

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- VIIth SEMESTER-EXAMINATION – MAY/JUNE- 2012

Subject code: 170404

Date: 28/05/2012

Subject Name: Bioprocess Engineering-I

Time: 02:30 pm – 05:00 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) Define Fluid. Also give classifications of fluids. 07
(b) How mass transfer occurs in fermentor? 07
- Q.2** (a) What is radial and axial mixing? Explain. 07
(b) Draw a sketch of Mixing vessel and give the role of major parts of it. 07
OR
(b) Write a note on: role of shear in fermentor 07
- Q.3** (a) Narrate Scale up and Scale down process. 07
(b) Discuss Dynamic method to find out $K_L a$ 07
OR
- Q.3** (a) What is structured model and unstructured model? Where and how does it help in control operations? 07
(b) Explain control loop strategy and need to control. 07
- Q.4** (a) Write a Note on: expert control system 07
(b) Factors for incubation control- Briefly Explain. 07
OR
- Q.4** (a) What are the major considerations for Stoichiometry calculations for fermentor? 07
(b) Derive suitable equation(s) for oxygen transfer. 07
- Q.5** (a) What is the major difference while handling animal cells and microbial cells in fermentation? 07
(b) Discuss main aspects of aseptic operations of fermentor. 07
OR
- Q.5** (a) Enlist various types of fermentor with its applications. 07
(b) Discuss mechanisms of mixing. 07
