

**D 13058**

Name

Reg. No. ....

**THIRD SEMESTER M.Sc. DEGREE EXAMINATION, FEBRUARY 2006**

General Biotechnology

**GBT 212—BIOPROCESS TECHNOLOGY**

Time : Three Hours

Maximum : 80 Marks

**Section A**

*Answer any **two** questions.*

*All questions carry equal marks.*

1. Narrate the process of industrial production of ethanol using yeasts.
2. Explain the process of production of glutamate exploiting bacteria at the industrial scale.
3. What are the major parameters monitored in microbial industries ? How they are controlled using suitable devices ?

(2 x 10 = 20 marks)

**Section B**

*Answer any **ten** questions.*

*All questions carry equal marks.*

4. Brief the typical structure of **fermenter** with suitable sketches.
5. Narrate the feature of air-lift **fermenters**.
6. What are the *three* major classes of **fermenters** ? Provide an example in each.
7. What is synchronous growth and how to achieve it ?
8. What are the methods of media sterilization in the large scale ?
9. What are the desired qualities of the fermentation medium ?
10. What are 'anti-forms' ? How they help in large scale processes ?
11. How precipitation technique is useful in downstream processing ?
12. How continuous filtration is achieved by rotary vacuum filter ?
13. How Basket centrifuge is used at the industrial scale ?
14. What are the physical methods of cell disruption ?
15. How spray driers are useful in obtaining several microbial products ?

(10 x 5 = 50 marks)

**Section C**

*Answer **all** questions.*

*All questions carry equal marks.*

16. What are the cheap inputs or sources of carbon and nitrogen in a large-scale culture medium ?
17. Differentiate batch and fed-batch cultures.
18. What is meant by counter-current extraction ?
19. What is the use of metabolic flux analysis in **Bioprocess** technology ?
20. What are contact driers ?

(5 x 2 = 10 marks)