



HCL-003-001517 Seat No. \_\_\_\_\_

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

October - 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) Mutations that occurs under natural condition are called
  - (2) Screening techniques used for \_\_\_\_\_ producers is the crowded plate technique
  - (3) Cell density in \_\_\_\_\_ is controlled by increasing and decreasing the flow of culture
  - (4) \_\_\_\_\_ is also known as Baker's yeast
  - (5) Antibiotics is \_\_\_\_\_ metabolites
  - (6) Lyophilisation technique is also called as
  - (7) Rheology is the study of
  - (8) The process of converting sugar into alcohol is called
  - (9) Precursor used in penicillin production is
  - (10) Heat labile compounds are generally sterilized by
  - (11) \_\_\_\_\_ dryer takes a liquid stream and separates the solute or suspension as a solid and the solvent into vapour
  - (12) In reverse phase chromatography the stationary phase is made of \_\_\_\_\_ solvent
  - (13) Name the enzyme used in linking the DNA segments together
  - (14) Molasses is used as a \_\_\_\_\_ source in fermentation media
  - (15) Glutraldehyde is used as \_\_\_\_\_ reagent in immobilization
  - (16) \_\_\_\_\_ strain is used for the production of Gluconic acid

- (17) \_\_\_\_\_ is a measure of the fractional reduction in viable organism count produced by heat and time regime
- (18) Reynolds number is \_\_\_\_\_ number
- (19) \_\_\_\_\_ is used in fermenter to prevent vortex formation
- (20) Expand HPLC.

- 2** (A) Write any three out of **six** : **6**
- (1) Give two examples of industrially important bacteria
  - (2) What are base analogues?
  - (3) What is Monod equation?
  - (4) What is an enrichment culture?
  - (5) Define immobilization
  - (6) What is fed batch culture technique?
- (B) Write any three out of **six** : **9**
- (1) Draw and enlist the part of typical fermenter
  - (2) Write advantages and disadvantages of continuous culture technique
  - (3) Define filtration and give its types
  - (4) Properties of supporting matrix used for immobilization
  - (5) Enlist and briefly explain the types of chromatography
  - (6) Recovery of Gluconic acid.
- (C) Write any two out of **five** : **10**
- (1) Explain the types and mechanism of immobilization in detail
  - (2) Enlist and explain methods of cell disruption
  - (3) Explain primary and secondary screening
  - (4) Enlist and explain the methods used for the determination of  $K_{La}$
  - (5) Explain the process of sterilization for continuous culture technique

- 3** (A) Write any three out of **six** : **6**
- (1) Define preservation of culture
  - (2) What is the importance of starter culture
  - (3) Explain sterilization cycle
  - (4) What is Fermentation Economics ?
  - (5) Explain the term upstream and downstream processing
  - (6) What is bioassays?
- (B) Write any three out of **six** : **9**
- (1) Write a note on cryopreservation
  - (2) Draw and explain any one non-stirred fermenter
  - (3) Explain Plackett Burmann method of media optimization
  - (4) Write a note on Automation
  - (5) Give an overview of downstream processing
  - (6) Kinetics of batch culture technique
- (C) Write any two out of **five** : **10**
- (1) Explain the fermentation process of alcohol
  - (2) Explain the process of formulation of media
  - (3) Explain the mechanism and application of rDNA technology
  - (4) Write a detailed note on aeration and agitation of fermenter
  - (5) Enlist and explain raw materials used in the fermentation media.
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