



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY**

**THIRD SEMESTER – NOVEMBER 2016**

**BT 3825 - BIOPROCESS & PHARMACEUTICAL BIOTECHNOLOGY**

Date: 07-11-2016  
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

**PART – A**

**Answer ALL the Questions**

**I. Choose the correct answer**

**(5 x 1 = 5 Marks)**

1. Impellers used in fermentors help in  
a) aeration    b) agitation    c) antifoaming    d) absorption
2. Which of the following is not a physical method of rupturing cells?  
a) milling    b) homogenisation    c) ultrasonication    d) enzymatic digestion
3. In beer production, hop is added as an  
a) adjunct    b) seasoning agent    c) carbonating agent    d) chelating agent
4. Rituximab is used in the treatment of  
a) Cancer    b) Haemophilia    c) Thyroid    d) Diabetes
5. Alteplase is used to  
a) dissolve blood clots    b) increase insulin production  
c) control blood pressure    d) treat cystic fibrosis

**II. State whether the following are true or false.**

**(5x1=5 Marks)**

6. Sulfur dioxide is added to wine during its production to enhance the growth of lactobacilli.
7. Nutritional deficiency is the factor which causes the accumulation of organic acids in fermentation.
8. Bioanalytical assays are necessary to determine and quantify the protein drug in biological fluids.
9. In SCP production the advantage of using bacteria is that they have faster growth rate than molds.
10. Amino acids can be produced by direct fermentation from a carbon source.

**III. Complete the following**

**(5 x 1= 5 Marks)**

11. Primary metabolites are produced during \_\_\_\_\_.
12. Citric acid is recovered by adding \_\_\_\_\_.
13. L – glutamic acid is produced by \_\_\_\_\_ through direct fermentation.
14. Hydro carbon of interest in the bacterial SCP production is \_\_\_\_\_.
15. Antifoam agents lower \_\_\_\_\_ during fermentation process.

**IV. Answer the following, each within 50 words**

**(5 x 1 = 5 Marks)**

16. List the substrates that can be used as a carbon source in fermentation media.
17. Differentiate probiotics from prebiotics.
18. How are fermented milk products classified?
19. What is indigenous fermentation?
20. What are coumarins used for?

**PART – B (5×8 = 40 Marks)**

**Answer the following, each within 500 words. Draw diagrams wherever necessary.**

21. (a) Give a brief account of the different types of agitators in a fermentor.  
OR  
b) Write briefly on the different methods of cell disruption in downstream processing.
22. (a) Discuss strain improvement based on mutation and Recombinant DNA Technology.  
OR  
b) Write a brief account on the primary and secondary screening of industrially important microbes.
23. (a) Classify Alcoholic beverages and briefly describe the production of Beer.  
OR  
b) Write short notes on liquid – liquid extraction, liquid – solid extraction.
24. (a) Write short notes on fumaric acid and itaconic acid production  
OR  
b) Give a brief account of the various methods of delivering drug to target tissue.
25. (a) Give a brief account of the clinical development of the first therapeutic antibody.  
OR  
b) Discuss the activity of Insulin. Add a note on its production.

**PART – C (2 × 20 = 40 Marks)**

**Answer any TWO of the following, each within 1500 words; Draw diagrams wherever necessary.**

26. Write in detail on the different types of fermenters.
27. Explain in detail the production of SCP. Add a note on its advantages and disadvantages.
28. What are the different types of cheese? Explain in detail the production of cheese.
29. Explain the role of FDA and ICMR in clinical trials.

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