

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

[BPHARM 0321]

MARCH 2021

Sub. Code: 2066

(SEPTEMBER 2020 EXAM SESSION)

B. PHARMACY DEGREE EXAMINATION

PCI Regulation SEMESTER – VI

PAPER V – PHARMACEUTICAL BIOTECHNOLOGY

Q.P. Code : 562066

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions.

(2 x 10 = 20)

1. What are the immobilized enzymes? Discuss the various techniques for enzyme immobilization?
2. What is rDNA Technique? Explain in detail Restriction endo nuclease and plasmid cloning vector.
3. Explain steps involved in southern blotting technique.

II. Write notes on: Answer any SEVEN questions.

(7 x 5 = 35)

1. Write the application of biosensor
2. Briefly discuss the steps involved in PCR.
3. Discuss the Quality control test for vaccines.
4. Explain Type I Hyper sensitivity reactions.
5. Describe sandwich ELISA procedure
6. Explain Production of Vitamin B₁₂ by fermentation method.
7. Discuss the structural components of Immunoglobulin
8. Explain the preparation method of Dried Human Plasma
9. Write the applications of Genetic engineering.

III. Short answers on: Answer ALL questions.

(10 x 2 = 20)

1. Define Protein Engineering
2. Component of Biosensor
3. Define Transformation process
4. What is selective marker system?
5. Define Antigen and Antibody.
6. What are Vaccine adjuvant?
7. State the function of DNA
8. Define Genome.
9. Define Sparger
10. Describe briefly Down streaming process in fermentation.

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PCI Regulation 2017 - SEMESTER - VI
PAPER V – PHARMACEUTICAL BIOTECHNOLOGY
Q.P. Code : 562066

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Discuss in detail the types and working principle of biosensor with examples.
2. Describe the production of Hepatitis-B vaccine by rDNA technology.
3. Discuss in detail step-wise production process of killed Bacterial Vaccine.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Describe shortly the steps involved in genetic engineering technique.
2. Discuss characteristics of restriction endo nuclease enzyme.
3. Explain Bacterial Conjugation process.
4. Discuss the production of Glutamic acid by fermentation method.
5. Describe briefly the production of Monoclonal Antibody.
6. Differentiate between active immunity and passive immunity.
7. Write the Application of western blotting technique.
8. Add a note on Plasma Substitutes.
9. Explain different types of Mutation.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Define Immobilization.
2. What is the industrial application of Protease?
3. What is selective amplification?
4. Define shuttle vectors.
5. Define Toxoid with example.
6. Give two examples for viral vaccines.
7. Define Transduction process.
8. What is Immunoblotting?
9. Define Fermentation.
10. Name the Microorganism used for production of Citric acid.

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

[BPHARM 0122]

**JANUARY 2022
(MARCH 2021 EXAM SESSION)**

Sub. Code: 2066

B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)

PCI Regulation 2017 – SEMESTER VI

PAPER IV – PHARMACEUTICAL BIOTECHNOLOGY

Q.P. Code : 562066

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Discuss the Hybridoma technology with production and applications.
2. Explain the production of Insulin by genetic engineering technology.
3. Describe working principle, types and application of Biosensor.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Discuss the Production of Citric acid by fermentation method.
2. Write the technique of Immobilization of Enzyme.
3. Describe the production of Penicillin by fermentation method.
4. Explain Transposable elements with examples.
5. Discuss Biotransformation reaction of Steroids.
6. Write briefly steps involved in Polymerase chain reaction (PCR).
7. What are the methods of conversion of Toxin to Toxoids?
8. Explain the types of Sparger used in Fermentation vessel.
9. Write the various Types of Immunity with example.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Use of western blot test.
2. Name High yield producing organism of glutamic acid.
3. Define Restriction endonuclease
4. What is immunosuppressant?
5. What are Plasma substitutes?
6. Write the applications of Southern Blotting
7. Define Plasmid.
8. What are the classes of Antibody?
9. Define Hypersensitivity reactions
10. Give two examples for Living Bacterial Vaccines.

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

[BPHARM 0522]

MAY 2022

Sub. Code: 2066

(SEPTEMBER 2021 EXAM SESSION)

B. PHARMACY DEGREE EXAMINATION

PCI Regulation SEMESTER - VI

PAPER IV – PHARMACEUTICAL BIOTECHNOLOGY

Q.P. Code : 562066

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Define Mutation. Explain the types and different methods of isolation of mutants.
2. Explain the basic steps involved in rDNA technology
3. Define vaccine. Explain the general method of preparation of viral vaccine with an examples.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Describe steps involved in PCR (Polymerase Chain Reaction) technique.
2. What is MHC? Explain its structure and functions.
3. Discuss the types of Biotransformation.
4. Write a note on operation of aerobic fermentation.
5. Types of Biosensors.
6. Outline the storage and stability conditions for vaccines.
7. Discuss the upstream and downstream process and applications of catalase enzyme.
8. Different types of Immuno stimulants.
9. Write briefly about dextran and its clinical uses.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Types of immunity.
2. Define transposon.
3. Chemical composition of chromosome.
4. Mention different methods for production of citric acid.
5. Examples of immuno suppressants.
6. Applications of immobilized enzymes.
7. Use of western blot techniques.
8. Give examples of Absorbable haemostat.
9. Define 1.Adaptive enzyme 2. Constitutive enzyme.
10. What is mutagenesis?

