Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–VIII EXAMINATION – SUMMER 2016**

**Subject Code: 180401** **Date:10/05/2016**

**Subject Name: Bio Process 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.**

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|---|---|---|---|
| **Q.1** | **(a)** | What is Sterilization? Explain Batch Sterilization Processes and Continuous Sterilization Processes. | **07** |
| | **(b)** | Define the term: Biosensor. Explain its characteristics and write down the application of Biosensor. | **07** |
| **Q.2** | **(a)** | What is downstream processing? Explain the steps for downstream processing. | **07** |
| | **(b)** | Write a short note on: on-line bio-mass estimation | **07** |
| | | **OR** | |
| | **(b)** | Explain any two large scale disruption techniques in details. | **07** |
| **Q.3** | **(a)** | What is Filtration? Explain Ultra Filtration and Tangential flow filtration in details. | **07** |
| | **(b)** | Enlist the Centrifuge Configurations. Explain any two Centrifuge Configurations in details. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Discuss Schulze Hardy Rule of Flocculation. | **07** |
| | **(b)** | Explain Principle and Methods of Sedimentation. | **07** |
| **Q.4** | **(a)** | Discuss the term: Liquid Liquid Extraction. Explain Solvent Selection and Extraction Equipment Selection in Liquid Liquid Extraction. | **07** |
| | **(b)** | What is Adsorption? Explain engineering analysis of Fixed-Bed Absorbers. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Define the term: Precipitation. Explain two major methods used for protein Precipitation. | **07** |
| | **(b)** | Write down the advantages, disadvantages and applications of MATLAB. | **07** |
| **Q.5** | **(a)** | Write a detail note on Affinity Chromatography. | **07** |
| | **(b)** | Explain Principle and theory of operation of Electrodialysis. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Discuss the term: Crystallizers. Explain Batch Crystallizers in details. | **07** |
| | **(b)** | Explain cost-cutting strategies and process design criteria for various classes of bio products in downstream processing. | **07** |

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