MAY 2011

[KY 352] **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION

(Regulations 2010)

(Candidates admitted from 2010-2011 onwards)

FIRST YEAR

BRANCH IV – PHARMACOLOGY

PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : Three hours **Maximum : 100 marks**

Answer All questions

I. Essay Questions : **(6 x 10 = 60)**

1. Write essay on concept, theories and forces involved in drug receptor interaction?
2. Discuss elaborately on fundamentals of QSAR and analysis of results?
3. Discuss various disease targets for gene therapy?
4. Write the pharmacodynamic and pharmacokinetics of peptide and protein drugs?
5. Write elaborately on regulation of gene expression?
6. Write essay on combinatorial chemistry?

II. Write Short Notes : **(8 x 5 = 40)**

1. Discuss isosterism and biological activity?
2. Write a note on Proteonomics?
3. Write briefly about various non viral vectors used in gene therapy?
4. Discuss briefly about applications of DNA recombinant technology?
5. Discuss receptor dimerization and its importance in drug design?
6. Explain lead seeking methods used in drug design?
7. Write a note on gene mapping?
8. Write briefly about rational drug design?

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October 2011

[KZ 352] **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION

FIRST YEAR

BRANCH IV – PHARMACOLOGY

PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : 3 hours (180 Min) **Maximum : 100 marks**

Answer ALL questions in the same order.

I. Elaborate on :	**Pages (Max.)**	**Time (Max.)**	**Marks (Max.)**
1. In detail explain the different techniques used in gene transfer. Add a note on disease targets of gene therapy.	17	40	20
2. Define receptor and state its properties. In detail discuss various receptor theories.	17	40	20
II. Write notes on :			
1. Give importance factors to be considered in rational drug designing.	4	10	6
2. What do you understand by isosterism and steric behaviour?	4	10	6
3. How you determine the solubility property of the chemical compound as per monograph?	4	10	6
4. What are QSAR models?	4	10	6
5. Give the importance of proteomics in identification and validation of targets.	4	10	6
6. Explain docking process in drug discovery program.	4	10	6
7. What is Computer Aided Drug Design?	4	10	6
8. Briefly write on peptides as drug molecule.	4	10	6
9. What is mean by protein structure prediction?	4	10	6
10. Define (i) Operons (ii) Exons (iii) Interons (iv) Pseudogenes.	4	10	6

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[LA 352] **MAY 2012** **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION

FIRST YEAR

BRANCH IV – PHARMACOLOGY

PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code: 262913

Time: 3 hours **Maximum: 100 marks**

(180 Min)

Answer ALL questions in the same order.

I. Elaborate on:	**Pages (Max.)**	**Time (Max.)**	**Marks (Max.)**
1. Write in detail about the new approaches in drug discovery.	17	40	20
2. Write about the basic considerations of drug design. Add a note on de-novo drug design and lead seeking methods.	17	40	20

II. Write notes on:

1.	Write a note on disease targets in gene therapy.	4	10	6
2.	Write briefly about the forces involved in drug receptor interactions.	4	10	6
3.	Write a note on Array technology.	4	10	6
4.	Write about signal transduction pathway.	4	10	6
5.	Write a note on rational drug design.	4	10	6
6.	Write the applications of Recombinant DNA technology.	4	10	6
7.	Write a note on gene expression and regulation.	4	10	6
8.	Write about gene transfer technologies.	4	10	6
9.	Write a note on prodrug concepts.	4	10	6
10.	Write short notes on receptor polymorphism.	4	10	6

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[LB 352] **NOVEMBER 2012** **Sub. Code: 2913**

M.PHARM. DEGREE EXAMS

FIRST YEAR

BRANCH IV – PHARMACOLOGY

PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : 3 hours **Maximum : 100 marks**

(180 Min)

Answer ALL questions in the same order.

