C-5/2110

BIOCHEMICAL ENGINEERING-IV

SEMESTER-V

(SYLLABUS DECEMBER-2018)

M.M 52

TIME ALLOWED 3 Hrs

NOTE: The candidates are required to attempt two questions each from Section A & B carrying 8 marks each and entire Section C consisting of 10 short answer type questions carrying 2 marks each.

Section A

1. What is biochemical Engg? Explain in detail overall bioprocess. 8
2. (a)Give the differences between Fed Batch and Continuous systems of fermentation
   (b) Give kinetics of continuous fermentation. 8
3. Explain in detail the role of bioreactor instrumentation required for monitoring and controlling bioprocess. 8
4. What is heat transfer coefficient? How it is determined in a bioreactor? 8

Section B

5. What do you mean by downstream Processing?Give steps of recovery of an intracellular protein in powder form. 8
6. Write note on
   a) Liquid liquid extraction 4
   b) Enlist all physical and enzymatic methods of cell distruption. 4
7. What is Chromatography ?Explain various techniques of chromatography in detail. 8
8. Explain
   a) Crystallization
   b) Bioprocess economics
   c) Electrodialysis

Section C

9. Explain 9x2

I. What are HEPA Filters?
II. What is scale up?
III. List various factors affecting KLa in bioprocess.
IV. What are the methods for cell distruption?
V. Write a note on drying.
VI. Enlist factors for down streaming of product.Sterilization of feedline
VII. KLa
VIII. Agglomeration
IX. Flocculation