Code No: D0303 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech II - Semester Examinations, March/April 2011

DOWNSTREAM PROCESSING

(BIOTECHNOLOGY)

Time: 3hours **Max. Marks: 60**

Answer any five questions

All questions carry equal marks

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1. Explain the role of downstream processing in Biotechnology? Why is preliminary economic analysis or cost analysis performed in Bio-process? [5 + 7]

2. Explain about the principles behind foaming in bioprocesses, giving examples write about the various foaming agents and their interactions with products. [12]

3. List out and describe the different techniques and equipments employed in the Precipitation method employed in downstream processes? [12]

4. Explain the principle behind drying in downstream possessing also how Equilibrium Moisture content (EMC) and relative humidity are utilized in interpreting the drying curves. [12]

5. What is the role of crystallization in bioprocesses? Explain about its applications for two successful products. [12]

6. Explain the principle and applications of chromatography in bioprocess. Elucidate on the different types of chromatographic methods available to a Biotechnologist.[12]

7. Why is the method of cell disruption used in bio-processing? Explain in detail about the physical and mechanical methods of Cell disruption and its advantages and disadvantages. [6 + 6]

8. Differentiate between the principles governing co-current and counter current extraction processes and write about their application in bio-processing. [12]

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