[KD 128] **Sub. Code : 2025**

M.D. DEGREE EXAMINATION.

Branch VI — Pharmacology

(New/Revised Regulations)

Paper I — GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Time : Three hours Maximum : 100 marks

Answer ALL questions.

1. Outline the role of nitric oxide in signal transduction in health and disease. List its implication for new drug development and pharmacotherapy. (25)

2. Briefly outline the various experimental methods for evaluating gastric anti-ulcer activity of drugs. (25)

3. Write briefly on : (5 × 10 = 50)

(a) Use of trasfenic animals in Pharmacology.

(b) Use of inbred strains of animals for experimentation.

(c) Principles of radio immune assay.

(d) Leukotriene antagonists.

(e) Role of placebo in clinical trials and its ethical aspects.

November-2001

[KE 128] **Sub. Code : 2025**

M.D. DEGREE EXAMINATION.

(New/Revised Regulations)

Branch VI — Pharmacology

Paper I — GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Time : Three hours Maximum : 100 marks

Answer ALL questions.

1. Explain the aims of BIOTRANSFORMATION of drugs. Describe the biotransformation reactions with suitable examples. What are the practical implications of these reactions? (25)

2. Define the term DRUG DEPENDENCE. Discuss the pharmacological aspects of drug dependence, with special emphasis on mechanisms of its development. Write a note on the drug management of dependence. (25)

3. Write briefly on : (5 × 10 = 50)

(a) Epidural administration of drugs.

(b) Drug antagonism.

(c) Environmental toxins.

(d) Phase IV clinical trials – relevance

(e) Drug induced allergic reactions.

March-2002

[KG 128] **Sub. Code : 2025**

M.D. DEGREE EXAMINATION.

(Old/New/Revised Regulations)

Branch VI — Pharmacology

Paper I — GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Time : Three hours Maximum : 100 marks

Answer ALL questions.

1. Discuss Drug Receptors and methods of discovery of new receptors. Explain the signalling mechanisms and drug action. (25)

2. Discuss the experimental methods for evaluation of antidiabetic drugs. (25)

3. Write briefly on : (5 × 10 = 50)

   (a) Rational therapeutics.

   (b) Phase I clinical trials.

   (c) Student 't' test.

   (d) Four point assay.

   (e) Furschgott.

[KH 128] **Sub. Code : 2025**

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch VI — Pharmacology

Paper I — GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIO ASSAY

Time : Three hours Maximum : 100 marks

Answer ALL questions.

1. Discuss G–proteins in detail. Critically discuss the role of G–proteins in signal transduction in various cells. (25)

2. Briefly explain the experimental models for evaluating anti–seizure drugs. (25)

3. Write briefly on : (5 × 10 = 50)

(a) Uses of isolated smooth muscle preparations in pharmacology.

(b) Merits and demerits of levers used in experimental pharmacology.

(c) Radio–immuno assay.

(d) Pharmacological importance of PGE_2 and PGI_2.

(e) Sequential analysis in clinical trials.

April-2003

[KI 128] **Sub. Code : 2025**

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch VI — Pharmacology

Paper I — GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Time : Three hours Maximum : 100 marks

Answer ALL questions.

1. Discuss in detail the molecular mechanism of drug action with suitable illustrations. (25)

2. Discuss the experimental models for screening the anti-psychotic drugs. (25)

3. Write briefly on : (5 × 10 = 50)

   (a) Sympathectomy

   (b) Pre-synaptic receptors

   (c) Phase IV clinical trials

   (d) Chromatography

   (e) Assay methods of polypeptides.

October-2003

[KJ 128] **Sub. Code : 2025**

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch VI — Pharmacology

Paper I — GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Time : Three hours Maximum : 100 marks

Theory :Two hours and forty minutes Theory : 80 marks

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

M.C.Q. must be answered **SEPARATELY** on the answer sheet provided as per the instructions on the first page.

Answer ALL questions.

Draw suitable diagrams wherever necessary.

1. Describe the mechanism of drug action through receptors. (15)

2. Describe the experimental models for screening Anti-inflammatory drug and their basis. (15)

3. Write briefly on : (5 marks each) (10 × 5 = 50)

(a) Pharmacogenetics.

(b) Importance of CyP 450 enzymes in therapy.

(c) Area under curve.

(d) Drug potency and efficacy.

(e) Teratogenecity.

(f) Pharmacovigilence.

(g) Plasma protein binding.

(h) Essential drugs in therapy.

(i) New/special drug delivery systems.

(j) Immunoassay.

