II Year B. Pharmacy I Semester

3+1+0 3

(R9201) PHARMACEUTICAL UNIT OPERATIONS

UNIT I

Stoichiometry: Unit processes, material and energy balance, molecular units, mole fractions, gas laws, mole volume, primary and secondary quantities, equilibrium state, rate process, steady and unsteady states, dimensionless equations, dimensionless symbols, dimensionless groups, different types of graphs, representation, mathematical problems.

UNIT II

Fluid Flow: Types of flow, Reynolds number, viscosity, concept of boundary layer, basic equations of flow, flow, flow meters, manometers and measurement of flow and pressure.

UNIT III

Material Handling Systems:
- Liquid handling: Study of different types of pumps such as reciprocating pumps, turbine pumps and centrifugal pumps.
- Gas handling: Various types of fans, blowers and compressors.
- Solid handling: Conveyors.

UNIT IV

Filtration and Centrifugation: Theory of filtration, filter aids, filter media, industrial filters including filter press, rotary filter, edge filter, etc. Factors affecting filtration, mathematical problems of filtration, optimum cleaning cycle in batch filters.

Principles of centrifugation, industrial centrifugal filters, centrifugal filters, and centrifugal sediments.

UNIT V


UNIT VI

Dehumidification and Humidity Control

Basic concepts and definition, wet bulb and adiabatic saturation temperature.

Psychrometer chart and measurement of humidity, application of humid measurement in pharmacy, equipments for dehumidification operations.

UNIT VII

Materials of Construction: General study of composition, corrosion, resistant properties and applications of the materials of construction with special reference to stainless steel and glass.

UNIT VIII

Industrial hazards and safety precautions: Mechanical, Chemical, Electrical, fume hazards, Industrial dermatoses, accident records etc.

TEXT BOOKS

2. C.V.S. Subramaniam, Pharmaceutical Unit Operations, Vallabi Prakasan.
5. Pharmaceutical Engineering By DFRB

REFERENCES

1. Perry's Handbook of Chemical Engineering.
2. Unit Operations by McCabe & Smith.
3. McCabe & Smith, Elements of Chemical Engineering.
5. F.A Rawlin, Bently's Text Book of Pharmaceutics, 8th edition, ELBS
UNIT VI

a. Glycosides: Definition and glycosidic linkages, enzymatic hydrolysis, physiological importance.

b. Lipids (oils and fats): Definition, fatty acids, characterization of lipids (Saponification value, acid value and iodine value), hydrogenation and ramification of oils and fats.

UNIT VII

a) Purine derivatives (xanthine bases): Chemical structures of uric acid and methylated xanthines (caffeine, theophylline and theobromine) of physiological/pharmaceutical significance.

b) Definitions of nucleic Acids, nucleotides, nucleosides. A brief account on structure of DNA & RNA.

UNIT VIII

A study of the mechanism and application in synthesis of the following named reactions:

A. Beckmann rearrangement
B. Birch reduction
C. Mannich reaction
D. Michael addition reaction
E. Wittig reaction
F. Lossen rearrangement
G. Curtius rearrangement
H. Schmidt reaction

TEXT BOOKS

4. Eftel, Stereochimistry of Organic compounds.
6. Organic reactions, Stereochimistry & mechanism by PS Kalsi

REFERENCES

2. Cram & Hammond, Organic Chemistry
3. A.I. Vogel, A textbook of practical organic chemistry
4. Solomons, Organic Chemistry
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

1 Year B. Pharmacy 1 Semester

STATISTICAL METHODS AND COMPUTER APPLICATIONS

Section A: Bio-statistics

UNIT-I

data collection and treatment: Significant digits and rounding of numbers, data collection, random and non-random sampling methods, sample size, data organization, diagrammatic representation of data, bar, pie, 2-D and 3-D diagrams, standard deviation and standard error of mean, coefficient of variation, confidence (fiducial) limits, probability and events.

probability and Distributions: Bayes' theorem, probability theorem, probability distribution, elements of binomial and Poisson distribution, normal distribution curve and properties, kurtosis and skewness.

