

Seat No. : _____

JJ-111

January-2021

B.Sc., Sem.-V

CC-304 : Microbiology

(Fermentation Technology)

(New Syllabus)

Time : 2 Hours]

[Max. Marks : 50

- Instructions :**
- (1) Students should write the answers from the question paper applicable to them; either “**NEW COURSE**” or “**OLD COURSE**” and it must be mentioned at the beginning of the answer paper.
 - (2) Answer any **three (3)** questions out of **eight (8)** questions. Question No. **9** is compulsory.
 - (3) Draw figures wherever necessary.
 - (4) Figures to the right indicate marks.

1. Describe the component parts of fermentation process. **14**
2. (A) Elaborate the range of fermentation processes. **7**
(B) Discuss the chronological development in industrial microbiology. **7**
3. Explain the strategies for selection of induced mutants with suitable examples. **14**
4. (A) Discuss the methodology for the primary screening of amino acid producers. **7**
(B) Write a short note on “Secondary Screening”. **7**
5. Describe the different media ingredients for the formulation of a fermentation media. **14**
6. (A) Discuss the principles of media formulation. **7**
(B) Explain the general principle for the development of seed culture for fungal processes. **7**
7. Describe the types of devices of aeration and agitation for stirred tank bioreactor. **14**
8. (A) Discuss the special features of “Tower Fermenter”. **7**
(B) Explain the salient features of Bio-catalyst reactors. **7**

9. Give short and specific answers in **1-2** lines only : (any **eight**)

8

- (1) What is Air-lift fermenter ?
 - (2) What is the specific feature of cyclone fermenter ?
 - (3) Define dissolved oxygen.
 - (4) What is the basic function of a bioreactor ?
 - (5) Define continuous sterilization process.
 - (6) Enlist the types of filters used for the sterilization of media.
 - (7) Name any two inhibitors used as a media ingredients.
 - (8) Write down the principle for “Use of high pressure steam for media sterilization”.
 - (9) Enlist the methods for preservation of fungal cultures.
 - (10) Define quality control.
 - (11) What are Primary metabolites ?
 - (12) Enlist methods for selection of recombinants.
 - (13) What is solid substrate fermentation ?
 - (14) What is batch sterilization ?
 - (15) Define enrichment method for the isolation of microorganisms.
 - (16) Give any two disadvantage of continuous fermentation.
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 - (3) Draw figures wherever necessary.
 - (4) Figures to the right indicate marks.

1. Discuss the methodology for the primary screening of antibiotics and amino acid producers. **14**
2. (A) Elaborate the range of fermentation processes. **7**
(B) Discuss the characteristics of industrially ideal organisms. **7**
3. Explain the general principle for the development of seed culture for bacterial and fungal processes. **14**
4. (A) Discuss the types of filters used for media sterilization. **7**
(B) Write a short note on “Principles of media formulation”. **7**
5. Describe the essential features of a bioreactor. **14**
6. (A) Discuss the types of devices used for agitation. **7**
(B) Explain the salient features of airlift reactors. **7**
7. Describe the modes of operation and control parameters of submerged culture. **14**
8. (A) Write a short note on “Mass transfer of oxygen”. **7**
(B) Describe the modes of operation of solid substrate fermentation. **7**

9. Give short and specific answers in **1-2** lines only : (any **eight**)

8

- (1) Define secondary screening.
 - (2) Enlist the stages in development of fermentation processes.
 - (3) Define fermentation.
 - (4) What are primary metabolites ?
 - (5) Name any two antifoaming agents.
 - (6) Name any two media inducers.
 - (7) Define batch sterilization.
 - (8) Define precursors.
 - (9) Define sparger.
 - (10) What is fermentation economics ?
 - (11) What is stirred tank bioreactor ?
 - (12) Define open fermentation.
 - (13) What is fed-batch fermentation ?
 - (14) Define aseptic operation.
 - (15) Define OTR.
 - (16) What is dissolved oxygen ?
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