

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[LO 963]

MAY 2019

Sub. Code: 2963

**M.PHARM. DEGREE EXAMINATION
(PCI New regulations 2016)
SEMESTER-I
BRANCH IV–PHARMACEUTICAL BIOTECHNOLOGY – MPB
PAPER III – BIOPROCESS ENGINEERING AND TECHNOLOGY**

Q.P. Code : 262963

Time : Three hours

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Define Fermentation and give examples of various classes of fermentation products. Discuss the different types of fermenters and their applications. Elaborate on the parts related to aeration and agitation.
2. Discuss in detail the methods for recovering intracellular constituents from fermentation system.

II. Write notes on:

(7 x 5 = 35)

1. Significance of mass transfer in fermentation.
2. Any one Vitamin produced by fermentation.
3. Briefly discuss the importance of rheology in fermentation process.
4. Write on the biotransformation of steroids with their advantages.
5. Streptomycin fermentation process.
6. Advantages and applications of Immobilisation.
7. Media used in fermentation.

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[LQ 0121]

JANUARY 2021

Sub. Code: 2963

(APRIL 2020 EXAM SESSION)

M.PHARMACY DEGREE EXAMINATION

SEMESTER-I (PCI New regulations 2016)

PHARMACEUTICAL BIOTECHNOLOGY – MPB

PAPER III – BIOPROCESS ENGINEERING AND TECHNOLOGY

Q.P. Code : 262963

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. What are the various factors which followed while scaling up process in the bioreactor?
2. Write in detail about alcohol produced by fermentation process.

II. Write notes on:

(7 x 5 = 35)

1. Explain the bioprocess of anyone organic acid.
2. Types of impeller used in bioreactors.
3. Write about super critical fluid extraction.
4. Purification of fermentation products by ion exchange chromatography.
5. Explain in detail about air lift fermenter.
6. Screening for fermentation media.
7. Application of immobilized enzyme.

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[MPHARM 0422]

**APRIL 2022
(OCTOBER 2021 EXAM SESSION)**

Sub. Code: 2963

**M.PHARMACY DEGREE EXAMINATION
SEMESTER-I (PCI New regulations 2016)
PHARMACEUTICAL BIOTECHNOLOGY - MPB
PAPER III – BIOPROCESS ENGINEERING AND TECHNOLOGY
*Q.P. Code : 262963***

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain in detail about primary and secondary screening techniques with diagrams, merits and demerits.
2. Explain the fermentative production features of the following.
 - a) Streptomycin. (10 Marks)
 - b) Citric acid and Lactic acid. (6+4 Marks)

II. Write notes on:

(7 x 5 = 35)

1. Write note on governing regulations on biological manufacturing.
2. Compare batch culture and continuous cultures with graphical plot.
3. Define immobilization. Explain the merits of immobilized cell over free cells.
4. Write briefly about rheological properties of fermentation system and its significance.
5. Explain basic principles of fermentation in brief.
6. Write a note on role of computer in fermentation process and its merits.
7. Note on hollow fiber reactor configuration and applications.

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[M.PHARM 0423]

**APRIL 2023
(OCTOBER 2022 EXAM SESSION)**

Sub. Code: 2963

**M.PHARMACY DEGREE EXAMINATION
SEMESTER - I (PCI New regulations 2016)
PHARMACEUTICAL BIOTECHNOLOGY - MPB
PAPER III – BIOPROCESS ENGINEERING AND TECHNOLOGY**

Q.P. Code: 262963

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Discuss the basics of a successful fermentation process. Briefly write on different types of fermentors and their application.
2. Discuss in detail the recovery of a fermentation product. Add a note on bioautography.

II. Write notes on:

(7 x 5 = 35)

1. HTST Sterilisation.
2. Importance of oxygen transfer and factors affecting it during fermentation.
3. Fermentative production of Griseofulvin.
4. Citric acid fermentation.
5. Microbial strain improvement for increasing yield.
6. Methods of enzyme immobilization.
7. Stock culture preservation methods and its importance.
