

B.Pharm 7th Semester :

1.7.1: Pharmaceutics-VII (Bio Pharmaceutics & Pharmacokinetics)

Theory

36 Hours.

UNIT-I.

1. Introduction to Biopharmaceutics and Pharmacokinetics and their role in formulation development and clinical setting.
2. Biopharmaceutics :
 - a. Passage of drugs across biological barrier (Passive diffusion, active transport, facilitated diffusion and pinocytosis)
 - b. Factors influencing absorption- physicochemical, physiological and pharmaceutical.
 - c. Drug distribution in the body, plasma protein binding.
3. Pharmacokinetics:
 - a. Significance of plasma drug concentration measurement.
 - b. Compartment model- definition and scope. Non-compartmental and model independent pharmacokinetic.
 - c. Pharmacokinetics of drug absorption- Zero order and first order absorption rate constant using Wagner- Nelson and Loo Reigelman method.
 - d. Volume of distribution and distribution coefficient.

UNIT-II

4.
 - a. Compartment kinetics- One compartment and preliminary information of multi-compartments. Determination of pharmacokinetic parameters from plasma and urine data after drug administration by intravascular and oral route.
 - b. Clearance concept, mechanism of renal clearance, clearance ratio, determination of renal clearance.

- c. Extraction ratio, hepatic clearance, biliary excretion, extrahepatic circulation.
 - d. Non-linear Pharmacokinetics with special reference to one compartment model after I.V. drug administration, Michaelis Menten Equation, detection of non-linearity (Saturation mechanism).
5. Bioavailability and bio-equivalence:
- a. Measures of bioavailability, C max, t max, and Area Under Curve (AUC).
 - b. Design of single dose bio-equivalence study and relevant statistics.
 - c. Review of regulatory requirements for conduction of bio-equivalent studies.

Practical : 36 hours

1. Experiments designed for the estimation of various pharmacokinetic parameters with given data.
2. Analysis of biological specification for drug content and estimation of the pharmacokinetic parameters.
3. In-vitro evaluation of different dosage forms for drug release.
4. Absorption studies – in vitro and in –vitro and in....situ
5. Statistical treatment of pharmaceutical data

B.Pharm 7th Semester

1.7.2: Pharmaceutical Chemistry-VII (Medicinal Chemistry-II)

Theory

36 Hours.

UNIT-I

Synthetic procedures of selected drugs, mode of action, uses, structure activity relationships including physicochemical properties of the following classes of drugs.

1. Steroids and related drugs: Steroidal nomenclature and stereochemistry, androgens and anabolic agents, estrogens, and progestational agents, adrenocorticoids.
2. Diuretics, anti hypertensive drugs, anticoagulants, antilipemics, dragnostic agents and antiplatelet drugs.

UNIT-II

3. Drugs acting on the Central Nervous System:

- (i) General Anesthetics and local anesthetics.
- (ii) Hypnotics and Sedatives.
- (iii) Opioid analgesics, and antitussives.
- (iv) Anticonvulsants.
- (v) CNS stimulants.
- (vi) Psychopharmacological agents (neuroleptics, antidepressants, anxiolytics).

Practical 36 hours

1. Introduction to the use of stereo models.
2. An exercise involving stereo-selective synthesis of a compound.
3. Resolution of racemic DL- alanine or any other racemic mixture.
4. Workshop on molecular modeling of primary, secondary and ten structures of proteins, molecular modeling on double helical structure nucleic acid showing hydrogen bonding.

B.Pharm 7th Semester
1.7.3: Pharmacognosy -IV

Theory

36 Hours.

UNIT-I

1. General Principles of plant genetics dealing with pharmaceutical examples and applications.
2. World wide trade in medicinal plants and derived products special reference to diosgenin (disocorea), taxol(Taxes sos) digitalis tropare alkaloid containing plants, Papain, Cinchona, 1 peace, Liquorice, Ginseng, Aloe, valerran, Rauwolfra and plants containing laxatives.
3. a brief account of plant based industries and institutions involved work on medicinal and aromatic plants in India. Utilization and production of phyto constituents such as quinine, calcium sennosides, podophyllotosin, diosgenin solasodine, and tropane alkaloids.
4. utilization of aromatic plants and derived products with special reference to sandalwood oil, mentha oil, lemon grass oil, vetiver oil, geranium oil and euealyptus oil

UNIT-II

5. Historical development of plant tissue culture, types of culture, nutritional requirements, growth and their maintenance applications of plant tissue culture in Pharmacognosy).
6. Principles and method of quantitative microscopical analysis.
7. Antibiotics with special reference to penicillin, Streptomycin and Tetracycline.
8. Microbial Transformation of steroids.