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August-2004

[KL 128] **Sub. Code : 2025**

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch VI — Pharmacology

Paper I — GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Time : Three hours — Maximum : 100 marks

Theory : Two hours and forty minutes — Theory : 80 marks

M.C.Q. : Twenty minutes — M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I. Essay : (2 × 15 = 30)

(1) Describe G–Protein linked transduction mechanisms, which are responsible for receptor mediated drug effects with suitable examples of receptors and their ligands.

(2) Discuss the experimental methods used to evaluate anticonvulsant drugs.

II. Write short notes : (10 × 5 = 50)

(a) History of General anaesthesia

(b) Elimination of life

(c) Acute toxicity studies

(d) Bioavailability and Bioequivalence

(e) Ethical committee

(f) Students T test

(g) Spectrophotometer

(h) Bioassay of 5–Hydroxy triptamine

(i) Null hypothesis

(j) Hypertensive animal models.

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[KM 128] **Sub. Code : 2025**

M.D. DEGREE EXAMINATION.

(Revised Regulations)

Branch VI — Pharmacology

Paper I — GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Time : Three hours Maximum : 100 marks

Theory : Two hours and forty minutes Theory : 80 marks

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I. Essay : (2 × 15 = 30)

(1) Discuss the historical developments in introduction of drugs in the management of Diabetes mellitus.

(2) Give an overview of pharmacotinetics of drugs based on passage of drugs across biological membranes.

II. Write Short notes : (10 × 5 = 50)

(a) Bioavailability.

(b) Writing levers.

(c) Experimental methods in screening antidepressant drugs.

(d) Volume of distribution.

(e) Drug interactions involving microsomal enzymes.

(f) Drug induced polymorphic ventricular tachycardia.

(g) Preclinical drug toxicity studies.

(h) Pharmacogenetics.

(i) Experimental methods in evaluating an anticonvulsant drug.

(j) Bioassay of Acetyl choline.

[KO 128] **Sub. Code : 2025**

M.D. DEGREE EXAMINATION.

Branch VI — Pharmacology

Paper I — GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Time : Three hours Maximum : 100 marks

Theory : Two hours and forty minutes Theory : 80 marks

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I. Essay : (2 × 15 = 30)

(1) Describe drug efficacy at G-Protein coupled receptors.

(2) Describe the mechanisms in Hepato Biliary and renal excretion of drugs and drug–drug interactions.

II. Write short notes on : (10 × 5 = 50)

(a) Computer aided drug design.

(b) Role of drug transporters at the blood brain barrier.

(c) Sex differences in pharmacokinetics.

(d) Transporters involved in renal elimination of drugs.

(e) Role of metabolic activation in drug induced hepatotoxicity.

(f) Experimental methods to evaluate a diuretic agent.

(g) Bio Assay using intact animals.

(h) Induction of drug metabolising enzymes and its consequences.

(i) Anti tussives – screening methods.

(j) Rat uterus as an experimental method.

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[KQ 124] **Sub. Code : 2025**

M.D. DEGREE EXAMINATION.

Branch VI — Pharmacology

GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Common to

Paper I — (Old/New/Revised Regulations)
(Candidates admitted from 1988–89 onwards)

and

Paper I — (For candidates admitted from 2004–2005 onwards)

Time : Three hours — Maximum : 100 marks

Theory : Two hours and forty minutes — Theory : 80 marks

M.C.Q. : Twenty minutes — M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I. Essay :

1. Discuss the functional and structural families of physiological receptors in relation to mechanism of action of common, important drugs in each family. (20)

2. Give an overview of pharmacotinetics of drugs based on passage of drugs across biological membranes. (15)

3. Discuss briefly the New Drug Development and Approval process. (15)

II. Short notes : (6 × 5 = 30)

(a) P glycoprotein.

(b) Nonlinear Pharmacokinetics.

(c) Principles of HPLC.

(d) Iatrogenic Cardiotoxicity.

(e) Pharmacogenomics.

(f) Therapeutic Drug Monitoring.

[KR 126] **Sub. Code : 2023**

M.D. DEGREE EXAMINATION.

Branch VI — Pharmacology

GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Common to

Paper I — (Old/New/Revised Regulations)

(Candidates admitted from 1988-89 onwards)

and

Paper I — (For candidates admitted from 2004–2005 onwards)

Time : Three hours Maximum : 100 marks

Theory : Two hours and forty minutes Theory : 80 marks

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

Answer ALL questions.

I. Long Essay :

1. (a) What is pharmacogenomics?

