ENGLISH

DETAILED TEXT-I : Recommended Topics :

1. THE KNOWLEDGE SOCIETY- APJ KALAM (RAVINDRA PUBLISHERS)
   OBJECTIVE: To make the learners rediscover India as a land of Knowledge.
   OUTCOME: The learners will achieve a higher quality of life, strength and sovereignty of a
developed nation.

2. MAN'S PERIL (RAVINDRA PUBLISHERS)
   OBJECTIVE: To inform the learner that all men are in peril.
   OUTCOME: The learner will understand that all men can come together and avert the peril.

3. IN LONDON: M.K.GANDHI (RAVINDRA PUBLISHERS)
   OBJECTIVE: To apprise the learner how Gandhi spent a period of three years in London as
   a student.
   OUTCOME: The learner will understand how Gandhi grew in introspection and maturity.

4. PRINCIPLES OF GOOD WRITING: L.A.HILL (RAVINDRA PUBLISHERS)
   OBJECTIVE: To inform the learners how to write clearly and logically.
   OUTCOME: The learner will be able to think clearly and logically and write clearly and
   logically.

Text Book : „Sure Outcomes” by Orient Blak Swan Pvt. Ltd Publishers

NON-DETAILED TEXT: (From Modern Trailblazers of Orient Blackswan)
(Common single Text book for two semesters)
(Semester I (1 to 4 lessons)/ Semester II (5 to 8 lessons)

1. G.D.Naidu
   OBJECTIVE: To inspire the learners by G.D.Naidu’s example of inventions and
   contributions.
   OUTCOME: The learner will be in a position to emulate G.D.Naidu and take to
   practical applications.

2. G.R.Gopinath
   OBJECTIVE: To inspire the learners by his example of inventions.
   OUTCOME: Like G.R.Gopinath, the learners will be able to achieve much at a low cost
   and help the common man.

3. Sudhamurthy
   OBJECTIVE: To inspire the learners by the unique interests and contributions of Sudha
   Murthy.
   OUTCOME: The learner will take interest in multiple fields of knowledge and make life
   worthwhile through social service.

4. Vijay Bhatkar
   OBJECTIVE: To inspire the learner by his work and studies in different fields of
   engineering and science.
   OUTCOME: The learner will emulate him and produce memorable things.

Text Book : „Trail Blazers” by Orient Black Swan Pvt. Ltd. Publishers
I Year – I SEMESTER

Remedial Mathematics – I/ Remedial Biology – I
(For Biology stream students)

UNIT I
Algebra:
Arithmetic Progression-Geometric Progression- Permutations & combinations-Binomial theorem partial fractions-Matrices-Determinants-Application of determinants to solve simultaneous equations (Cramer's Rule).

UNIT II
Trigonometry: Trigonometric ratios and the relations between them Sin (A+B), Cos (A+B), Tan (A+B) formulae only. Trigonometric ratios of multiple angles-Heights and distances (simple 000 problems there on).

UNIT III
Co-ordinate Geometry: Distances between points-Area of a triangle, Co-ordinates of a point dividing a given segment in a given ratio-locus-equation to a straight line in different forms-Angle between straight lines-point of intersection.

UNIT IV

UNIT V
Integral Calculus: Integration as on inverse process of differentiation, definite integrals, integration by substitution, integration by parts, integration of algebraic function of $E^x$ evolution of area in simple cases.

UNIT VI
Differential equations: Formation of a differential equation, order and degree, solution of first order differential equations, Laplace transformation.

TEXT BOOKS
1. Intermediate first Year mathematics
2. Intermediate Second year mathematics, printed and published by Telugu Academy, Himayatnagar, Hyderabad
Remedial Biology – I (40Hrs)
(For Maths stream students)

UNIT I
Classification of plant kingdom: Methods of classification of plants. 05
Plant cell: It’s detailed structure, mitosis, meiosis different types of plant tissues and their functions. 05

UNIT II
Morphology and histology of root, stem, bark, wood, leaf, flower, fruit and seed. 05
Modifications of root, stem and leaf. 05

UNIT III
General survey of animal kingdom: Non-chordates (Protozoa, Porifera, Cnidaria, Platyhelminthes, Nemahyhelminthes, Annelida, Arthropoda, Mollusca, Echinodermata). 05

