Register Number: …….

B.TECH DEGREE EXAMINATIONS: NOV/DEC 2010

Seventh Semester

BIOTECHNOLOGY

U07BT701: Downstream Processing

Time: Three Hours **Maximum Marks: 100**

Answer ALL Questions:-

PART A (10 x 1 = 10 Marks)

1. GMP means _____

a) Good Manufacturing Process b) Good Manufacturing Practice

c) Good Method Practice d) Good Method Process

2. Which one of the following is a physical method of cell disruption?

a) EDTA b) Ultrasonication c) Homogenizer d) Enzyme treatment

3. _____ is a filter aid

a) Perlite b) Merlite c) Graphite d) Copper Sulphate

4. Centrifugal decantation works on the principle of _____ difference in liquids

a) Density b) Velocity c) Time d) Temperature

5. French Press works on the principle of

a) Ultrasonic waves b) thermal denaturation c) hydro static force d) magnetic force field

6. Supercritical fluid extraction uses _____ as solvent

a) Carbon di oxide b) Oxygen c) Nitrogen d) Methyl oxide

7. Which one of the following is a planar chromatographic technique

a) GSC b) GLC c) LLC d) TLC

8. The separation technique based on molecular size is carried out using _____

a) HPLC b) Paper Chromatography c) Gel Filtration d) GLC

9. The process of forming particles with specific shape and size is called as _____

a) Drying b) Adsorption c) Centrifugation d) Crystallization

10. Lyophilization is otherwise called as _____

a) Direct contact Drying b) Indirect Contact Drying

c) Sublimation Drying d) Evaporation

PART B (10 x 2 = 20 Marks)

11. Define Downstream Processing

12. Name two mechanical methods of cell disruption.

13. Name two filter media and give two examples for rigid media used in water treatment.

14. Write any 5 common types of centrifuges used in bioseperations

15. Draw a flow diagram for continuous co-current extraction
16. What are the different methods of separation process available when the driving force is hydrostatic pressure?
17. Depending on the physical configuration how chromatography is classified? Give two examples for each
18. Define Retention Volume
19. What are the necessary finishing steps need to be carried out and why?
20. State the significance of drying.

PART C (5 x 14 = 70 Marks)

21. a) Explain a detailed note on characteristic of fermentation broth

(OR)

b) Explain a detailed note on:

(i) Physical methods of cell disruption (ii) Bead mill working

22. a) Explain in detail the working of rotary drum filter with a neat diagram

(OR)

b) Write a elaborate note on the the working principle of Tubular Bowl centrifuge and Stack Bowl Centrifuge. (7+7)

23. a) Explain a detailed notes on liquid - liquid extraction process

(OR)

b) Discuss in detail about the principles and advantages of super critical fluid extraction

24. a) Write an detailed notes on classification of chromatographic Techniques with Examples

(OR)

b) What is the principle behind the separation using Size Exclusion Chromatography? Explain in detail with a neat diagram.

25. a) Give a detailed account on freeze drying and Batch Freeze Driers.

(OR)

b) What are the separation steps involved in the downstream processing of an extra cellular enzyme? Describe using an example.

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