(b) Discuss its role in drug discovery and development. (20)

2. (a) What are the common laboratory animals used for experimentation?

(b) Mention any two experiments in which each animal is used.

(c) Add a note on the use of transgenic animals in drug research. (15)

3. Discuss in detail the clinical implications of plasma proteins binding of drugs. (15)

II. Short notes : (6 × 5 = 30)

(a) Patient compliance

(b) Graded dose response

(c) Randomization

(d) Non-neuronal transporters as drug targets

(e) Clinical importance of taking drug history

(f) Chronic toxicity tests.

MARCH 2008

Wk 14

[KS 125] **Sub. Code : 2022**

M.D. DEGREE EXAMINATION.

Branch VI — Pharmacology

GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Common to all candidates

Q.P. Code : 202022

Time : Three hours Maximum : 100 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I. Long Essay : ($2 \times 20 = 40$)

1. Discuss the transmembrane signaling mechanisms and drug action. (20)

2. Discuss the methods used for evaluating a drug for use as an analgesic agent both in animals and humans. (20)

II. Write short notes on : ($10 \times 6 = 60$)

(1) Pharmacological basis of drug interactions

(2) Post license studies

(3) Modified declaration of Helsinki

(4) Transgenic animals in experimental pharmacology

(5) Controls

(6) Newer drug delivery system

(7) Drug dependence

(8) Antagonism

(9) Ion channels

(10) Prodrugs.

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March 2009

[KU 125] **Sub. Code: 2022**

M.D. DEGREE EXAMINATION

Branch VI – PHARMACOLOGY
(Common to all candidates)

Paper I – GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY
Q.P. Code : 202022

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

Draw suitable diagram wherever necessary.
Answer ALL questions.

I. Essay questions : **(2 x 20 = 40)**

1. Explain how drugs undergo changes in the body before they are excreted. Discuss the clinical relevance.

2. Enumerate the methods of bioassay of 5 hydroxytryptamine. Describe the experimental details of one of the most sensitive preparations.

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

1. Therapeutic drug monitoring.
2. Randomisation.
3. Cytoplasmic second receptors.
4. Acute toxicity studies.
5. Spurious drugs.
6. Drug-drug interactions.
7. Pharmacovigilance.
8. Radio immunoassay.
9. Non receptor mediated drug actions.
10. Drugs and pregnancy.

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September 2009

[KV 125] **Sub. Code: 2022**

M.D. DEGREE EXAMINATION

Branch VI – PHARMACOLOGY
(Common to all candidates)

Paper I – GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY
Q.P. Code : 202022

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

Draw suitable diagram wherever necessary.
Answer ALL questions.

I. Essay questions : **(2 x 20 = 40)**

1. Describe how a drug crosses cell membranes in the body and the factors influencing the same.

2. Describe experimental models available to screen a potential immunosuppressant agent.

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

1. Different compartment pharmacokinetic models.
2. Drug induced hepatotoxicity.
3. Experimental evaluation of a potential diuretic agent.
4. Toxicity testing in animal models for teratogenicity.
5. Substance abuse in sports.
6. Enzyme linked receptors.
7. General anaesthetics used on laboratory animals.
8. Interpolation and matching bioassay methods.
9. Influence of age on drug action.
10. Experimental set up for isolated tissue preparations.

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March 2010

[KW 125] **Sub. Code: 2022**

M.D. DEGREE EXAMINATION

Branch VI – PHARMACOLOGY
(Common to all candidates)

Paper I – GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Q.P. Code : 202022

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

Draw suitable diagram wherever necessary.
Answer ALL questions.

I. Essay questions : **(2 x 20 = 40)**

1. Explain the aims of biotransformation of drugs. Describe the biotransformation reactions with suitable examples. What are the practical implications of these reactions?

2. Illustrate with examples the various procedures of assaying of drugs.

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

1. Drugs and subarachnoid space.
2. Spurious drugs.
3. Apoptosis and its therapeutic implications.
4. First and zero order kinetics.
5. Chromatographic techniques - clinical interpretation with examples.
6. Pharmacogenetics.
7. Exploratory therapeutic trials.
8. Paired ‘t’ test.
9. Acute tolerance.
10. Experimentally induced diabetes.

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September 2010

[KX 125] **Sub. Code: 2022**

M.D. DEGREE EXAMINATION

Branch VI – PHARMACOLOGY

Paper I – GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

(Common to all candidates)

Q.P. Code : 202022

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

Draw suitable diagram wherever necessary.
Answer ALL questions.