UNIT IV
Chordates: Phylum Hemichordata
Phylum Chordata (Classes: Pisces, Amphibians, Reptiles, Aves, Mammals) 05

UNIT V
Structure and life history of parasites: Amoeba, Entamoeba, Trypanosoma, Plasmodium, Taenia, Ascaris. 05

UNIT VI
General structure and life history of insects: Cockroach, Mosquito, Housefly, Itch mite and Silkworm. Relationship of insects with medicinal crops diseases. 05

TEXT BOOKS
1. Intermediate First Year and Second Year Botany / Zoology Text Books printed and published by Telugu Academy, Himayatnagar, Hyderabad.
2. A.C. Dutta, Text Book of Botany
3. Botnay for Degree students Vol I & II by B.P. Pandey
1 Year – I SEMESTER

HUMAN ANATOMY & PHYSIOLOGY - I

UNIT-I
Scope of anatomy and physiology: Structure of cell, its components and their function.

Elementary tissues of the human body: Epithelial, connective, muscular and nervous tissues, their sub- types and properties.

Skeletal muscles: Gross anatomy, physiology of muscle contraction, physiological properties of skeletal muscles and their disorders.


LO: To understand different tissues are involved in the formation of organs and perform different functions. For example skeletal muscle produce by way of its contraction and relaxation produce movement of the skeletal, nerves are involved in the transmission of electrical impulses, bones form body frame, muscles produce contraction and help in movement, circulation, digestion and excretion. Epithelial tissues protect and secrete juices.

UNIT-II
Haemopoietic system:
Composition and functions of blood, Genesis and regulation of red blood cells production, blood groups, transfusion of blood. Leukocytes, properties of white blood cells, reticulo endothelial system, blood coagulation and its mechanism, formation and circulation of lymph. Disorders of blood.

Formed elements of blood: WBC, RBC and Platelets,
Heamopoiesis and blood hormones, Blood groups and their significance, Coagulating factors, Pathways of coagulation and Mechanism of coagulation, Disorders of blood and its components disorders of coagulation.

LO: Blood is involved in oxygen and carbon dioxide transport, maintenance of B.P, defense immunity and excretion.

UNIT III
Cardiovascular system:
Basic anatomy, structure and functions of the heart and blood vessels. Excitatory and conductive system of the heart, action potential in cardiac cycle, nervous regulation of heart. Systemic coronary and hepatic blood circulation, cardiac output, blood pressure in different blood vessels, blood pressure regulations and measurements. ECG of heart. Brief outline of cardiovascular disorders like hypertension, hypotension, atherosclerosis, angina, myocardial infarction, congestive heart failure and cardiac arrhythmias.

Lymph and Lymphatic System: Composition, formation and circulation of lymph; disorders of lymph and lymphatic system. Basic physiology and functions of spleen.

LO: Heart and blood vessels maintain BP, transport gases, nutrients and waste products. Their function is essential to sustain life.
UNIT IV
Respiratory System: Anatomy of respiratory organs. Functions of respiration, mechanism and regulation of respiration, respiratory volumes and vital capacity. 07
LO: To know above external and internal respiration exchanging of gases, need for oxygen for metabolism of nutrients and generation of energy and is essential for life process.

UNIT V
LO: To understand digestion in various parts of GIT, enzymes and secretions involved – their functions.

UNIT VI
Urinary System: Structure and functions of Nephron, formation of urine, renal mechanism for concentrating and diluting the urine, regulation of acid-base balance, knowledge on release of renin from kidney and its functions. Regulations of blood volume and extracellular fluid volume. Disease related to kidney. 05
LO: To understand how urine is formed and various mechanisms involved in formation of urine.

TEXT BOOKS
2. C.C.Chatterjee, Human Physiology.

REFERENCES
1. A.C.Guyton, Text Book of Medical Physiology
2. Best & Taylor, The Living Body-A Text Book on Human Physiology
UNIT-I
**Dispensing Pharmacy:** Principles of dispensing, form of prescription, handling of prescription, source of errors for prescription, care required in dispensing procedures including labeling of dispensed products. Weights and Measures, introduction to Latin terms, Percentage calculations, alligation method, proof spirit calculations, displacement value and calculations of isotonicity adjustment. General dispensing procedure- posology calculations of doses.
LO: To understand dispensing principles, procedures, calculations involved, doses.

