

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

[LL 984]

NOVEMBER 2017

Sub. Code: 2984

**M.PHARM. DEGREE EXAMINATION**  
**(PCI New regulations 2016)**  
**SEMESTER-I**  
**PHARMACOLOGY – MPL**  
**PAPER IV – CELLULAR AND MOLECULAR PHARMACOLOGY**

*Q.P. Code : 262984*

**Time : Three hours**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Write down the types of immunotherapeutics and explain the Humanization Anti-body therapy.
2. Classify receptors and discuss molecular structure of Ligand gated Ion channels.

**II. Write notes on:**

**(7 x 5 = 35)**

1. List out various secondary messengers and give an account of Cyclic AMP and Cyclic GMP.
2. Mitogen Activated Protein Kinase (MAPK).
3. Intrinsic and Extrinsic pathways of apoptosis.
4. Write a note on Proteonomics.
5. Write a note on Biosimilars.
6. Clinical applications of gene therapy.
7. Culture techniques involved in subculture.

\*\*\*\*\*

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

[LM 984]

MAY 2018

Sub. Code: 2984

**M.PHARM. DEGREE EXAMINATION**  
**(New regulations 2016)**  
**SEMESTER-I**  
**PHARMACOLOGY – MPL**  
**PAPER IV – CELLULAR AND MOLECULAR PHARMACOLOGY**

*Q.P. Code : 262984*

**Time : Three hours**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Principles and applications of genomics and any two proteomic tools.
2. Explain the genetic variation in G-protein coupled receptors.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Janus – kinase signal transducer and activator of transcription signaling pathway.
2. Cell cycles and its regulation.
3. Cell signaling.
4. Write briefly about various non viral vectors used in gene therapy.
5. Discuss briefly about applications of Recombinant DNA technology.
6. Write a note on gene mapping.
7. Necrosis and Autophagy.

\*\*\*\*\*

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

[LN 984]

NOVEMBER 2018

Sub. Code: 2984

**M.PHARM. DEGREE EXAMINATION**  
**(PCI New regulations 2016)**  
**SEMESTER-I**  
**PHARMACOLOGY – MPL**  
**PAPER IV – CELLULAR AND MOLECULAR PHARMACOLOGY**

*Q.P. Code : 262984*

**Time : Three hours**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. List out various types of cell culture including general procedure for any four cell cultures.
2. Write down the basic principles and applications of Recombinant DNA technology – restriction enzymes.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Principle and applications cell viability assays.
2. Recent advances in gene therapy.
3. ELISA and Western Blotting.
4. Cyclic AMP signaling pathway.
5. Add a note on Nuclear Receptors.
6. Briefly explain Nutrigenomics.
7. Structure and functions of cell.

\*\*\*\*\*

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

[LO 984]

MAY 2019

Sub. Code: 2984

**M.PHARM. DEGREE EXAMINATION  
(PCI New regulations 2016)  
SEMESTER-I  
BRANCH VI –PHARMACOLOGY – MPL  
PAPER IV – CELLULAR AND MOLECULAR PHARMACOLOGY**

*Q.P. Code : 262984*

**Time : Three hours**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Discuss in detail the various processes of cell death. Explain about the apoptotic pathways.
2. How do cells communicate with each other? Discuss in detail the JAK-STAT signaling pathway.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Application of any two equipments used in cell culture lab.
2. Gene transfer techniques.
3. Flow cytometry- principle and applications.
4. Humanisation of antibodies and their applications.
5. What is Proteomics and what are its applications?
6. Gene sequencing techniques.
7. Polymorphisms affecting drug metabolism.

\*\*\*\*\*

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

[LP 984]

NOVEMBER 2019

Sub. Code: 2984

**M.PHARM. DEGREE EXAMINATION**  
**(PCI New regulations 2016)**  
**SEMESTER-I**  
**BRANCH VI – PHARMACOLOGY – MPL**  
**PAPER IV – CELLULAR AND MOLECULAR PHARMACOLOGY**

*Q.P. Code : 262984*

**Time : Three hours**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. a) What are second messengers? Give examples. Explain the functions of the following substances in intracellular cell signaling.  
i) Cyclic GMP      ii) NO      iii) MAPK  
b) Briefly explain intercellular signaling between neurons.
2. a) In detail explain various gene transfer technologies.  
b) Add note on restriction enzymes.

**II. Write notes on:**

**(7 x 5 = 35)**

1. What are lipid bilayers? Give the chemical composition of lipid bilayer.
2. How SiRNA acts and controls transcription? Explain with example.
3. What is mean by necrosis? How it induces inflammatory degenerative cascade action?
4. Add a note on metabolomics.
5. What is immuno therapeutics? State its advantages and limitations.
6. What are biosimilars? Give its application.
7. Explain the principle, procedure and applications of MTT assay.