UNIT-II

Regression: Correlation and regression analysis, method of least squares and non-linear regression.

UNIT-III

statistical inference: Common parametric and non-parametric tests employed in testing of significance in biological/pharmaceutical experiments and elements of NORMA (One way and two way).

UNIT-IV

Design of experiments: Basic concepts of CRD, RBD and Latin square designs.

Sampling and Quality Control: Concept of random sampling, statistical QC charts, applications of statistical concepts in pharmaceutical sciences.

Section B: Computer Applications

UNIT-V

touch view of Computer with general applications: components of computers, computer languages, usage of computers, Interactions of Operating systems.

UNIT-VI

INTRODUCTION TO MS OFFICE: MS-Word: Basics, working with files, working with text, formatting paragraphs, styles, lists, tables, graphics, spellings and grammar. Page formatting macros, table of contents.

MS-EXCEL: Basics, spreadsheets, data types, formulas, formatting, charts, graphs.

MS-POWER POINT: Power point basics, views, slide controls, applied design, page setup, templates, background control, colour screens, transitions, and animations, working with texts, and working with graphics.

MS-Acess: Database concepts, screen layouts, creating tables, data sheet records, report relationships, sorting and filtering, queries forms, form controls, sub forms, reports; importing, exporting, linking.

UNIT-VII

Information Technology today: Internet and world wide Web (WWW): structure and organization of the www, browsers, information search in www, search engines, pharmaceutical resources in www, types of indexing tools and search strategies; Hyper Text Markup Language (HTML) and E-mail.

Database Management: Concepts and Objectives of database management systems, advantages of the database management systems and examples of DBMS packages (like DBASE III).

Introduction to structured Query language (SQL): overview of SQL, Reserved words, SQL Commands.

UNIT-VIII

Computer applications in pharmaceutical and clinical studies, computer validation introduction.

TEXT BOOKS

1. 
Punab Kumar Beinjee, Introduction to Biostatistics
2. Bio Statistics and Computer applications By GN Rao
3. Text book of STATISTICAL Methods and computer applications by Dr. A. Ramakrishna Prasad.

REFERENCES

4. Y. Raja Ram, Computer Programming in C.
UNIY I

Intermolecular forces and states of matter: Binding forces between molecules, the states of matter, the gaseous state, the liquid state, solids and the crystalline state. Phase equilibria and the phase rule.

UNIT II

Thermodynamics: The first law of thermodynamics, Thermochemistry. The second law of thermodynamics. The third law of thermodynamics, Free energy functions and applications.

UNIT III

Physical properties of Drug Molecules: Dielectric constant, induced polarization, dipole moment, refractive index and molar refraction and optical rotatory dispersion.

UNIT IV

Solutions of Non electrolytes: Concentration expressions, ideal and real solutions, colligative properties, molecular weight determinations.

UNIT V


UNIT VI

Ionic equilibria: Modern theories of acids, bases and salts. Sorensen's pH scale, species concentration as a function of pH, calculation of pH and acidity constants.

UNIT VII

Buffers and buffered isotonic systems: The buffer equation, buffer capacity, buffers in pharmaceutical and biological systems, buffered isotonic solutions, methods of adjusting toxicity and pH (relevant numerical problems).

UNIT VIII


TEXTBOOKS

Jawaharlal Nehru Technological University
Hyderabad

II Year B. Pharmacy I Semester

T P C
3+1+0 3

(R9205) ANATOMY, PHYSIOLOGY AND PATHOPHYSIOLOGY

UNIT I

Central Nervous System: Functions of different parts of brain and spinal cord. Neurochemical transmission in the central nervous system, reflex action, electroencephalogram, specialized functions of the brain, cranial nerves and their functions. epilepsy, psychosis, depression, mania.

UNIT II

Autonomic Nervous System: Physiology and functions of autonomic nervous system. Mechanism of neurotransmitter transmission in the A.N.S.

UNIT III

Urinary System: Various parts, structures and functions of the kidney and urinary tract. Physiology of urine formation and acid base balance, urinary tract infections, acute and chronic renal failure.