UNIT-II
**Principles involved and procedures adopted in dispensing of the following classes of preparations.**
(i) Mixtures
(ii) Solutions – A study of the following solutions – Cresol with soap solution IP, Aqueous Iodine solution IP, Strong solution of Iodine IP, weak iodine solution IP, strong solution of Ammonium acetate.
(iii) emulsions (iv) powders (v) lotions & liniments (vi) ointments
LO: To understand principles and procedures involved in the dispensing of various categories of products.

Unit-III
**Dosage forms** – Purpose, classification, definitions and general characteristics of the following dosage forms
- Solids: Tablet and capsules,
- Liquid orals: Elixirs, Syrups, Lectures, Suspensions and Emulsions.
- Liquids for external use: Lotions & liniments applications.
- Semi solids: Ointments, Creams, Gels, Suppositories and Pessaries.
LO: To understand dosage forms and their general characteristics.

UNIT-IV
**Incompatibilities:** Physical, chemical and therapeutic incompatibilities – methods of overcoming and handling of incompatible prescriptions.
LO: To understand incompatibility and methods of overcoming incompatibility.

UNIT-V
** Extraction and galenical products:** Principle and methods of extraction - preparation of infusions, tinctures, dry, soft and liquid extracts.
LO: To understand extraction and galenical products – Principles and procedures.

UNIT-VI
**Pharmacy Ethics as prescribed by PCI.**
LO: To understand Ethics related to Pharmacy profession as prescribed by PCI.
TEXT BOOKS
1. Cooper & Gunns Dispensing Pharmacy, CBS, Publ. and Distributors New Delhi.
2. R.M Metha, Dispensing Pharmacy.
3. NK Jain and GD Gupta, Modern Dispensing Pharmacy, Pharma Med Press.

REFERENCES
1. Lippincott Williams and Wilkins, Remington Pharmaceutical Sciences.
2. E.A. Rawkins, Bentley’s Text Book of Pharmaceutics, Elbs publ.
3. Hoover, Dispensing of Medication.
I Year – I SEMESTER

PHARMACEUTICAL ORGANIC CHEMISTRY-I

UNIT-I
Structure and reactivity of organic molecules: Polarity of bonds, electronic effects: electromeric effect, inductive effect, mesomeric effect and Hyperconjugation and their influence on the properties of organic molecules; charged species: carbocations and carbanions, their generation, stabilities, rearrangement in the case of carbocations; Free radicals: formation and stability
LO: Understanding the basic concepts influencing the reactivity of organic molecules, understanding the mechanisms wherever applicable, applications of the above in the interpretation of various properties of organic molecules.

UNIT-II
Alkanes and cycloalkanes: Nomenclature, general methods of preparation, chain and conformational isomerism in the case of alkenes and their relative stabilities, Bayer’s strain theory and Sachse-Mohr theory in the case of cycloalkanes and their limitations.
Alkenes: Nomenclature, general methods of preparation, characteristic electrophilic and free radical addition reactions, orientation of product formation as interpreted by Markonikov’s rule and peroxide effect (Anti-Markonikov’s rule), ozonolysis and allylic substitution.
Alkadienes: Nomenclature, stability of conjugated dienes, 1,2- and 1,4- reactions and their relative stabilities.
Alkynes: Nomenclature, general methods of preparation, characteristic reactions with emphasis on acidity of one alkynes, formation of metal acetylides, stereospecific reduction of alkynes and addition of water involving keto-enol tautomerism
LO: Structures, equations involved in the preparations, mechanism of formation or the reaction, rearrangements if any, discussion on stabilities and applications of the characteristic reactions in synthesis.

UNIT-III
Alkylhalides: Nomenclature, general methods of preparation, significance of nucleophilic substitution of alkylhalides in organic synthesis, mechanisms and salient features of $S_N1$ and $S_N2$ reactions with examples including the proof in favor of these reactions, a comparison of $S_N1$ and $S_N2$, elimination reactions (E1 and E2): mechanisms, salient features and orientation of product formation in terms of Saytzeff’s rule and Hoffmann orientation.
LO: Structures, equations involving the methods of preparations and reactions, stabilities and applications of the reactions.

