

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

**B.Sc. DEGREE EXAMINATION – ADVAN. ZOOLOGY & BIO-TECH. & CHEMISTRY**

**FOURTH SEMESTER – APRIL 2010**

**PB 4210 / 4206 / 4202 - MICROBIAL BIOTECHNOLOGY**

Date & Time: 19/04/2010 / 9:00 - 12:00 Dept. No.

Max. : 100 Marks

**PART A**

(20 marks)

**Answer All questions**

*I Choose the Correct Answer*

( 5 x 1 = 5 marks)

01. Analytical technique used for the separation of DNA fragments is .....
- a. PAGE                      b. SDS-PAGE                      c. AGE                      d. PCR
02. .... is the byproduct of dairy industry which is a good carbon source in fermentation industry.
- a. Butter milk                      b. Cheese                      c. Whey                      d. Yoghurt
03. .... is the starting material for production of steroids.
- a. Diosgenin                      b. Streptomycin                      c. Cephalosporin                      d. Penicillin
04. Peroxidase enzyme is produced from.....
- a. soy bean                      b. horse radish                      c. papaya                      d. fig
05. Which of the following microorganism produces hexopolysaccharide?
- a. *Xanthomonas campestris*                      b. *Pseudomonas elodea*  
c. *Leuconostoc mesenteroides*                      d. *Acinetobactor sps.*

*II State whether the following statements are True or False:*

( 5 x 1 = 5 marks)

06. Intracellular metabolites are located outside the cells.
07. Photobioreactor is used for the production of secondary metabolites.
08. Commercial production of enzymes is mostly from microbes.
09. The most commonly used food preservative is glutamic acid.
10. BGA in aquatic fern fixes atmospheric nitrogen.

*III. Complete the following*

( 5 x 1 = 5 marks)

11. Taq DNA polymerase enzyme is extracted from \_\_\_\_\_
12. Bioreactor is used for the culturing of \_\_\_\_\_
13. The amount of Vitamin B12 produced by *Propionibacterium sps.* is \_\_\_\_\_ mg/L
14. Commercially available glutamic acid is called as \_\_\_\_\_
15. \_\_\_\_\_ is an intra cellular, carbon and energy rich biodegradable polymer.

*IV. Answer all the questions, each in about 50 words*

( 5 x 1 = 5 marks)

16. Define transgenic microbe.
17. What is inoculum build up?
18. Distinguish between surface and submerged fermentation
19. What is artificial sweetener?
20. Define yoghurt

**PART B**

( 5 x 7 = 35 marks)

*Answer the following, each within 350 words only. Draw diagrams and flowcharts wherever necessary.*

21a. Define Biotechnology. Write notes on restriction enzymes.

Or

b. Explain the method of DNA amplification.

22a. Explain the types of microbial growth in fermentation.

Or

b. Explain the different parts of a fermentor along with their functions.

23a. Briefly explain the commercial production of citric acid.

Or

b. Explain the production methodology of protease.

24a. Give an account of biosynthesis of Penicillin

Or

b. Explain the production methodology of Streptomycin.

25a. What is single cell protein? Describe the methodology of mass cultivation of *Spirulina*.

Or

b. Explain the steps involved in cheese production.

**PART C**

(3x 15 = 45 marks)

*Answer any three of the following, each within 1500 words only. Draw diagrams and flowcharts wherever necessary.*

26. Explain the steps involved in the production of recombinant strain.

27. Describe the process of fermentation technology. Add a note on carbon and nitrogen substrate used in fermentation industry.

28. What is biotransformation? Explain the process of biotransformation of steroids.

29. Mention any one microbial source and write about the applications of glutamic acid, citric acid and acetic acid.

30. Define Biosensor. Explain the working principle, types and applications of biosensor.

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