Code: R7412303 **R07**

IV B.Tech I Semester (R07) Supplementary Examinations, May 2012

DOWNSTREAM PROCESSING

(Biotechnology)

Time: 3 hours Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. Enumerate the common problems associated with fermentation, cell disruption, isolation, concentration, purification and formulation of low value high volume products.

2. Discuss important properties of bio-products that are relevant to bio-product separation.

3. (a) Explain briefly how membrane solubilization is used to release intracellular products.
   (b) Explain the working of continuous centrifuge with neat diagram.

4. (a) Explain ultra filtration.
   (b) Discuss about fouling of membranes briefly.
   (c) What is cross flow filtration? Explain briefly.

5. (a) What are the different anti solvent used in the precipitation process and explain briefly about their selection?
   (b) Write in detail about extraction using aqueous two phase systems.

6. (a) A 10^{-6} m diameter particle has measured mobility of 1 x 10^{9} m^2/s^v in a 0.005 M aqueous solution of NaCl at 25^0C.What is the value of zeta potential ξ .It is given that η (viscosity of the medium) = 0.890 x $10^{-3}\frac{Ns}{m^2}$.
   (b) Write short notes on SDS – Gel electrophoresis.

7. (a) Explain in detail about the HPLC.
   (b) Component A has $A_A = 3.22$ where $A_A = q_A/c_A$. In a chromatograph experiment a small pulse injected. The peak maximum for component A exits at 12.5 minutes while a non-retained tracer ($q_{tracer} = 0$) exits 2.8 minutes. Component B in the same experiment exits at 15.6 minute. Assume isotherms are linear and molecules are small so that $K_d = 1.0$. What is the value of A_B.

8. Taking an example of manufacture of penicillin, explain the problems and requirements of a downstream processing.

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