\*\*\*\*\*

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

[LQ 0121]

**JANUARY 2021**

**Sub. Code: 2984**

**(APRIL 2020 EXAM SESSION)**

**M.PHARMACY DEGREE EXAMINATION**

**SEMESTER-I (PCI New regulations 2016)**

**PHARMACOLOGY – MPL**

**PAPER IV – CELLULAR AND MOLECULAR PHARMACOLOGY**

***Q.P. Code : 262984***

**Time : Three hours**

**Answer ALL Questions**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. a) Diagrammatically explain the intrinsic & extrinsic pathways of apoptosis.  
b) How nuclear receptor intracellular signaling mechanism happens? Explain with pathway diagram.
2. a) State the principle, procedure, applications of recombinant DNA technology in the production of biologicals.  
b) Add a note on proteomics.

**II. Write notes on:**

**(7 x 5 = 35)**

1. How CYP enzyme polymorphisms affects drug metabolism?
2. Name the methods of gene mapping. State the principle of any one method.
3. What are paracrine and autocrine signaling?
4. Write a note on viral vector.
5. How calcium transport across the cell membrane been measured?
6. Name different types of media used in the cell culture. Explain the procedures of cell culture.
7. What is cryopreservation? State the purpose and limitations of them.

\*\*\*\*\*

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

**[MPHARM 0921]**

**SEPTEMBER 2021  
(OCTOBER 2020 EXAM SESSION)**

**Sub. Code: 2984**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER-I (PCI New regulations 2016)  
PHARMACOLOGY - MPL  
PAPER IV - CELLULAR AND MOLECULAR PHARMACOLOGY  
*Q.P. Code : 262984***

**Time : Three hours**

**Answer ALL Questions**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. What are vectors? Give examples. In detail explain various vectors used in rDNA technology. Add a note on application of rDNA technology.
2. What are second messengers? How it facilitate the signal transduction response? Explain the role of the following second messengers in signal transduction.  
a) Cyclic AMP      b) Calcium ion      c) NO

**II. Write notes on:**

**(7 x 5 = 35)**

1. How cell cycle is regulated? Explain.
2. Differentiate necrosis and apoptosis.
3. Write on gene mapping techniques.
4. Write a note on humanized antibodies.
5. What is polymorphism? Explain it with suitable example.
6. Write the principle, procedure and application of flow cytometry.
7. How primary cells are cultured? Explain and state its limitations.

\*\*\*\*\*

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

**[MPHARM 0422]**

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

**Sub. Code: 2984**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER-I (PCI New regulations 2016)  
PHARMACOLOGY - MPL  
PAPER IV - CELLULAR AND MOLECULAR PHARMACOLOGY  
*Q.P. Code : 262984***

**Time : Three hours**

**Answer ALL Questions**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. What are receptors? Classify receptors according to mechanism of action. With a diagram explain the functioning of Tyrosine kinase receptors? Add a note on ion channels.
2. Write the principle, procedure and applications of rDNA technology in biological preparations. What is tissue engineering? Explain.

**II. Write notes on:**

**(7 x 5 = 35)**

1. What is mean by necrosis and apoptosis?
2. State the application of molecular pharmacology.
3. With a diagram explain the functioning of biosafety cabinet.
4. Give the structure of a cell membrane. Explain the functions of Pore.
5. Explain JAK/STAT pathways.
6. Write a note on biosimilars.
7. How gene is sequenced?

\*\*\*\*\*

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

**[M.PHARM 0922]**

**SEPTEMBER 2022  
(APRIL 2022 EXAM SESSION)**

**Sub. Code: 2984**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER - I (PCI New regulations 2016)  
PHARMACOLOGY – MPL  
PAPER IV - CELLULAR AND MOLECULAR PHARMACOLOGY**

*Q.P. Code : 262984*

**Time : Three hours**

**Answer ALL Questions**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Principles and applications of genomics and any two proteomic tools.
2. Write in details about cell signaling.

**II. Write notes on:**

**(7 x 5 = 35)**

1. ELISA and western blotting.
2. Various types of gene transfer techniques.
3. Pharmacogenomics.
4. Types of immunotherapeutics.
5. Various types of cell culture.
6. Biosimilars.
7. Calcium influx assays.

\*\*\*\*\*

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

**[M.PHARM 0423]**

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

**Sub. Code: 2984**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER - I (PCI New regulations 2016)  
PHARMACOLOGY – MPL  
PAPER IV - CELLULAR AND MOLECULAR PHARMACOLOGY**

***Q.P. Code: 262984***

**Time : Three hours**

**Answer ALL Questions**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. Classify receptors and discuss molecular structure of Ligand gated Ion channels.
2. Define Gene therapy. What are the various techniques of gene transfer? Discuss the principles and application of polymerase chain reaction.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Give detail about cell cycle and its regulation.
2. Recombinant DNA technology.
3. Polymorphisms affecting drug metabolism.
4. Cell culture media.
5. Give the principles and application of cell viability assay.
6. Biosimilars.
7. Write a note on Proteomics.

