

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

[LM 987]

MAY 2018

Sub. Code: 2987

M.PHARM. DEGREE EXAMINATION
(PCI New regulations 2016)
SEMESTER-II
BRANCH-VI – PHARMACOLOGY – MPL
PAPER III – PRINCIPLES OF DRUG DISCOVERY

Q.P. Code : 262987

Time : Three hours

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Discuss about the Pharmacophore mapping and Pharmacophore based screening.
2. Explain in detail about the concepts of Rational drug design.

II. Write notes on:

(7 x 5 = 35)

1. Micro array technology.
2. High throughput screening.
3. Role of transgenic animals in target validation.
4. Validation of Genomics.
5. Bioinformatics.
6. Explain briefly about molecular docking.
7. Drug likeness screening.

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[LN 987]

NOVEMBER 2018

Sub. Code: 2987

M.PHARM. DEGREE EXAMINATION
(PCI New regulations 2016)
SEMESTER-II
BRANCH-VI – PHARMACOLOGY – MPL
PAPER III – PRINCIPLES OF DRUG DISCOVERY

Q.P. Code : 262987

Time : Three hours

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain in detail with suitable examples, how the bio-informatics and genomics information can be used for target identification/validation?
2. a) Write the steps involved in protein prediction.
b) What are the applications of NMR and crystalgraphy techniques?

II. Write notes on:

(7 x 5 = 35)

1. What is 2D and 3D Pharmacophore approach of drug designing? Explain.
2. What is meant by: a) Hit b) SiRNAs c) Motifs
d) High through put screening e) Peptide
3. What is Hansch analysis of QSAR modeling? Explain.
4. Write a note on prodrug concepts.
5. What is De novo drug design? Give its limitations.
6. Compare and contrast virtual screening and conventional methods of drug development.
7. What are transgenic animals? How it is useful in drug development?

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[LO 987]

MAY 2019

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Time : Three hours

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) What are the different statistical methods applied to validate the developed QSAR model? Explain PLS model.
b) Differentiate SAR & QSAR.
2. Explain the following:
 - a) One Target validation techniques.
 - b) Anti sense technologies.
 - c) Briefly explain the cost involvement and feasibility of new drug discovery in India.

II. Write notes on:

(7 x 5 = 35)

1. What are micro arrays? Write its importance in target discovery.
2. What are the parameters to be considered in lead optimization procedure?
3. What is meant by:
 - a) α Helix
 - b) Zinc finger proteins
 - c) Pharmacophore
 - d) Scaffold
 - e) Nucleotide
4. Write a note on rationale drug design.
5. Name the programs used in docking process. What is meant by G score?
6. Why solubility has been considered as one of the important parameters in drug development? Explain.
7. Explain the term COMFA & COMSIA.

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[LP 987]

NOVEMBER 2019

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BRANCH-VI – PHARMACOLOGY – MPL
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Q.P. Code : 262987

Time : Three hours

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Discuss in detail about various computational prediction of Protein structure.
2. Explain in detail about 3D QSAR approaches.

II. Write notes on:

(7 x 5 = 35)

1. Target validation role of genomics.
2. Economics of drug discovery.
3. List out various QSAR statistical methods and explain any one.
4. Explain any two *in silico* Lead discovery technique.
5. Add a note on assay development for Hit identification.
6. Hansch Analysis.
7. Rationale of prodrug design.

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

[LQ 0121]

JANUARY 2021

Sub. Code: 2987

(APRIL 2020 EXAM SESSION)

M.PHARMACY DEGREE EXAMINATION

SEMESTER-II (PCI New regulations 2016)

PHARMACOLOGY – MPL

PAPER III – PRINCIPLES OF DRUG DISCOVERY

Q.P. Code : 262987

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) Explain the structure and pharmacophore based drug designing approaches with suitable example.
b) Add a note on pharmacophore mapping.
2. a) What is 3D QSAR? How it improves the drug development process? Explain 3D QSAR approach with suitable example.
b) Add a note on Fee Wilson Analysis.

II. Write notes on:

(7 x 5 = 35)

1. Write the role of bioinformatics in target identification.
2. What is SiRNA? State its role in drug discovery.
3. How transgenic mice model can elucidate a target validation process? Explain with one example.
4. Write a note on X-ray crystallographic technique in protein structure prediction.
5. Define the term in relation to protein.
a) Helix b) Motif c) Domain d) Codon e) Ribbon
6. Write a note on high through put screening.
7. Why solubility of the drug is an important parameter in drug discovery process?