UNIT-IV
Alcohols: Nomenclature, classification, methods of preparation, industrial synthesis of ethanol and methanol, reactions of alcohols involving the replacement of hydroxyl or replacement of the hydrogen of the hydroxyl, iodoform reaction and Lucas test.
Ethers: Nomenclature, William sons synthesis, action of hydroiodic acid on ethers.
LO: Structures, general properties, equations involving the methods of preparation and reactions, mechanisms, reactivities.
UNIT-V
Stereochemistry: Isomerism and its comparison to stereoisomerism, stereoisomers, optical isomers (enantiomers), characteristics of enantiomers (chirality), racemic mixtures, methods of separation of racemic mixtures, optical activity, optical rotation, specific rotation, plane of symmetry and centre of symmetry, diastereomers, their properties and required characteristics with examples as given by Fischer projection formulae; mesoform and its characteristics; Configuration: relative configuration (D and L), absolute configuration (R and S); Geometric isomerism: cis-trans isomerism and E and Z nomenclature.
LO: Stereochemical structures, importance of stereochemistry with respect to drugs as interpreted in terms of reactivity and the properties of chiral drugs.

UNIT-VI
Grignard reagent: Preparation, characteristic nucleophilic addition and substitution reactions, applications in organic synthesis and limitations.
LO: Structure, mechanism and usefulness in synthesis.

TEXT BOOKS

REFERENCES
1. R.L Madan, Organic Chemistry,
Suggested Lab Manuals:

**OBJECTIVE:** To impart to the learner the skills of grammar as well as communication through listening, speaking, reading, and writing including soft, that is life skills.

**ADVANCED COMMUNICATION SKILLS**

UNIT 6  Body language  
UNIT 7  Dialogues  
UNIT 8  Interviews and Telephonic Interviews  
UNIT 9  Group Discussions  
UNIT 10  Presentation Skills  
UNIT 11  Debates

**Text Book:**

„Strengthen your Communication Skills”  Part-B by Maruthi Publications

**Reference Books:**

1. INFOTECH English (Maruthi Publications)  
2. Personality Development and Soft Skills (Oxford University Press, New Delhi)
1. Study of Simple and compound microscopes used in biology.
2. Section cutting, staining and mounting of sections.
3. Histological studies of the leaf, stem and root with description of their stained sections.
4. Description and study of floral characters of the plants representing the families in theory.
5. Observation of permanent slides.
1 Year – I SEMESTER

DISPENSING PHARMACY LAB

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1. Dispensing of prescriptions falling under the categories; Mixtures, solutions, emulsions, creams, ointments, powders, pastes, lotions, liniments, inhalations, paints. etc.
2. Identification of various types of incompatibilities in a prescription, correlation thereof and dispensing of such prescriptions.
3. Dispensing procedures involving pharmaceutical calculations, pricing of prescriptions and dosage calculations for paediatric and geriatric patients.
4. Dispensing of prescriptions involving adjustment of tonicity.
   A total 50 prescriptions are to be dispensed.
I Year – I SEMESTER

PHARMACEUTICAL ORGANIC CHEMISTRY LAB

Introduction to Equipment & Glassware
Recrystallization method, determinations of Melting point, Boiling Point and distillation

I. Preparation of organic compounds (each involving a specific organic reaction covered in theory)
   1. N.Acetylation: Preparation of Acetanilide from Aniline
   2. O-Acetylation: Preparation of Aspirin from salicylic acid
   3. Nuclear Nitr ation: Preparation of m-Dinitrobenzole from nitrobenzene
   4. Oxidation: Preparation of Benzoic acid from Benzyl chloride
   5. Esterification: Preparation of n-Butyl acetate from n-Butyl alcohol
   6. Etherification: Preparation of -Naphthyl methyl ether from –Naphthol
   7. Halogenation: Preparation of Iodoform from iodation of acetone
   8. Extensive Nuclear Substitution: Preparation of Tribromophenol
   9. Bromination of Tribromoaniline from Phenol or Aniline

II. Systematic qualitative Analysis (Identification) of Monofunctional Organic Compounds:
Avoid water-soluble compounds, and compounds containing more than one functional group; at least six individual compounds to be analyzed.

