

BIOTECHNOLOGY
(Biochemical Engineering)

Paper-IV (Semester-V)

Time : Three Hours]

[Maximum Marks : 70

Note : Attempt two questions each from Section A and B. Attempt all questions in Section C.

Section - A

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| I. | Describe the process of continuous sterilization. | 12 |
| II. | Describe the batch type bioreactors with suitable examples. | 12 |
| III. | Write a note on Fluid rheology and its monitoring. | 12 |
| IV. | Describe the basis and application of Mass transfer coefficient. | 12 |

Section - B

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|-------|---|----|
| V. | Describe the principle of liquid-liquid extraction with suitable example. | 12 |
| VI. | Describe the process of cost determination in bioprocesses. | 12 |
| VII. | Describe the process of distillation in purification of bioproducts. | 12 |
| VIII. | Describe the process of centrifugation in isolation of bioproducts. | 12 |

Section - C

- IX. Explain the following briefly :
- (a) What are the parameters of sterilization control ?
 - (b) What is diffusion ?
 - (c) What is flocculation ?
 - (d) What is heat transfer coefficient ?
 - (e) Define fermentation.
 - (f) What is exponential phase ?
 - (g) What is HPLC ?

- (h) What is reverse phase ?
(i) What is Biochemical oxygen Demand ?
(j) Define pH.
(k) What are buffers ?
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2x11=22