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

[MPHARM 0921]

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

Sub. Code: 2987

**M.PHARMACY DEGREE EXAMINATION
SEMESTER-II (PCI New regulations 2016)
PHARMACOLOGY - MPL
PAPER III – PRINCIPLES OF DRUG DISCOVERY
*Q.P. Code : 262987***

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain in detail the rationale and practical considerations involved in prodrug design.
2. Discuss in detail the application of NMR and X ray crystallography in protein structure prediction.

II. Write notes on:

(7 x 5 = 35)

1. Explain the relation between Hansch and Free Wilson analysis.
2. Discuss the role of Bioinformatics in target discovery and validation.
3. Write a note on small interfering RNA (siRNA).
4. Denovo drug design.
5. Enumerate the differences between SAR and QSAR.
6. Write a note on Comparative Molecular Field Analysis (COMFA).
7. Structure based drug design.

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

[MPHARM 0122]

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

Sub. Code: 2987

**M.PHARMACY DEGREE EXAMINATION
SEMESTER-II (PCI New regulations 2016)
PHARMACOLOGY - MPL
PAPER III – PRINCIPLES OF DRUG DISCOVERY
*Q.P. Code : 262987***

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain in detail the role of genomics and proteomics in target discovery and validation.
2. Discuss in detail the various methods employed in molecular docking-based screening of new chemical entities.

II. Write notes on:

(7 x 5 = 35)

1. Zinc finger proteins.
2. Threading methods in protein structure prediction.
3. Explain the application of Combinatorial chemistry in lead identification.
4. Discuss the concept of pharmacophore mapping.
5. Hansch analysis.
6. Ligand based drug design.
7. Regression analysis.

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

[M.PHARM 0922]

SEPTEMBER 2022
(APRIL 2022 EXAM SESSION)

Sub. Code: 2987

M.PHARMACY DEGREE EXAMINATION
SEMESTER - II (PCI New regulations 2016)
PHARMACOLOGY - MPL
PAPER III – PRINCIPLES OF DRUG DISCOVERY

Q.P. Code : 262987

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. What is meant by lead? Explain lead seeking methods with suitable example, How the identified lead is optimized?
2. What is rational drug design? Explain the structure based drug design with example.

II. Write notes on:

(7 x 5 = 35)

1. How siRNA can be used as targets?
2. How transgenic mice can be used for target validation?
3. Explain the following molecular property description and its significance in drug development
 - a) Topology
 - b) Polarizability.
4. State the Fee Willson equation. Give its limitations and assumption.
5. Differentiate SAR and QSAR.
6. Explain Q^2 and R^2 in QSAR analysis.
7. Differentiate COMFA and COMSIA.

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

[M.PHARM 0423]

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

Sub. Code: 2987

**M.PHARMACY DEGREE EXAMINATION
SEMESTER - II (PCI New regulations 2016)
PHARMACOLOGY - MPL
PAPER III – PRINCIPLES OF DRUG DISCOVERY**

Q.P. Code: 262987

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. What is meant by Pharmacophore? How pharmacophore are generated? Give its significance in drug design. What is the difference between 2D and 3 D pharmacophore?
2. What is QSAR? Explain two methods of QSAR equation development. Add a note on molecular descriptors.

II. Write notes on:

(7 x 5 = 35)

1. Write the application of bio-informatics in drug discovery.
2. How proteins are characterized? Explain any one method.
3. Explain different folds of protein structure with reason.
4. Write the application of X-ray crystallography in protein identification.
5. What is ClogP? How it is calculated?
6. Explain the following interaction and its significance in drug discovery with example:
 - a) Hydrophobic interaction.
 - b) Dipole – Dipole interaction.
7. What are Zing Finger proteins? Explain.

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

[M.PHARM 0823]

AUGUST 2023
(APRIL 2023 EXAM SESSION)

Sub. Code: 2987

M.PHARMACY DEGREE EXAMINATION
SEMESTER - II (PCI New Regulations 2016)
PHARMACOLOGY - MPL
PAPER III – PRINCIPLES OF DRUG DISCOVERY

Q.P. Code: 262987

Time : Three hours

Answer ALL Questions

Maximum : 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain various lead seeking and lead optimization methods.
2. Describe target discovery and validation role of:
a) Genomics b) Proteomics c) Bioinformatics

II. Write notes on:

(7 x 5 = 35)

1. Partial least square analysis.
2. 3D QSAR approaches of COMFA & COMSIA.
3. Molecular docking.
4. HANSCH analysis.
5. Pharmacophore based screening.
6. Traditional Versus Rational Drug Design.
7. Drug Likeness Screening.

