



**JW-003-001526** Seat No. \_\_\_\_\_

**B. Sc. (Sem. V) (CBCS) Examination**

**October - 2019**

**MB-502 : Microbiology**

*(Bio-process Technology)*

*[New Course]*

**Faculty Code : 003**

**Subject Code : 001526**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

**Instructions :**

- (1) All questions are compulsory.
- (2) Draw diagrams wherever necessary.
- (3) Write answers in the main answer sheet.

**1** Answer the following questions : **20**

- (1) Enlist the physical methods of immobilization.
- (2) Define sulphite waste liquor.
- (3) Name good source of microbial growth factors.
- (4) Name few precursors used in fermentation process.
- (5) Define Buffers.
- (6) Write full form of NCTC.
- (7) Write full form of CCM.
- (8) Name the scientist who discovered “Streptomycin”.
- (9) Role of Monosodium glutamate in food products.
- (10) Write the name of strains producing Citric Acid.

- (11) Define Heterolactic fermentation.
- (12) What are synthetic fermentation media ?
- (13) Why  $\text{CaCO}_3$  is added in Organic acid production ?
- (14) What is the name of Vortex cutting part in fermentor ?
- (15) Define supercritical fluid extraction system.
- (16) Define protoplast fusion technique.
- (17) Define Agitation process.
- (18) Define : Stroke's Law.
- (19) What is cell disruption technique ?
- (20) What is Turbidometric assay ?

- 2** (a) Answer the following : (any three) **6**
- (1) What is inoculum media ?
  - (2) What is Batch fermentation ?
  - (3) Define Biological assay.
  - (4) What is Rheological properties ?
  - (5) Why growth factors are important ?
  - (6) Define by-products of fermentation.
- (b) Answer the following : (any three) **9**
- (1) What are crude fermentation media ?
  - (2) Why aeration is important in bioprocess ?
  - (3) What is downstream process ?
  - (4) What are disadvantages of Amino-acid fermentation ?
  - (5) List out different types of Molasses.
  - (6) Write the benefits of cross-flow filtration.
- (c) Answer the following : (any two) **10**
- (1) Medium optimization in fermentation.
  - (2) Disposal of fermentation waste material.
  - (3) Explain "Strain improvement programme."
  - (4) Range of fermentation process.
  - (5) Production of vitamin : Riboflavin.

- 3 (a) Answer the following : (any three) 6
- (1) Define Del-Factor.
  - (2) Enlist few examples of Antifoam agents.
  - (3) Why Air Sterilization is required in fermentation process ?
  - (4) What are diffusion assay ?
  - (5) Define : Two phase aqueous extraction system.
- (b) Answer the following : (any three) 9
- (1) Write role of Impeller.
  - (2) Define-Sparger and its type.
  - (3) List out types of Bioreactors.
  - (4) What are chemical assay of fermentation products ?
  - (5) List out the crude carbon sources of fermentation media.
  - (6) What are the benefits of synthetic fermentation media ?
- (c) Answer the following : (any two) 10
- (1) Explain the Techniques of Cell disruption – by non mechanical methods.
  - (2) Explain the Immobilization of cells in fermentation industries.
  - (3) Write about component parts of fermentation process.
  - (4) Concept and application of bioinformatics in fermentation industries.
  - (5) Write on “Medium Sterilization”.
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