I. Essay questions : **(2 X 20 = 40)**

1. Discuss the Pharmacokinetic and Pharmacodynamic considerations in dermatological pharmacotherapy.

2. What is clearance of a drug? How is it calculated? Describe its clinical importance.

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

1. Polymorphism.
2. Street Drugs.
3. FDA Drug formulary during pregnancy.
4. Drug modifiers of G-protein coupled receptors.
5. Pre systemic metabolism.
6. Toxicity testing in animal models for teratogenicity.
7. Exploratory therapeutic trials.
8. Computer aided drug design.
9. Drug prescribing in renal insufficiency.
10. Substance abuse in sports.

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MAY 2011

[KY 125] **Sub. Code: 2022**

M.D. DEGREE EXAMINATION

BRANCH VI – PHARMACOLOGY

GENERAL PHARMACOLOGY, EXPERIMENTAL

PHARMACOLOGY AND BIOASSAY

Q.P. Code : 202022

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

(180 Min)

Answer ALL questions in the same order.

	Pages (Max.)	Time (Max.)	Marks (Max.)
I. Essay:			
1. Write in detail about Pharmacogenetics.	6	15	10
2. Discuss evaluation techniques for analgesic agents.	6	15	10
II. Short Questions:			
1. Half life.	3	8	5
2. Hepatic transporters.	3	8	5
3. G-protein coupled receptors.	3	8	5
4. Radioimmunoassay.	3	8	5
5. Excretion of drugs.	3	8	5
6. Alternatives to animal experiments. v			
7. Role of polygraph in pharmacology research.	3	8	5
8. Transgenic animals.	3	8	5
III. Reasoning Out:			
1. Value of non-parametric statistical tests.	4	10	5
2. Preclinical testing of new drugs.	4	10	5
3. Post-marketing surveillance of new drugs.	4	10	5
4. Randomization in clinical trials.	4	10	5
IV. Very Short Answers :			
1. Define normal distribution.	1	4	2
2. Define clearance.	1	4	2
3. Define standard deviation.	1	4	2
4. List four drugs used to anaesthetize lab animals.	1	4	2
5. Define Cmax.	1	4	2
6. Define bioavailability.	1	4	2
7. Simple lever versus frontal lever.	1	4	2
8. List drugs used for chemical euthanasia.	1	4	2
9. Define volume of distribution.	1	4	2
10. Define therapeutic index.	1	4	2

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April 2012

[LA 125] **Sub. Code: 2022**

M.D. DEGREE EXAMINATION
BRANCH VI – PHARMACOLOGY
GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY
Q.P. Code : 202022

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

Answer ALL questions in the same order.

	Pages (Max.)	Time (Max.)	Marks (Max.)
I. Essay:			
1. Discuss briefly the new – drug development and approval Process.	9	15	10
2. Describe in detail transmembrane signaling mechanism.	9	15	10
II. Short Questions:			
1. Apoptosis.	3	8	5
2. Various techniques used in gene therapy.	3	8	5
3. Randomization.	3	8	5
4. Compartment models.	3	8	5
5. Therapeutic window.	3	8	5
6. Drug antagonism.	3	8	5
7. Chemical sympathectomy.	3	8	5
8. Radio – Immuno Assay.	3	8	5
III. Reasoning Out:			
1. Rational use of drugs.	5	10	5
2. Safe drugs in pregnancy.	5	10	5
3. Spare receptors.	5	10	5
4. Fixed dose combination.	5	10	5
IV. Very Short Answers :			
1. Mention four gene transfer vectors.	1	4	2
2. Write the significance of plasma proteins.	1	4	2
3. Write the consequence of microsomal enzyme induction.	1	4	2
4. Discuss the merits and demerits of Bio assay.	1	4	2
5. Define Tachyphylaxis with suitable examples.	1	4	2
6. What is plasma half life?	1	4	2
7. Write the advantages of prodrug.	1	4	2
8. Role of Transgenic animals in evaluation of drugs.	1	4	2
9. Common laboratory animals for experimentation.	1	4	2
10. Advantages of log dose response curves.	1	4	2

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(LC 125) **APRIL 2013** **Sub. Code: 2022**

M.D. DEGREE EXAMINATION

BRANCH VI-PHARMACOLOGY

GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Q.P. Code : 202022

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

I. Essay: **(2X10=20)**

1. Discuss in detail about pharmacogenomics.
2. Significance of Biotransformation in pharmacotherapy.

II. Short Questions: **(8X5=40)**

1. Chronopharmacology
2. Therapeutic Drug Monitoring
3. Drug allergy
4. Tyrode solution
5. Pharmacovigilance
6. Anova
7. Alternatives to animal experiments
8. Drugs in pregnancy and lactation

