Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2180408 **Date: 04/05/2017**

Subject Name: Biochemical Engineering-II

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.**
4. **Notations, used in this paper, have conventional meaning.**

Q.1	**(a)**	Draw a neat sketch to narrate the principle of mass spectrometry give its applications.	**07**
	(b)	Discuss any one type of continuous filtration assembly with diagram. Compare it with batch process.	**07**
Q.2	**(a)**	Explain the meaning of the terms: Physical model, Mathematical model.	**07**
	(b)	Explain the uses and principle of MALDI-TOF-MS.	**07**
		OR	
	(b)	Discuss the plasmid stability model. Clearly mention dependent variables. State assumptions.	**07**
Q.3	**(a)**	What is the meaning of boundary conditions? Define the terms: lumped parameter, distributed parameter, steady state model.	**07**
	(b)	Explain unstructured model by taking an example.	**07**
		OR	
Q.3	**(a)**	Derive suitable equation for model depicting population growth.	**07**
	(b)	Briefly explain the principle of FIA. Mention the role of dispersion in that.	**07**
Q.4	**(a)**	What is Downstream Processing? Explain its various stages and elaborate on its role in biotechnology industries.	**07**
	(b)	Explain various laboratory scale cell disruption techniques.	**07**
		OR	
Q.4	**(a)**	Explain basic principle and working of biosensor. Classify them and explain Optical biosensor in brief.	**07**
	(b)	Write a brief note on: Ultrafiltration in biotechnology.	**07**
Q.5	**(a)**	Explain principle, working and applications of Gel Permeation Chromatography.	**07**
	(b)	Write equation of Stoke's law and explain any one type of centrifuge assembly.	**07**
		OR	
Q.5	**(a)**	Explain principle, working and applications of Affinity Chromatography.	**07**
	(b)	Write a brief note on application of flocculation and sedimentation techniques in biotechnology.	**07**

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