MCP-003-001517 Seat No. _____

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

May / June - 2018

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) The process in which electron donor and electron acceptor are organic molecules is called _____.

(2) Give examples of cryopreservative agents.

(3) Name the methods of strain improvement.

(4) The methods for primary screening of antibiotics are _____ and _____.

(5) The equipment for the aeration in fermenter is known as _____.

(6) The techniques for media optimization includes _____ and _____.

(7) The equipment for agitation in fermenter is known as _____.

(8) The modes of operation of fermentation process are _____, _____ and _____.

(9) Give the methods for measurement of OTR.

(10) Name the methods for the maintenance of continuous culture.

(11) Give examples of antibiotics.

(12) Define bioassay.

(13) Give examples of the crude medium for fermentation.

(14) Growth associated products are formed in _____ phase of microbial growth curve.

(15) Enlist the different designs of fermenters.

(16) Name the methods for immobilization.

(17) Give techniques for broth conditioning.

(18) Which products are formed in trophophase of the microbial growth ?

(19) The method for sterilization of heat labile substance is _____.

(20) Give examples of organic acids.

SECTION – II

2 (a) Write any **three** out of six : **6**

(1) Define : screening.

(2) Define strain improvement and its significance .

(3) What is impeller ? Give its function.

(4) What is crude medium ?

(5) What is inoculum medium ? Give its significance.

(6) What are the advantages of cell or enzyme immobilization ?

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

(1) Describe: Secondary Screening.

(2) Write a note on enrichment.

(3) Describe methods of sterilization of air for fermentation process.

(4) Explain the technique of crystallization.

(5) Explain the techniques of preservation of cultures.

(6) Explain ideal characteristics of fermenter.

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

(1) Describe media optimization in detail.

(2) Explain fermentation economics in detail.

(3) Explain applications of r-DNA technique in fermentation industry.

(4) Discuss in detail citric acid fermentation.

(5) Explain oxygen transfer rate.

SECTION – III

3 (a) Write any **three** out of six : **6**

(1) Define Distillation.

(2) Enlist and define types of fermentation media .

(3) Describe broth conditioning techniques.

(4) Define downstream processing.

(5) What is solid state fermentation ?

(6) What is sparger ? Give its functions.

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

(1) Explain the crude medium components used as Nitrogen sources.

(2) Give the ideal characteristics of starter cultures for fermentation.

(3) Give overview of Downstream processing.

(4) Explain techniques for Bioassay of fermentation products.

(5) Write a note on vitamin B_{12} production.

(6) Explain induced mutagenesis as a method of strain improvement.

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

(1) Write a note on basic concept of growth kinetics.

(2) Give the methods for disruption disintegration of cell.

(3) Describe various designs of fermenters.

(4) Explain the techniques of automation of fermentation process.

(5) Explain penicillin fermentation in detail.
