

## **FERMENTATION AND DOWN STREAM PROCESSING**

**INSTRUCTION TO STUDENTS: ATTEMPT ALL QUESTIONS.**

### **DOWNSTREAM PROCESSING**

#### **PART A**

1. Name any three molecules manufactured by fermentation.
2. Write the spectrum of separations used in biotechnology.
3. Write any two design questions to improve the separation process.
4. Write the four steps in the bioseparation process.
5. What is the principle used in Osmotic shock and enzyme digestion?
6. Name any two chemical methods for cell disruption.
7. Name any two mechanical methods for cell disruption.
8. Give two examples for solubilization and liquid dissolution.
9. Name the layers of gram negative cell.
10. Write short notes on solubilization.
11. Explain Schmidt number.
12. Explain Sherwood number.
13. Define Reynold's number.
14. What is principle of alkali treatment?
15. What is Cell disruption?
16. What are the solvents used in lipid dissolution?
17. List out the four familiar steps in most bio-separation.
18. Explain about lipid dissolution.
19. What are the different steps in downstream processing?
20. What are the physical methods of cell disruption?

**PART B****PHYSICAL METHODS OF SEPARATION**

1. What is depth filtration?
2. Write the Poiseuille's equation.
3. Write the formula for Poiseuille's equation.
4. What is cake compressibility?
5. Short note on Diaphragm pumps.
6. Short note on centrifugal pumps.
7. Short notes on Positive displacement pumps.
8. What is porosity?
9. Short notes on filter aid.
10. Filter media.
11. Short notes on equipment selection.
12. How will you use continuous and Batch filtration together.
13. Short notes on Rotary vacuum filter.
14. Short notes on Nutsches.
15. Short notes on cross flow filtration.
16. Short notes on factors affecting the characteristics of filters.
17. What is continuous mode?
18. What is Dia filtration?
19. What are the parameters which affect for filter performance?
20. Explain trans membrane pressure.