

MASTER OF SCIENCE (MICROBIOLOGY) (CBCS - 2018 COURSE)
M.Sc. (Microbiology) Sem-II :SUMMER- 2022
SUBJECT : FERMENTER DESIGN & MICROBIAL BIOTECHNOLOGY

Day : Thursday
Date : 14-07-2022

S-18590-2022

Time : 03:00 PM-06:00 PM
Max. Marks : 60

N.B. :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labelled diagram **WHEREVER** necessary.

Q.1 Explain in detail the basic design of fermentor. Discuss the methods for sterilization of fermentor and its parts. **(15)**

OR

Define microbial biotechnology. Explain in detail commercial production of antibiotics and solvents.

Q.2 a) Describe the role of Impellers and Sparger in fermentor. **(08)**

b) Explain in detail the design and application of Airlift fermentor. **(07)**

OR

a) What is K_{La} value? Explain the factors that affect K_{La} value in fermentation vessels. **(08)**

b) Describe the commercial production of any one amino acid. **(07)**

Q.3 Attempt **ANY THREE** of the following : **(15)**

- a) Explain the role of valves in maintaining aseptic conditions.
- b) Diagrammatically explain the design of the deep jet fermentor.
- c) Describe the oxygen requirement of industrial fermentation.
- d) What is the scale – down concept in designing of fermentor?
- e) Draw flow sheet for commercial production of any enzyme.

Q.4 Write short note on **ANY THREE** of the following : **(15)**

- a) Fluid Rheology.
- b) Rotating – disc fermentor.
- c) Contaminant in fermentor.
- d) Baffles.
- e) Fermentor design for animal cell culture.

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