxygen in an aerobic process and discuss various problems that may arise if DO level falls down. **07**
- Q.4** (a) Explain Glycolysis and TCA cycle with diagram **07**
- (b) Discuss various techniques of Enzyme/Cell immobilization and the challenges associated with it. Discuss in brief benefits of immobilization **07**
- OR**
- Q.4** (a) Discuss production of alcohol by fermentation method along with a flow diagram **07**
- (b) Explain the carbon and nitrogen cycle. Discuss the reasons for Global warming in brief. **07**
- Q.5** (a) Discuss with flow diagram the production of single-cell protein. State its application **07**
- (b) Discuss with examples the structure of different type of carbohydrates **07**
- OR**
- Q.5** (a) Discuss in details various chromatographic techniques used in downstream processing **07**
- (b) Explain the structure of Nucleic acids – DNA and RNA with diagram **07**