REFERENCES
**I Year – II SEMESTER**

**HUMAN ANATOMY & PHYSIOLOGY – II (50 Hrs)**

**UNIT – I**

**Central Nervous System:** Anatomy and physiology of different parts of brain, spinal cord and cranial nerves.

LO: Brain involvement in sensory and motor functions including pain perception, sleep wake cycle, cognitive skills, memory, behavior and governance.

**UNIT – II**

Neuron, axon conduction, Neurochemical transmission, reflex action, electroencephalogram, specialized functions of the brain, and their functions.

LO: Chemical Mediators like Acetyl choline, Serotonin, Dopamine, Noradrenaline, glutamic acid, gaba involvement in transmission of impulse and disorders due to their changes.

**UNIT - III**

**Autonomic Nervous System:** Physiology and functions of sympathetic and parasympathetic nervous system. Mechanism of neurohumoral transmission in the A.N.S.

LO: Cholinergic system is Essential for life process while adrenergic system is needed to meet emergency by flight or fight. ANS works without rest through life without rest unlike CNS.

**UNIT - IV**

**Endocrine System:** Basic anatomy and physiology of pituitary, thyroid, parathyroid, adrenals, testes, ovary and endocrine functions of hormones and functions.

LO: Growth, reproduction and metabolism depend on hormonal activity. Their imbalance leads to disorders and some of them cannot be rectified.

**UNIT-V**

**Reproductive System:** Male and female reproductive systems and the functions of their hormones. Physiology of menstruation, Spermatogenesis and Oogenesis.

LO: Concept of male & female hormones, Characters, sex cell maturity, reproductive period, copulation and pregnancy, parturition, concept of pregnancy, menopause and their care.

**UNIT-VI**

**Sense organs:** basic anatomy and physiology of Eye, Ear, Nose, Tongue and skin.

LO: Sensations are the combined activities of sensory organs and specified areas of the brain.

**TEXT BOOKS**

REFERENCES

2. Subrhamanyam and Others, A textbook of Physiology
4. Best & Taylor, The Living Body-A Text Book on Human Physiology
UNIT-I
1. Classification of inorganic pharmaceuticals based on their applications and therapeutic uses.
2. Sources of impurities, quality control and test for purity. Limit tests for chlorides, sulphates, iron, arsenic, lead and heavy metals and their pharmacopoeial standards.
LO: Pharmaceutical orientation to inorganic chemistry, definitions, principles, procedures, limits of detection, keeping the impurities in pharmaceutical substances to the minimal level.

UNIT-II
1. **Sodium, potassium and calcium replenishers**: sodium chloride, compound sodium chloride solution (Ringer solution), potassium chloride, ORS.
2. **Calcium replenishers**: Calcium chloride, calcium gluconate, dibasic calcium phosphate.
3. **Acid-base regulators**: sodium bicarbonate, sodium lactate, sodium citrate/potassium citrate, sodium acetate and ammonium chloride.
4. **Antacids**: Aluminium hydroxide gel, dried aluminium hydroxide gel, magnesium oxide, magnesium hydroxide mixture, magnesium trisilicate and calcium carbonate.
5. **Expectorants**: Ammonium chloride, potassium iodide.
6. **Emetics**: Potassium antimony tartrate and copper sulfate.
7. **Antidotes**: Sodium thiosulphate and sodium nitrite.
LO: Properties, classification, preparation, assay of ammonium chloride, sodium thiosulphate and sodium nitrite, uses.

UNIT-III
1. **Adsorbents**: Light kaolin, heavy kaolin and activated charcoal.
2. **Astringents**: Zinc oxide and Bismuth subcarbonate.
3. **Protectants**: Calamine, zinc oxide, zinc state, talc and titanium dioxide.
4. **Silicone polymers**: Activated Dimethicone.
5. **Anti-infectives**: Hydrogen peroxide solution, potassium permanganate, silver nitrate (Silver protein), iodine (Solutions of iodine, povidone-iodine) boric acid and yellow mercuric chloride.
LO: Properties, preparation wherever applicable, assay of hydrogen peroxide, potassium permanganate, boric acid, zinc oxide and uses.