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[BPHARM 1022]

**OCTOBER 2022
(MARCH 2022 EXAM SESSION)**

Sub. Code: 2066

B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)

PCI Regulation 2017 – SEMESTER VI

PAPER V – PHARMACEUTICAL BIOTECHNOLOGY

Q.P. Code : 562066

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Explain the production of Monoclonal antibodies with their applications.
2. Production of penicillin by fermentation.
3. Write in detail about gene transfer methods.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Production of amylase.
2. Microbial Biotransformation.
3. Hypersensitivity Reactions.
4. Cloning Vectors.
5. Production of Citric Acid.
6. Write short notes on Interferon.
7. Write note on Polymerase chain reaction.
8. Protein engineering.
9. Note on transposable elements.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Conjugation.
2. Functions of MHC.
3. Southern blot.
4. Gene expression.
5. Source of organisms for the production glutamic acid.
6. Biosensors.
7. Live bacterial vaccines.
8. Types of Immunity.
9. Examples for restriction endonucleases.
10. Examples of immune modulators and immune suppressants.

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

[B.PHARM 0323]

**MARCH 2023
(SEPTEMBER 2022 EXAM SESSION)**

Sub. Code: 2066

**B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)
PCI Regulation 2017 – SEMESTER VI
PAPER V – PHARMACEUTICAL BIOTECHNOLOGY**

Q.P. Code: 562066

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Define Immobilization. Explain the different methods of immobilization with applications.
2. General methods of preparation of bacterial vaccines. Mention the storage and stability of official vaccine.
3. What is Hybridoma technology? Explain the steps involved in Hybridoma technology.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Production of Insulin.
2. ELISA technique.
3. Biosensors.
4. Restriction endonucleases.
5. Collection of Whole human blood.
6. Screening method in fermentation process.
7. Write short notes on mutation.
8. Cloning strategies.
9. Write note on production of lipase.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Viral vaccines.
2. Western blot.
3. Microbial Biotransformation.
4. Source of organisms for the production of Vitamin B12.
5. Active immunity.
6. Gene mapping.
7. Vectors.
8. Microbial source for the production of glutamic acid.
9. Examples of triple vaccine.
10. Differentiate transcription and translation.

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

[B.PHARM 0823]

**AUGUST 2023
(MARCH 2023 EXAM SESSION)**

Sub. Code: 2066

**B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)
PCI Regulation 2017 – SEMESTER VI
PAPER V – PHARMACEUTICAL BIOTECHNOLOGY**

Q.P. Code: 562066

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Structure and functions of Major Histocompatibility Complex.
2. Define Biosensors and give its types and write note on each type with example.
3. Genetic engineering for the production of Hepatitis -B.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Immuno blotting techniques.
2. Quantitative estimation of antigen and antibody.
3. Bio processing method for the production of Griseofulvin.
4. Write short notes on plasma substitutes.
5. Classification of Immunoglobulins.
6. Define antigen and antibody. Explain the antigen antibody reactions.
7. Note on fermenter design and its various control.
8. Concentrated human red blood cells.
9. Define immunity. Differentiate between active and passive immunity.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. What is polymerase chain reaction?
2. Mutagens.
3. Types of biotransformation.
4. Insertion sequences.
5. Northern blot.
6. Official Parameters in fermentation process.
7. Haptens.
8. Define Toxoid.
9. DNA ligase.
10. Storage of Whole human blood.

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

[B.PHARM 1223]

**DECEMBER 2023
(SEPTEMBER 2023 EXAM SESSION)**

Sub. Code: 2066

**B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)
PCI Regulation 2017 – SEMESTER VI
PAPER V – PHARMACEUTICAL BIOTECHNOLOGY**

Q.P. Code: 562066

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Define Biosensors. Discuss different types of biosensors in pharmaceutical industries.
2. Explain the method of production, storage and uses of various blood products.
3. Define enzymes. Describe the general consideration to be followed for industrial production of Enzymes.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Production of Recombinant Hepatitis B vaccine.
2. Classification of vectors with examples.
3. Discuss the production of Glutamic acid by fermentation.
4. Immuno blotting techniques.
5. Explain the different methods in production of monoclonal antibodies.
6. Method of production of Diphtheria anti toxin.
7. Discuss the methods of protein engineering.
8. Differentiate between Humoral immunity and Cell mediated immunity.
9. Write a note on types and applications of PCR (Polymerase Chain Reaction).

