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Total Number of Pages: 01

B.TECH
PCBT4306

6th Semester Regular / Back Examination 2016-17
DOWNSTREAM PROCESS ENGINEERING

BRANCH: BIOTECH

Time: 3 Hours

Max Marks: 70

Q. Code: Z242

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

- Q1 Answer the following questions: (2 x 10)**
- a) How detergents help in cell disruption?
 - b) Differentiate between absorption and adsorption.
 - c) Differentiate between normal phase and reverse phase chromatography.
 - d) Write the principle behind TLC.
 - e) Classify chromatography techniques on the basis of their working principle.
 - f) What is drying curve?
 - g) What do you mean by IMAC?
 - h) What is R_f value? Discuss its importance.
 - i) What is osmotic shock?
 - j) Differentiate between salting in and salting out.
- Q2 a) Explain the different components of the HPLC with a suitable schematic diagram along with its working. (5)**
- b) Write a note on ion-exchange resins (5)**
- Q3 a) Write a note on theory of centrifugation. (5)**
- b) Discuss the affinity chromatography with example. (5)**
- Q4 Discuss the different techniques used for the cell disruption in details with suitable examples. (10)**
- Q5 a) Discuss the different techniques used for precipitation of proteins. (5)**
- b) Discuss the electro dialysis technique. (5)**
- Q6 a) Derive the equation for filtration under constant pressure. (5)**
- b) Discuss the working principle of lyophilization. (5)**
- Q7 a) Write a note on ultrafiltration module. (5)**
- b) Discuss the liquid-liquid extraction technique. How it is different from aqueous two phase extraction technique. (5)**
- Q8 Write Short Notes (Any Two): (5x2)**
- a) Liquid electrophoresis
 - b) Dialysis
 - c) hydrophobic chromatography
 - d) Nucleation