UNIT-IV:
1. **Laxatives**: Magnesium sulphate and sodium phosphate.
2. **Haematinics**: Ferrous sulphate, Ferrous fumarate, Ferrous gluconate, Ferric ammonium citrate, Iron and dextrose injection.
3. **Suspending agents**: Bentonite and colloidal silica.
4. **Excipients**: Di and tricalcium phosphates, magnesium stearate, talc and calcium carbonate (precipitated chalk).
5. **Colorants**: Titanium oxide and ferric oxide.
LO: Properties, preparations wherever applicable, uses.
UNIT-V
Dental products:
1. **Fluorides**: Sodium fluoride and stannous fluoride.
2. **Oral antiseptics**: Hydrogen peroxide, Zinc peroxide and mouth washes.
3. **Dentifrices**: Dibasic calcium phosphate, strontium chloride and sodium metaphosphate.
4. **Cements and Fillers**: Zinc oxide.
LO: Properties, preparations wherever applicable, uses.

UNIT-VI
Miscellaneous medicinal agents of inorganic nature:
Cisplatin (Antineoplastic), lithium carbonate (Antipsychotic), barium sulfate (diagnostic agent), plaster of paris (surgical aid), sodium aurthiomalate (antirheumatic), sodium antimonygluconate (internal parasiticid) and potassium perchlorate (antithyroid).
LO: Structures, properties and uses.

TEXT BOOKS
2. Advanced Inorganic Chemistry by Satya prakash, G.D. Tuli

REFERENCES
1. J.H Block, E.Roche, T.O Soine and C.O. Wilson, Inorganic Medical and pharmaceutical Chemistry Lea & Febiger Philadelphia PA.
2. P. Gundu Rao, Inorganic pharmaceutical chemistry; Vallabh Prakashan, Delhi.
UNIT-I
**Benzene:** Kekule’s structure, aromaticity, Hückle’s rule, resonance energy, characteristic electrophilic substitution reactions: nitration, halogenations, sulfonation, Friedel-Craft’s alkylation and acylation with limitations, orientation in monosubstituted benzenes.

**Polynuclear aromatic hydrocarbons:** Nomenclature, methods of preparation of naphthalene, anthracene and phenanthrene, their oxidation and reduction reactions, relative susceptibilities to oxidation as interpreted in terms of sacrifice of resonance energies, electrophilic substitution reactions.

**Arylhalides:** Nomenclature, comparison of reactivity with respect to alkylhalides, mechanism of nucleophilic substitution (Benzyne concept).

LO: Understanding the properties of aromatic compounds, mechanisms of reactions and their usefulness in organic synthesis, electronic factors influencing orientation.

UNIT-II
**Carbonyl compounds:** Nomenclature, important methods of preparation, characteristic nucleophilic addition reactions (addition of bisulphate, Grignard reagent, hydrogen cyanide, hydrazine derivatives and alcohols); Aldol condensation, Cannizzaro reaction and Perkin reaction.

LO: General properties, relative reactivities towards nucleophilic addition, mechanisms and applications.

UNIT-III
**Carboxylic acids:** Nomenclature, important methods of preparation, characteristic reactions (acidity, relative acidities, reduction, H-V-Z reaction, conversion into acid chlorides, amides and esters); methods of preparation of important esters (acetoacetic ester and malonic ester) and their applications in organic synthesis.

LO: General properties, measurement of relative acidities, equations involving the reactions and mechanisms, applications in synthesis.

UNIT-IV
**Phenols:** Nomenclature, general methods of preparation, industrial synthesis of phenol by Dow process, characteristic reactions (acidity and its comparison to alcohols and carboxylic acids as interpreted by resonance, ether formation, ester formation, Kolbe reaction, Reimer-Tiemann Reaction, bromination and nitration).

LO: Structures, equations, mechanisms, importance of these reactions in pharmaceutical organic synthesis.

UNIT-V
**Amines and Diazonium compounds:** Nomenclature, methods of preparation, characteristic reactions (basicity and relative basicities, alkylation and exhaustive alkylation, nitration and orientation), separation of all three classes of amines by Hinsberg’s method; formation of
Diazonium compounds, characteristic reactions (replacement by hydrogen, Sandmeyer reaction, replacement by nitrile, and their applications in synthesis and coupling reactions). LO: Properties, structures, equations, mechanisms, orientations and applications.

