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Total number of printed pages – 2

B. Tech  
PCBT 4306

**Sixth Semester Back Examination – 2015**

**DOWNSTREAM PROCESS ENGINEERING**

**BRANCH : BIOTECH**

**QUESTION CODE : M 233**

**Full Marks – 70**

**Time : 3 Hours**

*Answer Question No. 1 which is compulsory and any **five** from the rest.  
The figures in the right-hand margin indicate marks.*



1. Answer the following questions :

2×10

- (a) What do you mean by salting in ?
- (b) Write the principle of sonication in cell disruption.
- (c) Write the role of osmotic shock in cell disruption.
- (d) Write the principle of hydrophobic chromatography.
- (e) Write the principle behind liquid-liquid extraction.
- (f) Differentiate between absorption and adsorption.
- (g) Differentiate between normal phase and reversed phase chromatography.
- (h) What are the different types of filtration ?
- (i) What do you understand by g force ?
- (j) What are the different product polishing techniques ?

P.T.O.

2. Write the principle of Crystallization. What are the different types of crystallizers used for crystallization ? Explain the principle and working of Draft tube crystallizer. 2+2+6
3. What are the different parts of HPLC ? Explain the principle, working of HPLC. 3+7
4. (a) Describe in details about the principle and working of fluidized bed dryer. 5  
(b) Discuss the different types of chromatography techniques in details based upon the operation and working principle. 5
5. (a) Discuss the different physical method of cell disruption with suitable example. 5  
(b) Differentiate between dialysis and electrodialysis. 5
6. (a) Discuss the salting out method of protein precipitation in details. 5  
(b) Write the principle and working of size exclusion chromatography. 5
7. (a) Write the principle and working of Affinity chromatography. 5  
(b) Write a note on ultrafiltration module and its configuration. 5
8. Write short notes any **two** of the following : 5×2  
(a) Absorption  
(b) Dialysis  
(c) Principle and working of TLC  
(d) Theory of centrifugation.
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