

7. (a) What should be criteria for the choice of recovery of the product/process. 4  
 (b) Give an outline for the recovery and purification of Penicillin G. 7
8. Give a detailed account on the production process of commercial ethanol. 11

**SECTION—C**

9. Explain the following :
- (I) Chemostat  
 (II) Exponential phase of growth  
 (III) Baffles  
 (IV) Agitators  
 (V) Sterilization  
 (VI) Growth media vs fermentation media  
 (VII) Importance of media formulation  
 (VIII) Offline sensor  
 (IX) Anti foam  
 (X) Fluid rheology  
 (XI) Name the online sensor in fermentation process  
 (XII) KLa  
 (XIII) Enlist the purification methods  
 (XIV) Activated sludge process  
 (XV) Lagoons 15×2=30

Roll No. ....

Total No. of Pages : 2

**PC 11711-NH**

**CS/2111**

**BIOPROCESS TECHNOLOGY—BHB-23**

**Semester—V**

Time Allowed : Three Hours]

[Maximum Marks : 74

**Note :-** Attempt *two* questions each from Sections A and B and Section C is compulsory.

**SECTION—A**

1. Elaborate the major groups of commercially important fermentations. 11
2. What are the basic components of fermentation process ? Discuss in detail. 11
3. Write down the various types of culture vessels and discuss their applications in production process. 11
4. What should be the criteria for the inoculum development ? Discuss in detail. 11

**SECTION—B**

5. What are the various classes of sensor ? Briefly elaborate the characterization of sensor system in relation to its application process control. 11
6. Why measurement of KLa is important for the better performance of a bioreactor ? Justify. 11