I. Elaborate on :	**Pages (Max.)**	**Time (Max.)**	**Marks (Max.)**
1. Discuss briefly the fundamentals of QSAR. Write a note on QSAR parameters related to chemical structure and Biological activity.	17	40	20
2. Discuss in detail about receptor polymorphism and dimerization and its importance in drug design.	17	40	20
II. Write Notes on :			
1. Write briefly the prodrug concepts.	4	10	6
2. Write a note on gene mapping.	4	10	6
3. Write about the applications of molecular pharmacology to drug design.	4	10	6
4. Write about de-novo drug design.	4	10	6
5. Write a note on Bio Sensors.	4	10	6
6. Write the clinical applications of gene therapy.	4	10	6
7. Write briefly about computer aided drug design.	4	10	6
8. Write a note on protein structure prediction and their applications.	4	10	6
9. Write a note on Proteomics.	4	10	6
10. Write briefly about gene transfer technologies.	4	10	6

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[LC 352] **APRIL 2013** **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION

FIRST YEAR

BRANCH IV – PHARMACOLOGY

PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : 3 hours **Maximum : 100 marks**

I. Elaborate on : **(2x20=40)**

1. Describe in detail about the basic considerations of drug design. Add a note on de-novo drug design.
2. Explain in detail about the various disease targets for gene therapy. Write about pharmacokinetics of protein drugs.

II. Write notes on : **(10x6=60)**

1. Write a note on pharmacogenomics.
2. Explain in detail about prodrug and its drawbacks.
3. Describe in detail about prediction of protein structure.
4. Write a note on applications of Recombinant DNA technology.
5. Write in detail about the non- viral vectors in gene therapy.
6. Describe a note on complex of events between drug administration and drug action.
7. Explain in detail about the theories of drug receptor interactions.
8. Write in detail about the correlative methods used in QSAR.
9. Explain in detail about the various applications of molecular pharmacology to drug design.
10. Write a note on general approaches to drug design.

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[LD 352] **OCTOBER 2013** **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATIONS

FIRST YEAR

BRANCH IV – PHARMACOLOGY

PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time: Three Hours **Maximum: 100 marks**

Answer ALL questions in the same order.

I. Elaborate on : **(2 x 20 = 40)**

1. What you understand by CADD explain various steps involved in drug design?

2. Explain different gene transfer technologies. What are the applications of gene therapy?

II. Write notes on : **(10 x 6 = 60)**

1. Write a note on 2D pharmacophore.
2. Write a note on array technology.
3. Write a note on pharmacogenomics.
4. What are receptor theories?
5. Explain cell signaling mechanism.
6. Write a note on receptor polymorphism.
7. Explain gene regulation.
8. Write a note on rational drug design.
9. Write a note on biosensors.
10. With suitable diagram explain the structure of a cell membrane.

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[LE 352] **APRIL 2014** **Sub. Code: 2913**

M.PHARM. DEGREE EXAMS
FIRST YEAR
BRANCH IV – PHARMACOLOGY
PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : 3 hours **Maximum : 100 marks**

I. Elaborate on : **(2x20=40)**

1. Describe in detail about the role of selected physicochemical properties in relation to drug action and drug design.

2. Write in detail about the structural factors in drug design. Add a note on prodrug concepts.

II. Write notes on : **(10x6=60)**

1. Explain in detail about gene mapping.
2. Explain in detail about gene regulation.
3. Write short note on biosensors.
4. Write a note on Recombinant DNA technology.
5. Write in detail about the non-viral vectors in gene therapy.
6. Explain briefly about concept of soft drug.
7. Write a note on Receptor dimerisation.
8. Describe briefly about High Throughput screening.
9. Write a short note on fundamentals of QSAR.
10. Write a note on pharmacogenetics.