III. Reasoning Out: **(4X5=20)**

1. Immunological tolerance
2. Drugs and blood brain barrier
3. Significance of liposomal drug delivery
4. Blinding in clinical trials

IV. Very Short Answers: **(10X2=20)**

1. Rabbit as experimental animal
2. Lead compound
3. Orphan drug
4. Chirality
5. Mention 4 alkaloids and their uses
6. Saturation kinetics
7. Suicide inhibitors
8. Physiological antagonism
9. Surrogate markers
10. Holfmann elimination

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[LD 125] **OCTOBER 2013** **Sub. Code: 2022**

M.D. DEGREE EXAMINATION

BRANCH VI – PHARMACOLOGY

GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Q.P. Code : 202022

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

I. Essay: **(2 x 10 = 20)**

1. Discuss briefly the biotransformation of drugs.
2. Describe in detail transmembrane signaling mechanism .

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

1. Drug synergism.
2. Randomization.
3. Drug Tolerance.
4. Drug Accumulation.
5. Techniques used in gene therapy.
6. Idiosyncratic reactions.
7. Radio-Immuno Assay.
8. Volume of Distribution.

III. Reasoning Out: **(4 x 5 = 20)**

1. Spare receptors.
2. Drugs used in Pregnancy Hypertension.
3. Pharmacogenomics.
4. Structure activity relationship.

IV. Very Short Answers: **(10 x 2 = 20)**

1. Define Tachyphylaxis with suitable examples.
2. Advantages of log dose response curves.
3. Describe competitive antagonism.
4. Describe G protein coupled receptors.
5. Discuss Therapeutic drug monitoring.
6. Tyrosine kinase blockers as drugs.
7. Discuss Glucuronide conjugation reactions.
8. Preclinical toxicity screening.
9. Drug enantiomer.
10. Bio equivalence.

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(LE 125) **APRIL 2014** **Sub. Code:2022**

M.D. DEGREE EXAMINATION

BRANCH VI - PHARMACOLOGY

GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSY

Q.P.Code: 202022

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

I. Essay: **(2X10=20)**

1. Write in details about the Drug Interactions. Mention the advantages and disadvantages of fixed drug combinations.

2. Write in detail about the various preclinical & clinical screening procedures for anti epileptics.

II. Short Questions: **(8X5=40)**

1. Phase II clinical trial
2. Clearance
3. Small animal anesthesia methods
4. DNA recombinant technique
5. Elisa use in pharmacological research
6. Randomization
7. Ion channel
8. Levers in preclinical research.

III. Reasoning Out: **(4X5=20)**

1. 5HT and vascular headache
2. Dopamine and acute renal failure
3. Pharmacogenetics in therapy
4. Physiological antagonism

IV. Very Short Answers: **(10X2=20)**

1. Solvents/vehicle
2. Body weight in drug treatment
3. Hoffman elimination
4. Apparent volume distribution
5. Pro drug
6. Micro dose
7. Nucleic acid receptor
8. Therapeutic paradox
9. Implants
10. Steady state concentration

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(LF 125) **OCTOBER 2014** **Sub. Code:2022**

M.D. DEGREE EXAMINATION

BRANCH VI - PHARMACOLOGY

PAPER I - GENERAL PHARMACOLOGY, EXPERIMENTAL PHARMACOLOGY AND BIOASSAY

Q.P.Code: 202022

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

I. Essay: **(2 x 10 = 20)**

1. Discuss the process of new drug development and its approval.
2. Give a detailed account of the screening methods for evaluating an analgesic agent.

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

1. Spectrophotometer and its uses.
2. Transgenic animals.
3. Evidences for Neurohumoral transmission.
4. Plasma protein binding of drugs.
5. Pharmacovigilance.
6. Cytoplasmic second messengers.
7. Tyrosine kinase inhibitors.
8. Matching bioassay method.

III. Reasoning Out: **(4 x 5 = 20)**

1. Importance of sample size calculation in clinical trials
2. Preclinical testing of a drug.
3. Transdermal therapeutic systems.
4. Sustained release formulations.

IV. Very Short Answers: **(10 x 2 = 20)**

1. Ehrlich and Langley.
2. Ceiling effect in a Dose Response curve.
3. Define precision.
4. Students ‘t’ test.
5. Chirality.
6. Spare receptors.
7. First order kinetics
8. List four drugs that attain high concentration in bile.
9. Define C max.
10. Inverse agonist.

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