Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER–VIII • EXAMINATION – SUMMER • 2014

Subject Code: 180401 Date: 05-06-2014

Subject Name: Bioprocess Engineering II

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 deterministic and stochastic approach for model development by taking suitable examples.	**07**
	(b)	Enlist the parameters for batch sterilization process and give importance of each of them in designing sterilization process.	**07**
Q.2	**(a)**	Distinguish between mechanical and chemical methods of cell disruption from cell handling point of view.	**07**
	(b)	Discuss Schulze – Hardy rule of flocculation.	**07**
		OR	
	(b)	How does rotary vacuum filter works? Draw a neat sketch and give principle.	**07**
Q.3	**(a)**	Write a detail note on: High Performance Liquid Chromatography.	**07**
	(b)	Give an overview of strategies to control costs for bioproducts.	**07**
		OR	
Q.3	**(a)**	When, where and how does the molecular sieve chromatography apply?	**07**
	(b)	Give a detail account of on line monitoring methods with principle of each.	**07**
Q.4	**(a)**	Enlist the forces in centrifugation process and give Stoke's law. Discuss the major factors affecting centrifugation process.	**07**
	(b)	Make a list of advantages, disadvantages and applications of MATLAB.	**07**
		OR	
Q.4	**(a)**	Discuss extraction and crystallization along with its principle and significance with reference to biotechnology.	**07**
	(b)	Discuss with a diagram: enzyme electrode	**07**
Q.5	**(a)**	Explain biosensor assembly and give functions of each component.	**07**
	(b)	Discuss the technical features of adsorption in CSTR.	**07**
		OR	
Q.5	**(a)**	Briefly explain the heating, cooling and holding phase of continuous sterilization.	**07**
	(b)	Classify the models and give the steps for developing steady state models. What changes did development of dynamic model bring about in compare to that of steady state models?	**07**

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