

Seat No. : _____

ME-131

March-2019

B.Sc., Sem.-V

304 : Microbiology

Time : 2:30 Hours]

[Max. Marks : 70

- Instructions :**
- (1) Draw figure wherever necessary.
 - (2) Mention correct question number against each answer.
 - (3) Figures to the right indicate marks.

1. (A) What is screening ? Describe in brief primary screening of amylase, antibiotic and amino acid producers. 14

OR

- (i) Describe production of biomass and enzymes as range of fermentation process. 7
- (ii) Enlist characteristics of an industrially ideal organism. 7
- (B) Answer the followings in one or two lines only : (any **four**) 4
 - (1) Define bioprocess technology.
 - (2) Define industrial microbiology.
 - (3) Name any two component parts of upstream process.
 - (4) Name any two component parts of downstream process.
 - (5) Give two examples of recombinant product.
 - (6) Give two examples of organic acid produced by bacteria.

2. (A) Enlist and explain different carbon sources & nitrogen sources used as ingredients of fermentation media. 14

OR

- (i) Describe continuous sterilization process for fermentation media. 7
- (ii) Describe general principles for development of seed culture. 7
- (B) Answer followings in one or two lines only : (any **four**) 4
 - (1) Define sterilization.
 - (2) What is inoculum ?
 - (3) What is mode of action of high pressure steam to kill microorganism ?
 - (4) Give full name of PTFE.
 - (5) Give two examples of inhibitors used in fermentation media.
 - (6) Give any two differences between Corn steep liquor and Sulfite waste liquor.

3. (A) Write a brief essay on fermentation economics. **14**
- OR**
- (i) Describe in brief types of agitator and sparger. **7**
- (ii) Explain design and working of Air-lift fermenter. **7**
- (B) Answer the followings in one or two lines only : (any **three**) **3**
- (1) Why head space is kept empty in bioreactor ?
- (2) What is the function of baffles in stirred tank bioreactor ?
- (3) What is SS316 ?
- (4) What is the aspect ratio of a tower fermenter ?
- (5) Give use of drain port in fermenter.
-
4. (A) Explain in detail batch, fed-batch and continuous fermentation processes. **14**
- OR**
- (i) Write a brief note on solid substrate fermentation. **7**
- (ii) Explain aseptic operation of a fermentation process. **7**
- (B) Answer followings in one or two lines only : (any **three**) **3**
- (1) What is surface culture fermentation ?
- (2) What is open fermentation ?
- (3) How temperature is controlled in fermenter ?
- (4) What do you mean of mass transfer of oxygen ?
- (5) Give any two approaches for foam control in fermenter.
-