UNIT IV

Reproductive Systems: Male and Female reproductive systems and their hormones, physiology of menstruation, coitus and fertilization. Sex differentiation, spermatogenesis & oogenesis. Pregnancy its maintenance and parturition.

UNIT V

Digestive System: Gross anatomy of the gastro-intestinal tract, functions of its different parts including those of liver, pancreas and gall bladder, various gastrointestinal secretions and their role in the absorption and digestion of food. peptic ulcer, ulcerative colitis, hepatic disorders.

UNIT VI


UNIT VII

Endocrine System: Basic anatomy and physiology of pituitary, thyroid, parathyroid, adrenals, pancreas, testes and ovary, their hormones and functions. Diabetes, thyroid.

UNIT VIII


TEXT BOOKS

2. Elaine N. Marieb, Essential of Human Anatomy & Physiology
3. Robbins, SL & Kumar, Basic Pathology
4. Sherwood- Principles of Human Physiology
5. Ross & Willson, Principles of anatomy and physiology

REFERENCE BOOKS

1. A.C Guyton, Textbook of medicinal physiology by by W.B.Prism books Pvt. Ltd., Delhi
2. Joseph Dipiro, Patho Physiology and applied therapeutics
4. Zaltzmann, Essentials of Pathophysiology for pharmacy

JNTUFORUM.COM
II Year B. Pharmacy I Semester

(R9206) PHARMACEUTICAL ORGANIC CHEMISTRY-II LAB

I. Synthesis of some simple heterocyclic compounds.
   a. 3,5-Dimethylpyrazole from Acetoneacetonitrile.
   b. 3,5-Dimethylisoxazole from Acetoneacetonitrile.
   c. 4,5-Diphenoxyimidazole from Benzil.
   d. Benzoxazole from o-Aminophenol.
   e. 2,5-Dioxopiperazine from Glycine.
   f. Oxazolidone from Benzoylacetone.

II. Molecular rearrangements and named reactions
   a. Benzimidazole from o-phenylenediamine (Phillip's Reaction).
   b. O-hydroxyacetophenone from phenyl acetate (Fries migration)
   c. Benzamidine from benzophenone oxime (Bekmann's rearrangement)
      (To be avoided from End Examination)
   d. Preparation of 2-phenylthiadole from Phenylhydrazine by Fischer's method.

III. Systematic analysis of organic binary mixtures

IV. Analysis of oils & fats
   a. Determination of Acid value of fixed oil.
   b. Determination of Saponification value of a fixed oil.
   c. Determination of Iodine value of a fixed oil.
   d. Determination of Acetyl value of a fixed oil.

REFERENCES
1. Indian Pharmacopoeia, 1996.
2. A. L. Vogel's Practical Organic Chemistry
(R9208) PHYSICAL PHARMACY I LAB

1. Percent composition Capillary Flow method
2. Percent composition polarimeter & refraction meter
3. Molecular weight: Lindsberger method
4. Molecular weight: Raoult's method
5. Calibration of pH Meter
6. pH Estimation pH meter
7. pH Estimation colorimetric method
8. pH Estimation by Half Neutralization method
9. Refractive index of liquids
10. Phenol water system: CST
11. Lower consolute temperature Test and Water
12. Heat of neutralization
13. Phase diagram - Phenol Water, Effect of Impurities
14. Ternary phase diagram
15. Preparation of Buffers and Buffer Capacity Determination.

(R9209) HEALTH EDUCATION & PATHOPHYSIOLOGY LAB

1. Study of reproductive system with the help of charts and models
2. Various devices used in family planning like Copper I.UD, T. Lippes loop, Pills, Diaphragm and Condom.
3. Microscopic studies of abnormal tissue sections
4. Simple experiments involved in the analysis of normal and abnormal urine: collection of specimen, appearance, determination of pH, sugars, proteins, urea and creatinine
5. Physiological experiments on nerve-muscle preparations

REFERENCES
1. Planner, Practical Biochemistry
2. Chatterjee, Human Physiology

JNTUFORUM.COM