



ED-639

M.Sc. 3rd Semester
Examination, March-April 2021

MICROBIOLOGY

Paper - II

Fermentation Technology

Time : Three Hours] [Maximum Marks : 80

Note : Answer **all** questions in which Question No. 1 is compulsory. All questions carry equal marks.

1. Write notes on the following :

- (a) Formation of Ethanol by fermentation
- (b) Biosensors
- (c) Production of penicillin
- (d) Immobilized bio-catalysts

Unit-I

2. Describe historical perspective of fermentation biotechnology.

OR

Write short notes on the following :

- (a) Kinetics of substrate utilization
- (b) Primary and secondary metabolites

DRG_71_(2)

(Turn Over)

(2)

Unit-II

3. Describe basic principles of the functioning of a continuous stirred tank microbial bioreactor.

OR

Write short notes on the following :

- (a) Animal and plant cell bioreactors
- (b) Batch and continuous sterilization

Unit-III

4. Describe industrial production of single cell protein and their uses in detail.

OR

Write short notes on the following :

- (a) Industrial production of mushrooms
- (b) Microbial polysaccharides and polyesters

Unit-IV

5. Explain downstream processing in detail.

OR

Write short notes on the following :

- (a) Removal of microbial cells and solid matters
- (b) Purification of mixtures