D 26241 **(Pages : 2)** **Name.....**

Reg. No.....

THIRD SEMESTER M.Sc. DEGREE EXAMINATION SEPTEMBER/OCTOBER 2006

Bioprocess Technology

GBT-212—BIOPROCESS TECHNOLOGY

Time : Three Hours Maximum : 80 Marks

Section A

Answer any **two** *questions.*
Each question carries **10** *marks.*

1. How penicillin is produced industrially ?
2. Define 'single cell protein' ? Narrate the production of single cell protein with an example.
3. How to treat the effluents originating from microbial industries ?

(2 x 10 = 20 marks)

Section B

Answer any **ten** *questions.*
Each question carries 5 *marks.*

4. What are the components of a fermenter ? What is the role of those components ?
5. How fermenters are classified based on the mode of agitation ?
6. What are the typical phases of microbial growth ? What is the relationship of micro-oganisms in each stage of growth with product formation ?
7. What are packed bed reactors ?
8. What is synchronous growth ? What is its significance in relation to Bioprocesses ?
9. What are the methods of air sterilization ? How air is sterilized in the industrial scale ?
10. Differentiate and distinguish surface, immersed and solid state fermentation techniques.
11. Why immobilization of whole cells is preferred in certain fermentations ?
12. What are the causes for the initiation of foaming ? What is the role of microbes in this process ?
13. How precipitation is employed in recovering certain microbial products ?
14. Why continuous filtration is preferred ? How does it differ from batch filters ?
15. What are super critical fluids ? What are the reasons for employing them in extracting certain microbial products ?

(10 x 5 = 50 marks)

Turn over

Section C

Answer **all** *questions.*
Each question carries **2** *marks.*

16. What are the cheap sources of nutrients in a large-scale culture medium ?

17. Why freeze-drying process is employed for certain products ?

18. Whether filtration or centrifugation is desired in harvesting microbial biomass ? Why ?

19. How freeze therming causes cell disruption ?

20. What are the components of a monitoring and control device ?

(5 x 2 = **10 marks)**