



# ANDHRA UNIVERSITY

## TRANS-DISCIPLINARY RESEARCH HUB

### ADVANCED PHARMACOLOGY

#### **UNIT-I: Basic principles of Pharmacology**

Mechanisms of drug action, Types of Receptor proteins and their molecular structure, Targets for G-Protein coupled receptors, Protein phosphorylation and Kinase cascade mechanisms, Cellular aspects- Excitation, Contraction and Secretion.

#### **UNIT-II: ADME of drugs**

Transfer of drugs through biological membranes. Plasma protein binding of drugs. Microsomal & Non-microsomal biotransformation of drugs. Excretion of drugs by various routes.

#### **UNIT -III: Endogenous Mediators**

1. Histamine
2. Prostaglandins
3. Leucotrienes
4. Kinins
5. Opioids
6. Nitric oxide

#### **UNIT -IV:**

Common laboratory animals in pharmacological research. Anaesthetics used in laboratory animals, Some standard techniques used in handling laboratory animals. Regulation for the care and use of laboratory animals. Acute, Sub-acute, and Chronic toxicity studies.

#### **UNIT-V:**

Strategies and approaches employed in drug discovery. Basic concepts of combinatorial chemistry, High throughput screening, Cell lines and their applications in drug discovery. Transgenic animal models in the development of new drugs.

#### **UNIT-VI:**

Stem Cell: Basic concepts and their therapeutic applications in medicine.  
Free radicals - their role in biological system, endogenous anti-oxidant system.

#### **RAS**

**UNIT-VII: Screening methods and biological assay:** Simple, Blind and Programmed screening. Organization for Screening of Pharmacological activity and Evaluation of new substances.

[Methods used in the bioassays and development of new bioassay methods.]

#### **UNIT-VIII: Pharmacology of Receptors**

1. Excitatory amino acid receptors
2. Purinoreceptors
3. Cannabinoid receptors
4. Adrenergic receptors
5. Cholinergic receptors
6. Dopaminergic receptors
7. Serotonergic receptors



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### MODEL QUESTION PAPER

**Time: 3 Hrs**

**Max. Marks: 100**

**Answer any FIVE questions**

**All questions carry equal marks**

1. Write about the following.
  - a) What are GPCRS? Discuss in detail about signal transduction pathways of GPCRS.
  - b) Discuss about the mechanism of contraction of skeletal muscle.
2. Discuss in detail about the following.
  - a) Biological factors affecting drug absorption.
  - b) Phase I metabolic reactions.
3. Describe the following.
  - a) Biosynthesis and functions of serotonin.
  - b) Physiological and pathological functions of prostaglandins.
4. Discuss about the following.
  - a) CPCSEA guidelines
  - b) Acute toxicity studies
5. Write about the role of the following in drug discovery.
  - a) High throughput screening
  - b) In vitro testing of drugs
6. Discuss about the following.
  - a) Types of stem cells and their applications.
  - b) Production of free radicals.
7. Write about the following.
  - a) Programmed screening.
  - b) Different bioassay methods.
8. Discuss about the following.
  - a) Glutamate receptors.
  - b) Adrenergic receptors.