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[LF 352] **OCTOBER 2014** **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION
FIRST YEAR
BRANCH IV – PHARMACOLOGY
PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : Three hours **Maximum : 100 marks**

I. Elaborate on: **(2 x 20 = 40)**

1. What is Pharmacophore? Explain the essential parameters of 3D pharmacophore. Add a note on pro drug concepts.

2. Explain the principle, process and applications of recombinant DNA technology.

II. Write notes on: **(10 x 6 = 60)**

1. What is *de nova* drug design?
2. With suitable example explain the importance of combinatorial chemistry in drug discovery.
3. Why proteomics are given emphasize in drug discovery?
4. What are the forces involved in drug receptor interactions?
5. Explain virtual screening by molecular modeling.
6. What do you understand micro array technology?
7. Explain any one methods of gene transfer.
8. Explain Hansch equation.
9. How physiological informations can be useful in drug development?
10. Write a note on isosterism.

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[LG 352] **APRIL 2015** **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION

FIRST YEAR

BRANCH IV – PHARMACOLOGY

PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time: Three Hours **Maximum: 100 marks**

Answer ALL questions

I. Elaborate on : **(2 x 20 = 40)**

1. Write a note on protein structure prediction and molecular modeling.

2. a) Discuss detail on regulation of gene expression.

   b) Write essay on combinatorial chemistry.

II. Write notes on : **(10 x 6 = 60)**

1. Write the pharmacodynamic and pharmacokinetics of peptide and protein drug.

2. Discuss about the vectors used in gene therapy.

3. Discuss briefly about rational drug design.

4. Write a note on gene mapping.

5. Explain about the isolation of RNA from yeast.

6. Applications of molecular pharmacology.

7. Discuss about the signal transduction pathway.

8. Discuss about the oxidation reduction potential.

9. Explain about isosterism.

10. Write a note on computer aided drug design.

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[LH 352] **OCTOBER 2015** **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION
FIRST YEAR
BRANCH IV – PHARMACOLOGY
PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : Three hours **Maximum : 100 marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Explain in detail about the various disease targets for gene therapy. Write about pharmacokinetics of protein drugs.

2. a) Explain signal transduction pathways for G-protein coupled receptors.
   b) What are ion channels? Explain how ion channels act as drug targets.

II. Write notes on: **(10 x 6 = 60)**

1. Discuss receptor dimerization and its importance in drug design.
2. What do you understand by isosterism and steric behaviour?
3. Write a note on partition coefficient.
4. Explain briefly about electronic parameters used in QSAR.
5. Write a note on Proteomics.
6. Describe the clinical applications of gene therapy.
7. Explain about the identification of a pharmacophore in CADD.
8. Write a note on gene mapping.
9. Write about signal transduction pathway.
10. Write a note on Array technology.

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[LI 352] APRIL 2016 **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION
FIRST YEAR
BRANCH IV – PHARMACOLOGY
PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : Three hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. a) Define Receptor and state its properties.
   b) Discuss in detail about various Receptor theories.
2. a) Explain about the various lead seeking methods in Drug design.
   b) Discuss about Pro-drug concepts.

II. Write notes on: **(10 x 6 = 60)**

1. Write about the clinical application of gene therapy.
2. Discuss about biosensors.
3. Explain about the principles of recombinant DNA technology.
4. Discuss about the approaches of array technology in drug discovery.
5. Explain about partition coefficient in relation to drug design.
6. Discuss about the fundamentals of SAR.
7. Write note on chelates formation importance.
8. Write note on Isosterism.
9. Explain about gene expression.
10. Discuss about gene transfer technologies.

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[LJ 352] OCTOBER 2016 **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION
FIRST YEAR
BRANCH IV – PHARMACOLOGY
PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : Three hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Explain the principle, procedure and methods used in rDNA technology. Add a note on its application.

2. What are QSAR studies? How it differs from SAR studies? Write the principle and method used in QSAR studies. Give its application in drug discovery.

