STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2006 – 07 & thereafter)

SUBJECT CODE: BY/PC/BP35

M. Sc. DEGREE EXAMINATION, NOVEMBER 2008
BIOTECHNOLOGY
THIRD SEMESTER

COURSE : CORE
PAPER : BIOPROCESS TECHNOLOGY
TIME : 3 HOURS **MAX. MARKS: 100**

SECTION – A

Answer all questions: **20 x 1 = 20**

1. What is a) Weber Number b) Nosselt Number
   c) Sherwood Number
2. Differentiate In-line sensor and On-line Sensor.
3. What is Newtonian fluid? Give its Rheogram.
4. What are the different process variables to be controlled in a Bioreactor?
5. List the structural components used in aeration and agitation of a fermentor.
6. What are the different physical methods of cell disruption?
7. List the steps involved in up-stream processing.
8. List the characteristic of an industrial microbe.
9. What is Respiratory Quotient for growth Reaction?
10. Define Primary and Secondary Metabolites. Give examples.
11. What is Setting in and setting out?
12. Give the principle of Centrifugation and list the types of centrifuges used in Bioprocess.
13. How are soluble products recovered in Down stream processing?
14. What are ion exchange Resin? Give examples.
15. What is settling velocity in a sedimentation process?
16. Define Transformation. Give examples.
17. By what factor will you convert the unit RPM into gravitational force ‘g’.
18. What are chaotrophic agents?
19. What is an integral controller?
20. What is leudekig – Pinet kinetics for product formation?

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SECTION – B

Answer any four questions in about 600 words : 4 x 10 = 40

21. How will you determine KLa values?
22. Write an essay on crystallisation and drying of fermentation products.
23. Explain a) Liquid – Liquid extraction
    b) Super – critical fluid extraction
24. Draw a neat diagram of Bioreactor with its instrumentation. List the Basic functions of a fermentor.
25. How will you develop a spore inoculum for fermentation process?
26. How will you measure and control dissolved oxygen.

SECTION – C

Answer any two questions in about 1500 words: 2 x 20 = 40

27. Detail on the kinetics of cell death.
28. Explain the different control systems used in Bioprocess.
29. What are the different chromatographic techniques used in Down stream processing.
30. Explain the growth kinetics of a microorganism in Batch and CSTR mode.

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