\*\*\*\*\*

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

**[M.PHARM 0823]**

**AUGUST 2023  
(APRIL 2023 EXAM SESSION)**

**Sub. Code: 2984**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER - I (PCI New Regulations 2016)  
PHARMACOLOGY – MPL  
PAPER IV - CELLULAR AND MOLECULAR PHARMACOLOGY**

***Q.P. Code: 262984***

**Time : Three hours**

**Answer ALL Questions**

**Maximum : 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. a) Explain with diagram the intracellular signaling mechanisms of G protein coupled receptor.  
b) How ion channels are regulated?
  
2. a) With suitable example explain the negative and positive regulation of gene expression.  
b) What do you understand by the term in gene activity?  
i) repressor            ii) activator            iii) loci            iv) promoter

**II. Write notes on:**

**(7 x 5 = 35)**

1. State the principle, procedure and applications of ELISA method.
2. Add a note on non viral vector.
3. Why genetics is important in drug therapy?
4. What are the limitations of antibody therapy?
5. State the principle and functions of flow cytometry.
6. What are primary cell lines? Explain.
7. Differentiate reverse transcription and real time PCR.

\*\*\*\*\*

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

**[M.PHARM 1223]**

**DECEMBER 2023  
(OCTOBER 2023 EXAM SESSION)**

**Sub. Code: 2984**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER - I (PCI New Regulations 2016)  
PHARMACOLOGY – MPL  
PAPER IV - CELLULAR AND MOLECULAR PHARMACOLOGY**

*Q.P. Code: 262984*

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. a) Discuss briefly the receptor polymorphism influencing drug metabolism.  
b) Describe the mechanism of nuclear receptor.
2. Explain various types of cell culture and illustrate the procedure for cell culture methods.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Explain signal transduction pathways.
2. Discuss type of vectors in r-DNA technology.
3. Cell signaling through calcium.
4. Write a note on gene mapping.
5. Necrosis and autophagy.
6. Micro Array Techniques.
7. Western Blotting.

\*\*\*\*\*

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

**[M.PHARM 0524]**

**MAY 2024  
(APRIL 2024 EXAM SESSION)**

**Sub. Code: 2984**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER - I (PCI New Regulations 2016)  
PHARMACOLOGY – MPL  
PAPER IV - CELLULAR AND MOLECULAR PHARMACOLOGY**

***Q.P. Code: 262984***

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. A) Classify Receptors and explain the genetic variation in G-protein coupled receptors.  
B) Write the Principle and Application of Polymerase chain reaction.
2. Enumerate the principles, process and applications of recombinant DNA technology.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Explain about proteomics.
2. Biosimilars.
3. Write the types of cell culture.
4. Explain about cell death.
5. Write about Immunotherapeutics in clinical practice.
6. Cell Cycle and its Regulation.
7. Mitogen Activated Protein Kinase (MAPK).

\*\*\*\*\*

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

**[M.PHARM 0425]**

**APRIL 2025**

**Sub. Code: 2984**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER - I (PCI New Regulations 2016)  
PHARMACOLOGY – MPL  
PAPER IV - CELLULAR AND MOLECULAR PHARMACOLOGY**

*Q.P. Code: 262984*

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. a) Discuss in detail the different types of gene therapy.  
b) Discuss in detail the various processes in microarray technique.
2. Discuss in detail about the inter cellular and intra cellular signaling pathways.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Cell viability assay.
2. Principles and applications of DNA Electrophoresis.
3. Janus – kinase signal transducer and activator of transcription signaling pathway.
4. What is polymorphism? Explain it with suitable examples.
5. G-protein coupled receptors.
6. Structure and functions of cell.
7. Biosimilars.

\*\*\*\*\*

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

**[M.PHARM 1025]**

**OCTOBER 2025**

**Sub. Code: 2984**

**M.PHARMACY DEGREE EXAMINATION  
SEMESTER - I (PCI New Regulations 2016)  
PHARMACOLOGY – MPL  
PAPER IV - CELLULAR AND MOLECULAR PHARMACOLOGY**

*Q.P. Code: 262984*

**Time: Three hours**

**Answer ALL Questions**

**Maximum: 75 Marks**

**I. Elaborate on:**

**(2 x 20 = 40)**

1. a) In detail explain the different technique used in gene transfer.  
b) Various types of Vector.
2. Define pharmacogenomics. Enlist the gene mapping and cloning of disease gene in detail.

**II. Write notes on:**

**(7 x 5 = 35)**

1. Intrinsic pathways of apoptosis.
2. Glucose uptake assays.
3. Write briefly on Functionomics.
4. Explain Micro array technology.
5. Write briefly on Autophagy.
6. Receptor polymorphism.
7. Types of cell culture media and its significance.

\*\*\*\*\*