

R07

Code: R7412303

B.Tech IV Year I Semester (R07) Supplementary Examinations, May 2013

DOWNSTREAM PROCESSING

(Biotechnology)

Time: 3 hours

Max. Marks: 80

Answer any FIVE questions
All questions carry equal marks

- Explain how problems and requirements associated with high value low volume products.
 - Name and explain briefly about the different separation processes used in bio-separations.
- Describe the physico-chemical basis of bio-separation with special reference to citric acid production.
- What are the bio-separation techniques used for removal of the cell debris?
 - Write in detail about the sedimentation.
- Write in detail about the classification of membrane separation processes.
 - Differentiate between reversible and irreversible fouling.
- What is integrated bioprocessing? Draw a neat schematic diagram for a known compound of your interest.
 - What do you understand about the Hofmeister solutes and write their effectiveness in precipitation process?
- Explain in detail about the electrophoresis.
 - Estimate the double layer thickness in a 0.005 M solution of NaCl at 25 °C. It is given that at 25°C, dielectric constant of the medium $\epsilon = 78.30$.
- A liquid chromatograph using 20 μm silica gel is separating acetophthalene (A) from dinitronaphthalene (D). K values are $K_A = 5.5$ $K_D = 5.8$ in a solvent which is 23% methylene chloride, 77% pentane. With an interstitial velocity of 1.0 cm/sec, H is measured as 0.12 cm. We desire a resolution of $R = 1.0$. What column length is required?
- What is pervaporation? Explain briefly about the pervaporation process with governing equations as well as mass transfer mechanism and its applications in biotechnology.
