

R09
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Code: 9A23703

B.Tech IV Year I Semester (R09) Supplementary Examinations, May 2013

**DOWNSTREAM PROCESSING**

(Biotechnology)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions  
All questions carry equal marks

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1. (a) Write the role and importance of downstream processing in biotechnology with the help of an example.  
(b) Characterize the biotechnology products basing on their value and volume.
2. Write short notes on:
  - (a) Liquid extraction signal stage process with an example.
  - (b) Adsorption
3. Explain in detail about various chemical and physical methods of cell disruption for intracellular products.
4. (a) Write in detail about membrane types and various methods of preparing the membranes.  
(b) Write in brief about membrane fouling and draw neat diagrams for explaining the flow patterns in membrane modules.
5. Write in detail about integrated bioprocessing with help of a schematic diagram.
6. Write short notes on:
  - (a) 2D gel electrophoresis
  - (b) Pulse electrophoresis
  - (c) Electrophoresis of nucleic acids
7. Explain the principle involved in chromatographic techniques. Explain in detail about the operation and working of HPLC.
8. Explain in detail about bioprocessing of citric acid production.

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