



MAJ-003-001517 Seat No. _____

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

October / November – 2016

BT-501 : Bioprocess & Biochemical Engineering

Faculty Code : 003

Subject Code : 001517

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

[Total Marks : 70

- Instructions :** (1) Section-I covers compulsory one mark questions of 20 marks.
(2) Figures in the right indicate marks.

SECTION - I

- 1 One mark objective Questions : 20**
- (1) Name the methods for strain improvement.
 - (2) The method of freeze drying the culture is known as _____.
 - (3) Name the microorganisms producing amylase.
 - (4) The method for screening of auxotrophic strains is known as _____.
 - (5) The equipment for the aeration in fermenter is known as _____.
 - (6) The equipment for agitation in fermenter is known as _____.
 - (7) The equipment for breaking down vortex in fermenter is known as _____.
 - (8) Give the full form of OTR.
 - (9) The Placket-Burman design is used for the _____.
 - (10) Name the methods for the maintenance of continuous culture.

- (11) Give the name of two antibiotics and microorganisms producing that antibiotic.
- (12) Give the examples of the vectors.
- (13) What is heated partially germinated barley grains called?
- (14) Give the examples of cryopreservatives.
- (15) Arrange in step-wise fashion the events of upstream processing :
 - (a) Strain improvement
 - (b) Secondary screening
 - (c) Production
 - (d) Primary screening
- (16) Which fermenter is used for Alcohol fermentation?
- (17) Name the methods for immobilization.
- (18) Homogenizer is used for the _____ in downstream processing.
- (19) Which products are formed in Idiophase of the growth?
- (20) The method for sterilization of heat labile substance is _____.

SECTION - II

- 2** (a) Write any **three** out of six : **6**
- (1) Give the definition of fermentation.
 - (2) What are secondary metabolites? Give some examples.
 - (3) What is containment?
 - (4) Define strain improvement and its significance.
 - (5) What is inoculum medium? Give its significance.
 - (6) What is downstream processing?

- (b) Write any **three** out of six : **9**
- (1) Describe : Primary Screening techniques.
 - (2) Explain ideal characteristics of fermenter.
 - (3) Write a note on heat control in fermentation process.
 - (4) Describe methods of sterilization of air and media for fermentation process.
 - (5) Explain the technique of solvent-solvent extraction.
 - (6) Explain the techniques of preservation of cultures.
- (c) Write any **two** out of five : **10**
- (1) Explain method of strain improvement by r-DNA technology.
 - (2) Explain oxygen transfer rate.
 - (3) Describe media optimization in detail.
 - (4) Explain fermentation economics in detail.
 - (5) Discuss in detail Alcohol fermentation.

SECTION - III

- 3** (a) Write any **three** out of six : **6**
- (1) Define and enlist types of induced mutations.
 - (2) What is sparger? Give its functions.
 - (3) Enlist and define types of fermentation media.
 - (4) Describe broth conditioning techniques.
 - (5) What is solid state fermentation?
 - (6) Give the methods and significance of immobilization of cells and enzymes.

(b) Write any **three** out of six : **9**

- (1) Explain chemically induced mutagenesis as a method of strain improvement.
- (2) Give the ideal characteristics of starter cultures for fermentation.
- (3) Explain the crude medium components used as Carbon sources.
- (4) Give overview of Downstream processing.
- (5) Explain techniques for Bioassay of fermentation products.
- (6) Write a note on Lysine production.

(c) Write any **two** out of five : **10**

- (1) Write a note on Enrichment techniques.
 - (2) Describe various designs of fermenters.
 - (3) Explain the techniques of automation of fermentation process.
 - (4) Give the methods for disruption-disintegration of cell.
 - (5) Explain Gluconic acid fermentation.
-