II. Write notes on: **(10 x 6 = 60)**

1. Write a note on receptor polymorphism.
2. Explain the term:
   a) Steric behavior b) Hydrogen bonding c) Polarity
3. Classify chemical substances based on its solubility. What is mean by freely soluble?
4. What is mean by
   a) Helix b) β sheet c) Loop in a protein structure
5. Explain the factors to be considered in lead optimization.
6. Name the program used in computer aided drugs designing. How docking studies are performed in *in silico*?
7. Draw the structure of a cell membrane and label its parts.
8. How micro array chips are developed? Give its significance.
9. What are the disease targets for gene therapy?
10. Explain the limitations in protein therapeutics.

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[LK 352] MAY 2017 **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION
FIRST YEAR
BRANCH IV – PHARMACOLOGY
PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : Three hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Write in detail on combinatorial chemistry. Write the applications of drug designing.

2. Explain the pharmacodynamic and pharmacokinetics of peptide and protein drugs.

II. Write notes on: **(10 x 6 = 60)**

1. Complex events between drug administration and drug action.
2. Explain briefly about electronic parameters used in QSAR.
3. Write the drug designing of pro drugs.
4. Non-viral vectors in gene therapy.
5. Briefly explain the pharmacogenomic approach in drug discovery.
6. Hydrogen bonding and surface actions.
7. Protein isolation using gel electrophoresis.
8. Rational drug design.
9. Structural factors in drug design.
10. Correlative methods and analysis of results.

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[LL 352] OCTOBER 2017 **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION
FIRST YEAR
BRANCH IV – PHARMACOLOGY
PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : Three hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Write about the protein structure prediction and molecular modeling.

2. Classify Receptors. Explain various theories and forces involved in drug Receptor interaction.

II. Write notes on: **(10 x 6 = 60)**

1. Bio-sensors.
2. Partition co-efficient.
3. Write the importance of chelates in medicine.
4. Viral vectors in Gene therapy.
5. Describe the structure of G-protein coupled receptors.
6. What are Ion channels? Explain how Ion channels act as drug targets.
7. Explain about the identification of a pharmacophore in computer aided drug design.
8. Oxidation reduction potential.
9. Cell signaling.
10. QSAR parameters related to chemical structure.

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

[LM 352] MAY 2018 **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION
FIRST YEAR
BRANCH IV – PHARMACOLOGY
PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : Three hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Write about the basic considerations of drug design. Add a note on denova drug design and lead seeking methods.

2. Discuss in detail about receptor polymorphism, dimerisation and its importance in drug design. Write in detail about various theories of drug receptor interactions.

II. Write notes on: **(10 x 6 = 60)**

1. Isosterism and Steric behavior.
2. Vectors used in gene therapy.
3. Prodrug concepts and its applications.
4. Gene mapping.
5. Signal transduction pathway.
6. Applications of molecular pharmacology.
7. Computer aided drug design.
8. Forces involved in drug receptor interactions.
9. Isolation of RNA from yeast.
10. Proteomics and array technology.

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

[LN 352] OCTOBER 2018 **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION
FIRST YEAR
BRANCH IV – PHARMACOLOGY
PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : Three hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. a) Discuss about novel approaches in drug discovery.
   b) Discuss briefly the fundamentals of QSAR.

2. a) Describe different techniques used for gene transfer.
   b) Explain the applications of gene therapy.

II. Write notes on: **(10 x 6 = 60)**

1. Explain short note on biosensors.
2. Describe the Recombinant DNA technology.
3. What is soft drug? Explain their concepts.
4. Explain different steps of cell signaling mechanism.
5. Express the note on Rational Drug design.
6. Write note on theories of drug receptor interactions.
7. What is Pharmacogenomics? Explain their importance.
8. Enumerate the drawbacks of prodrug.
9. Write a note on oxidation-reduction potential.
10. Write a note on 2D Pharmacophore.

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

[LO 352] MAY 2019 **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION
FIRST YEAR
BRANCH IV – PHARMACOLOGY
PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : Three hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Describe in detail about the role of selected physicochemical properties in relation to drug action and drug design.