UNIT-VI
Name reactions: Beckmann rearrangement, Mannich reaction, Fries rearrangement, Michael addition, Schmidt reaction, Benzoin condensation.
LO: General reaction, structures and mechanism, applications in organic synthesis.

TEXT BOOKS

REFERENCES
1. R.L Madan, Organic Chemistry.
PHYSICAL PHARMACY – I (50 Hrs)

UNIT 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.
LO: To learn intermolecular forces and states of matter, Phase equilibria and 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.
LO: To understand laws of Thermodynamics and their Applications

UNIT - III
Physical properties of Drug Molecules: Dielectric constant induced polarization, dipole moment, refractive index and molar refraction, optical rotatory dispersion.
LO: To understand the physical properties of drug molecules and their significance

UNIT - IV
Solutions of Non electrolytes: Concentration expressions, ideal and real solutions, colligative properties, molecular weight determinations.
LO: To understand properties of Non electrolytes and their significance

UNIT - V
LO: To know theories of electrolytes and their dissolution and colligative properties

UNIT - VI
Buffers and buffered isotonic systems: The buffer equation, buffer capacity, buffers in pharmaceutical and biological systems, buffered isotonic solutions, methods of adjusting tonicity and pH (relevant numerical problems).
LO: To know about buffers, buffer isotonic solutions, Methods of adjusting isotonicity and their significance

TEXT BOOKS
2. C.V.S.Subramanyam, Essentials of Physical Pharmacy, Vallabh Prakashan.
4. S. J Carter, Cooper and Gunn”s Tutorial pharmacy.
REFERENCES

2. Derle Deeliprao, Essentials of Physical Pharmacy
5. Martindale, the Extra Pharmacopoeia; Latest Edition the Royal Pharmaceutical Society
6. Lippincott Williams and Wilkins, Remington Pharmaceutical Sciences
8. Bentley”s Text Book of Pharmaceutics by E.A. Rawlins
UNIT-I
Overview of computer with general applications: components of computers, computer languages, usage of computers, introduction of operative system.

Introduction to MS-Office: MS-word: Basics, working with files, working with text, formatting paragraphs, styles, lists, tables, graphics, spelling and grammar, page formatting macros and table of contents.
MS-Excel: Basics, spreadsheets, data types, formulas, formatting charts and graphs.
MS-Power Point: Basics, views, slide controls, applied design, page setup, templates, background control, colour screens, traditions and animations, working with texts and working with graphics.
MS-Access: Data base concepts, screens layouts, creating tables, data sheet record, table relationships, shorting and filtering, query forms, form controls, sub forms, reports, importing, exporting and linking.
LO: The student should be familiar with overview of the computers and MS-office

UNIT-II
Information Technology Today: Internet and World Wide Web (www), structure and organization of www, browsers, information searching in www, search engines, pharmaceutical resources in www types of indexing tools and search strategies, Hyper Text Manuscripts Languages (HTML) and e-mail.
LO: Familiarity with internet, WWW, browsing, HTML & e-mails.

UNIT-III
Database Management: Concepts and objectives of Database Management systems, advantages of database management systems and examples of DBMS packs (like DBASE III).
LO: Familiarity with Database management

UNIT-IV
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.

Measures of central tendency and variations: Mean, median, mode, properties and applications, range, standard deviations and standard error of means, coefficient of variation, kurtosis, skewness and confidence (fiducial) limits for mean and proportions.

UNIT-V
Regression: Correlation and regression analysis, method of least squares and non-linear regression.
Statistical Quality control: Statistical Quality control charts like mean and range charts, p-chart, np-chart and c-chart. Applications of Statistical Quality control in pharmaceutical sciences.

LO: Correlation and regression quality control charts in pharmacy.

Unit-VI

Statistical inference: t-test, chi square test and their applications in pharmacy.

Elements of ANOVA: One-way and two-way with examples.

LO: Application of t-test, Chi square test and approve in the testing the significance of difference or similarity.

TEXTBOOKS

2. Information Technology Workshop,3e, G Praveen Babu, M V Narayana BS Publications.
4. Pranab Kumar Banerjee, “Introduction to Biostatistics”.