Practical

36 hours

1. Isolation of some selected phytoconstituents studied in theory.
2. Extraction of volatile oils and their chromatographic profiles.

...ments in plant tissue culture.

B.Pharm 7th Semester

1.7.4: Pharmacology-II

Theory

36 Hours.

UNIT-I

1. Pharmacology of cardiovascular system:

- i. Digitalis and cardiac glycosides, (b) Antiarrhythmic drugs,
© Coronary dilators, (d) Anti-hypertensive drugs.**

2. Drugs acting on the Hemopoietic system:

- (a) Hematinics and growth hormones.**
- (b) Anticoagulants, Vitamin K and Hemostatic agents.**
- (c) Fibrinolytic and anti-platelet drugs.**
- (d) Blood and plasma volume expanders.**

UNIT-II

3. Drugs acting on urinary system:

- (a) Fluid and electrolyte balance restorers.**
- (b) Diuretics and antidiuretics**

4. Autacoids:

- (a) Histamine, 5-HT and their antagonists.**
- (b) Prostaglandins, thromboxanes and leukotrienes and kinins.**

5. Drugs acting on the respiratory system:

- (a) Anti asthmatic drugs including bronchodilators and mucolytics**
- (b) Anti-tussive and expectorants.**
- (c) Respiratory stimulants.**

Practical

36 hours

Recording of spontaneous motor activity. Stereotype –analgesia, anticonvulsants, anti-inflammatory and muscle relaxant activities of drugs using simple experiments.

B.Pharm 7th Semester
1.7.5: ELECTIVE
(APPLIED PHARMACEUTICAL SCIENCE)

Theory : 36 Hours.

UNIT-I

1. a. Pre-formation studies.

- (i) Physiochemical, Chemical and Biological Parameters including stability studies.**
- (ii) Bio Pharmaceutical consideration.**
- (iii) Evaluation of the dosage form.**

b. (i) Packing of Pharmaceutical dosage form, Container, closure selection, advantage, disadvantages and limitation.

(ii) Cosmeticology- Commonly used cosmetic like dental preparations, cold cream and vanishing cream, Body Lotion and powders. Evaluation including toxicity studies.

2. a. Study of different bio-chemical and pharmacological methods in laboratory to determine blood glucose, cholesterol, SGOT, SGPT, Serum bilirubin, RNA, DNA etc. Bio-assay.

b. (i) Toxicology (Environmental, Teratogenesis and Reproductive)

(ii) Adverse drug reaction and patient safety.

3. Establishing a Pharmaceutical Factory – Governing Laws, site selection, placement of buildings , area and other requirements of each department, layout of each department, material handling, safety, future expansion.

UNIT-II

4. Quality Control and quality assurance(definition, scope, introduction to different methodologies of chemical, microbiological and pharmacological, GMP, validation of instruments and analytical procedures), Modern pharmaceutical Analytical Techniques (Spectrophotometry in determination of concentration and structure elucidation with the knowledge of interpretation of spectra).
5. Knowledge on new drugs synthesis of organic and heterocyclic compounds and purity concern mode of action of some important categorized drugs, determination and significance of physico-chemical parameters, importance of Nucleic acids, Genetic engineering and its application.
6. (a) Pharmacognostical studies (Morphology, winislet number, stomatal index, palisade ratio, size determination of drug samples, ash values and extractives, refractive index, moisture content, viscosity, melting point, solubility, optical rotation, foreign organic matter, microbiological limits, biological evaluation) of root, wood, bark, leaf, seed, fruit, flower and their products.
(b) Phytochemical studies (Extraction, identification, chromatography, chemical evaluation, physico-chemical determination, structure elucidation, microbiological/biological evaluation) of the products of root, wood, bark, leaf, seed, fruit, flower.