

Registration No :

--	--	--	--	--	--	--	--	--	--

Total Number of Page : 01

B.Tech.
PCBT4306

**6th Semester Back Examination 2017-18
DOWNSTREAM PROCESS ENGINEERING**

BRANCH : BIOTECH

Time : 3 Hours

Max Marks : 70

Q.CODE : C484

Answer Question No.1 which is compulsory and any five from the rest.

The figures in the right hand margin indicate marks.

Answer all parts of a question at a place.

- Q1. Answer the following questions : (2 x 10)**
- a) Write the importance of downstream process steps in bioprocessing? Differentiate between sedimentation and precipitation.
 - b) Explicate the role of dialysis in a protein separation process.
 - c) Define the term filtration.
 - d) Distinguish between adsorption and absorption.
 - e) Explain the role of drying curve in bioprocessing.
 - f) Write any two detergents that help in cell disruption?
 - g) Write the principle of sonication.
 - h) What are the different types of chromatography techniques?
 - i) Differentiate between normal and reverse phase chromatography.
 - j) What is salting out? How it is different from salting in?
- Q2. a) Explain about different the enzymatic methods that help in cell disruption. (5)**
b) Write a note on microfiltration. (5)
- Q3. a) Explain in detail about ultrafiltration. (5)**
b) Write in detail about the aqueous two-phase extraction process (5)
- Q4. a) Explain the principle and working of TLC. (5)**
b) Describe the membrane based separation process. (5)
- Q5. a) Write the principle behind crystallization. (5)**
b) Describe the different types of physical methods that are used in cell disruption (5)
- Q6. a) Deliberate details about the various methods used for precipitation of protein. (5)**
b) Write a note on theory of centrifugation. (5)
- Q7. What do you understand by the term HPLC? Discuss the working principle of HPLC with a neat diagram. (10)**
- Q8. Write short answer on any TWO : (5 x 2)**
- a) Cryopreservation
 - b) Electrodialysis
 - c) Adsorption chromatography
 - d) Liquid-liquid extraction