



**H-003-001517**

Seat No. \_\_\_\_\_

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

**May / June - 2017**

**BT - 501 : Bioprocess & Biochemical Engineering**

**Faculty Code : 003**

**Subject Code : 001517**

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

[Total Marks : 70

1 Answer the following question in one word : **20**

- (1) The rate of mutation can be increased by various factors and agents called \_\_\_\_\_.
- (2) Antibiotic is an example of \_\_\_\_\_ metabolites.
- (3) Cryopreservation preserves the culture at \_\_\_\_\_°C.
- (4) An elongated non mechanically stirred fermenter, through which there is a unidirectional flow of gases is \_\_\_\_\_ fermenter.
- (5) Paper and thin layer chromatography are examples of \_\_\_\_\_ chromatography.
- (6) In bioassay, the diameter of the area reflects the \_\_\_\_\_ of compound being assayed.
- (7) \_\_\_\_\_ phase in growth curve is associated with no increase or decrease in microbial population.
- (8) OTR in aeration and agitation stands for \_\_\_\_\_.
- (9) Rheology is the study of \_\_\_\_\_.
- (10) Corn steep liquor is used as \_\_\_\_\_ in penicillin production.
- (11) \_\_\_\_\_ catalyses the decarboxylation of pyruvic acid to acetaldehyde.
- (12) The viscosity of pseudoplastic liquid \_\_\_\_\_ with increasing shear rate.
- (13) \_\_\_\_\_ salts are used for the recovery and fractionation of protein.

- (14) Ultrasonicator is used for the \_\_\_\_\_ of cell.
- (15) \_\_\_\_\_ organism is commercially used for the production of citric acid.
- (16) The first immobilized enzyme was.
- (17) The immobilized enzyme produced by micro encapsulation provides \_\_\_\_\_ surface area.
- (18) Heat labile compounds can be sterilized by \_\_\_\_\_.
- (19) Purine replaced by pyrimidine, the process is called.
- (20) Baffles is used for the prevention of \_\_\_\_\_ formation.

- 2 (a) Write any **three** out of **six** : **6**
- (1) Define strain improvement.
  - (2) What is Monod equation ?
  - (3) What is Fed batch Culture ?
  - (4) What is Reynolds's number ?
  - (5) What is Del factor ?
  - (6) Define preservation.
- (b) Write any **three** out of **six** : **9**
- (1) Explain primary screening with example.
  - (2) Advantage and disadvantage of immobilization.
  - (3) Recovery of Gluconic acid.
  - (4) Write types of fermentation media.
  - (5) Explain response surface methodology.
  - (6) Explain the inoculum preparation of fungi.
- (c) Write any **two** out of **five** : **10**
- (1) Enlist and explain the preservation techniques of microorganism.
  - (2) Explain the formulation of media.
  - (3) Explain the fermentation process of penicillin.
  - (4) Principles and mechanism of immobilization method.
  - (5) Draw and explain the ideal fermenter.

- 3** (a) Write any **three** out of **six** : **6**
- (1) Define media optimization.
  - (2) Write four names of chemical mutagens.
  - (3) Which are the raw material used as a nitrogen source in media ?
  - (4) What is solid state fermentation ?
  - (5) What is diffusion assay ?
  - (6) What are the phases of growth curve ?
- (b) Write any **three** out of **six** : **9**
- (1) Importance of batch culture over continuous culture.
  - (2) Raw material as carbon source in media.
  - (3) Write a note on Automation.
  - (4) Explain solvent extraction method.
  - (5) Types of sparger used in fermentation.
  - (6) Explain the economics related to fermentation industry.
- (c) Write any **two** out of **five** : **10**
- (1) Explain mechanical and non-mechanical method of cell disruption.
  - (2) Draw and explain designs of fermenter.
  - (3) Explain different types of chromatography used for recovery.
  - (4) Explain media sterilization.
  - (5) Explain the properties of immobilized enzyme.
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