2. Explain the principle, procedure and methods used in Recombinant DNA technology. Add a note on its application.

II. Write notes on: **(10 x 6 = 60)**

1. Hydrogen bonding and surface actions.
2. What are the disease targets for gene therapy?
3. Explain receptor polymorphism and its importance.
4. Discuss about the ionization.
5. Explain the combinatorial chemistry.
6. Explain lead seeking methods in drug design. Give its significance.
7. What are QSAR models?
8. Describe briefly about High throughput screening.
9. Explain Hansch equation.
10. What are the advantages and disadvantages of natural products and lead compounds?

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

[LP 352] OCTOBER 2019 **Sub. Code: 2913**

M.PHARM. DEGREE EXAMINATION
FIRST YEAR
BRANCH IV – PHARMACOLOGY
PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : Three hours **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. What is QSAR? How it differs from SAR? Explain the principle, methods to determine the QSAR activity?

2. What is rational drug design? What are the steps followed in drug designing using CADD?

II. Write notes on: **(10 x 6 = 60)**

1. Mention the physiological importance for drug development.
2. Write a note on partition coefficient and solubility.
3. What is proteomics? How it influences the drug discovery process.
4. What are biosensors? Explain with one example.
5. What is gene mapping? Give its application.
6. Write the process of rDNA technology.
7. How non viral vectors are used for transfection? Explain.
8. Write a note on protein drugs.
9. Why receptor polymorphism is important for drug action and discovery? Explain.
10. What is restriction enzyme? Explain its application.

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

[LQ 0121] JANUARY 2021 Sub. Code: 2913

(APRIL 2020 EXAM SESSION)

M.PHARMACY DEGREE EXAMINATION

FIRST YEAR

BRANCH IV – PHARMACOLOGY

PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY

Q.P. Code : 262913

Time : Three hours **Answer ALL Questions** **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. a) Discuss the concept, theories and forces involved in drug receptor interaction.
   b) Explain the combinatorial chemistry and its importance.

2. a) Discuss isosterism and biological activity.
   b) Describe lead seeking methods used in drug design.

II. Write notes on: **(10 x 6 = 60)**

1. Describe the gene mapping and its importance.
2. Discuss about Rational drug desin.
3. How you determine the solubility property of the chemical compound as per monograph?
4. Discuss docking process in drug discovery program.
5. Briefly write on peptides as drug molecule.
6. Discuss about biosensors.
7. Clarify the applications of Molecular pharmacology.
8. What are receptor theories? Explain the Drug-Receptor occupation theory.
9. What is Pharmacogenomics? Explain their importance.
10. Hydrogen bonding and surface actions.

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

[MPHARM 0122] JANUARY 2022 Sub. Code: 2913
(APRIL 2021 EXAM SESSION)

M.PHARMACY DEGREE EXAMINATION
FIRST YEAR
BRANCH IV – PHARMACOLOGY
PAPER IV – DRUG DESIGN AND MOLECULAR PHARMACOLOGY
Q.P. Code : 262913

Time : Three hours **Answer ALL Questions** **Maximum : 100 Marks**

I. Elaborate on: **(2 x 20 = 40)**

1. Describe in detail about the basic considerations of drug design. Add a note on denovo drug design.

2. Enumerate the various cell signaling methods? Describe the various secondary messengers involved in signal transduction pathway.

II. Write notes on: **(10 x 6 = 60)**

1. Write a note on gene mapping.
2. Explain about the isolation of RNA from yeast.
3. Write a note on computer aided drug design.
4. Discuss about the oxidation reduction potential.
5. Explain the term:
   a) Steric behavior b) Hydrogen bonding c) Polarity.
6. How microarray chips are developed? Give its significance.
7. Explain the factors to be considered in lead optimization.
8. Describe the structure of G- Protein coupled receptors.
9. Explain the importance of chelates in medicine.
10. Write a note on partition coefficient.

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