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Types of hypersensitivity reactions.
2. Define Major Histocompatibility Complex.
3. Classify fermentation methods.
4. Applications of genomic library.
5. Examples for attenuated and killed bacterial vaccines.
6. Gene expression.
7. Commercial applications of lipases.
8. Difference between endotoxin and exotoxin.
9. Define Immunoglobulins.
10. What is Triple antigen?

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

[B.PHARM 0524]

MAY 2024

Sub. Code: 2066

**B.PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)
PCI Regulation 2017 – SEMESTER VI
PAPER V – PHARMACEUTICAL BIOTECHNOLOGY**

Q.P. Code: 562066

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Explain the principle and various steps involved in western blotting technique. Add a note on its applications.
2. Explain in detail the production of Vitamin B12.
3. What are Interferons? Explain the methods of production of Interferons.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Write a short note on Plasma substitutes.
2. Discuss the different types of mutation.
3. Explain the types of Biosensors.
4. Discuss the production of the enzyme Protease.
5. Explain the steps involved in Polymerase Chain Reaction technique.
6. Write a note on foam control and temperature control in fermenter.
7. Applications of genetic engineering.
8. Functions of Major Histocompatibility Complex.
9. Discuss about Hypersensitivity reactions.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Active immunity.
2. Define Sparger.
3. What is bio-transformation process?
4. Define Immobilization.
5. What is mutagenesis?
6. What is Hybridoma technology?
7. Write the storage conditions for the Hepatitis B vaccine.
8. What is batch fermentation?
9. Any two applications of Elisa.
10. Define Conjugation.

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

[B.PHARM 1024]

**OCTOBER 2024
(SEPTEMBER 2024 EXAM SESSION)**

Sub. Code: 2066

**B. PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)
PCI Regulation 2017 – SEMESTER VI
PAPER V – PHARMACEUTICAL BIOTECHNOLOGY**

Q.P. Code: 562066

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions. (2 x 10 = 20)

1. Define Hybridoma technology. Explain the production and applications of monoclonal antibodies.
2. Explain the different methods of immobilization techniques with applications.
3. Define fermentation. Describe the production of penicillin by bioprocess technique.

II. Write notes on: Answer any SEVEN questions. (7 x 5 = 35)

1. Production of interferon by rDNA technology.
2. Classify toxin. Discuss the preparation of Diphtheria toxoid.
3. Discuss the different types of biosensors and its application.
4. Applications of biotechnology in pharmaceutical sciences.
5. Explain the different types of Immunoglobulin.
6. Production and industrial applications of amylase.
7. Discuss the types of mutations.
8. Differentiate between eukaryotes and prokaryotes genetic organization.
9. Types of T cells and their functions.

III. Short answers on: Answer ALL questions. (10 x 2 = 20)

1. Types of ELISA.
2. Define Immuno stimulants.
3. Mention fractionation of plasma products.
4. Spargers and types.
5. Steps involved in PCR (Polymerase Chain Reaction).
6. Microbial biotransformation.
7. Examples of anticoagulants.
8. Name the organism for the production of: 1) Small pox vaccine 2) BCG vaccine.
9. Define transduction.
10. What is innate immunity?

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

[B.PHARM 0325]

MARCH 2025

Sub. Code: 2066

**B. PHARMACY DEGREE COURSE (SEMESTER EXAMINATIONS)
PCI Regulation 2017 – SEMESTER VI
PAPER V – PHARMACEUTICAL BIOTECHNOLOGY**

Q.P. Code: 562066

Time: Three hours

Maximum: 75 Marks

I. Elaborate on: Answer any TWO questions.

(2 x 10 = 20)

1. What is rDNA Technique? Explain in detail Restriction endo nuclease and plasmid cloning vector.
2. Explain the production of penicillin by fermentation technique.
3. Define vaccine. Explain the general method of preparation of viral vaccine with examples.

II. Write notes on: Answer any SEVEN questions.

(7 x 5 = 35)

1. Production of Griseofulvin.
2. Different types of mutation.
3. Explain the steps in western blotting technique.
4. Write a note on stability of official vaccines.
5. Applications of Hybridoma technology.
6. Dried human plasma.
7. Production of catalase.
8. Applications of enzyme immobilization.
9. Production of Interferon.

III. Short answers on: Answer ALL questions.

(10 x 2 = 20)

1. Define Protein engineering.
2. What are Biosensors?
3. What are Vectors?
4. Define Fermentation.
5. Mention the types of Immunity.
6. What is transduction?
7. What is Dextran?
8. What is Polymerase Chain Reaction (PCR)?
9. What is Major Histocompatibility Complex (MHC)?
10. What is ELISA?