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

[M.PHARM 1223]

DECEMBER 2023
(OCTOBER 2023 EXAM SESSION)

Sub. Code: 2987

M.PHARMACY DEGREE EXAMINATION
SEMESTER - II (PCI New Regulations 2016)
PHARMACOLOGY - MPL
PAPER III – PRINCIPLES OF DRUG DISCOVERY

Q.P. Code: 262987

Time: Three hours

Answer ALL Questions

Maximum: 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. What are OMICS? Write its application in drug discovery program. How knowledge of OMICS can be applied in target identification? Explain with example.
2. What is meant by docking? Explain different methods of docking with suitable example. Among the docking methods which is the best method of docking and why?

II. Write notes on:

(7 x 5 = 35)

1. Write a note on homology modeling.
2. Write a note on High throughput screening.
3. What are the properties of drug likeness? Why it is important?
4. What is mean by 3D pharmacophore? Write its application in drug discovery.
5. Write a note on rational drug design.
6. How ADME property of a drug can be improved through pro drug concept? Explain.
7. What is PLS? How it is calculated?

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

[M.PHARM 0524]

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

Sub. Code: 2987

**M.PHARMACY DEGREE EXAMINATION
SEMESTER - II (PCI New Regulations 2016)
PHARMACOLOGY - MPL
PAPER III – PRINCIPLES OF DRUG DISCOVERY**

Q.P. Code: 262987

Time: Three hours

Answer ALL Questions

Maximum: 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. a) What are the ways of lead discovery can be done? With suitable example. Explain any one method in detail.
b) Write a note on 2D pharmacophore.
2. a) What is meant by QSAR? Explain the QSAR technique in detail by Hansch analysis. State its importance in drug development process.
b) How docking score can help in drug designing process?

II. Write notes on:

(7 x 5 = 35)

1. State role of proteomics in target identification.
2. Write a note on Zinc finger proteins.
3. What are microarray techniques? Explain its significance in target discovery.
4. Compare and contrast traditional and rational drug design.
5. Write a note on antisense technologies.
6. Why virtual screening techniques are having limitations in drug discovery process explain with example.
7. Explain partial least square analysis.

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

[M.PHARM 0425]

APRIL 2025

Sub. Code: 2987

**M.PHARMACY DEGREE EXAMINATION
SEMESTER - II (PCI New Regulations 2016)
PHARMACOLOGY - MPL
PAPER III – PRINCIPLES OF DRUG DISCOVERY**

Q.P. Code: 262987

Time: Three hours

Answer ALL Questions

Maximum: 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Discuss about molecular docking and docking based screening.
2. Write about QSAR Statistical methods.

II. Write notes on:

(7 x 5 = 35)

1. Concepts in Pharmacophore mapping.
2. High throughput screening.
3. Application of NMR and X-ray crystallography in protein structure prediction.
4. Combinatorial chemistry.
5. Assay development for hit identification.
6. Anti sense oligonucleotides in drug discovery.
7. Target identification and its validation.

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

[M.PHARM 1025]

OCTOBER 2025

Sub. Code: 2987

**M.PHARMACY DEGREE EXAMINATION
SEMESTER - II (PCI New Regulations 2016)
PHARMACOLOGY - MPL
PAPER III – PRINCIPLES OF DRUG DISCOVERY**

Q.P. Code: 262987

Time: Three hours

Answer ALL Questions

Maximum: 75 Marks

I. Elaborate on:

(2 x 20 = 40)

1. Explain in detail different techniques involved in virtual screening.
2. A) What are Lead optimization techniques? Explain in detail.
B) How bioinformatics data facilitate target selection.

II. Write notes on:

(7 x 5 = 35)

1. What is meant by small interference RNA? Explain.
2. How protein structure is predicted?
3. What is Lipinski rule of 5?
4. What is 3D pharmacophore model? Explain.
5. What is Hansch analysis?
6. What is Free energy with respect to protein drug interaction? How it is calculated?
7. Write briefly on Regression analysis in drug design.