REFERENCE BOOK:

1. Essential Computer and IT Fundamentals for Engineering and Science Students, Dr. N.B. Venkateswarlu
2. Biostatistics for medical, nursing and pharmacy students by A.Indrayan, L Satyanarayana.
3. Introduction to Information Technology, ITL Education Solutions Ltd.,2nd Ed, PEARSON
I Year – II SEMESTER

HUMAN ANATOMY PHYSIOLOGY LAB

1. Study of compound microscope and precautions to be taken while handling it.
2. Microscopic study of structure of cell and different tissues.
3. To understand and learn Blood withdrawal techniques.
4. Determination of bleeding time, clotting time, blood grouping and Estimation of Hemoglobin in blood.
5. Study of Haemocytometry.
8. Estimation of D.L.C.
10. Study of different systems with the help of charts and models.
11. Recording of body temperature, pulse rate and blood pressure.
12. Determination of vital capacity, experiments on spirometry.
13. Various devices used in family planning like Copper T, Lippe’s loop, diaphragm, condom and oral pills.
I Year – II SEMESTER

PHYSICAL PHARMACY – I LAB

5. Calibration of pH Meter.
7. pH Estimation – Colourimetric method.
8. pH Estimation by Half Neutralization Method.
9. Refractive index of liquids.
15. Preparation of Buffers and Buffer capacity determination.
I Year – II SEMESTER

COMPUTER APPLICATIONS LAB

Identification of the peripherals of a computer.
To prepare a report containing the block diagram of the CPU along with the configuration of
each peripheral and its functions. Description of various I/O Devices
A practice on disassemble the components of a PC and assembling them to working condition.
Examples of Operating systems-Dos, Windows, Installation of MS windows on a PC.
Introduction to Memory and Storage Devices, I/O Port, Device Drivers, Assemblers,
Compilers, Interpreters, Linkers, Loaders.

Internet & World Wide Web: Importance of Networking, Transmission Media, Networking
Devices- Gateway, Routers, Hub, Bridge, NIC, Bluetooth Technology, Wireless Technology,
Modem, DSL, Dialup Connection.

Orientation & Connectivity Boot Camp and surfing the Web using Web Browsers:
Students should get connected to their Local Area Network and access the Internet. In the
process they should configure the TCP/IP setting and demonstrate how to access the websites
and email. Students customize their web browsers using bookmarks, search toolbars and pop up
blockers.

Search Engines & Netiquette: Students should know what search engines are and how to use
the search engines. A few topics would be given to the students for which they need to search on
Google.

MS Office

Word Orientation: Word as word Processors.
Accessing, overview of toolbars, saving files, Using help and resources, rulers, formatting, Drop
Cap, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and
Footer, Using Date and Time option

Creating project: Abstract Features to be covered:-Formatting Styles, Inserting table, Bullets
and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell
Check, Track Changes, Images from files and clipart, Drawing toolbar and Word Art,
Formatting Images, Textboxes and Paragraphs.

MS Excel

Excel Orientation: The mentor needs to tell the importance of MS Excel as a Spreadsheet tool,
give the details of the tasks and features that would be covered in each.
Using Excel Accessing, overview of toolbars, saving excel files, Using help and resources
Creating a Scheduler - Features to be covered: Gridlines, Format Cells, Summation, auto fill, Formatting Text

Performance Analysis - Features to be covered: Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting

Power Point
Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered during this week includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows, Hyperlinks, Inserting – Images, Clip Art, Tables and Charts in PowerPoint. Concentrating on the in and out of Microsoft power point. Helps them learn best practices in designing and preparing power point presentation. Topic covered during this week includes: - Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotted, notes etc), and Inserting – Background, textures, Design Templates, Hidden slides.

MS Access:
Students have to work on creating data bases, tables, storing and organizing data in the data base, querying, Creating Forms and Reports (take appropriate examples.)

TEXT BOOK:
1. Computer Fundamentals, Anita Goel, Pearson
2. Information Technology Workshop,3e, G Praveen Babu, M V Narayana BS Publications.
3. Introduction to Information Technology, ITL Education Solutions Ltd., 2nd & 3rd Eds., PEARSON

REFERENCE BOOK:
1. Williams, Using Information Technology: Practical Introduction, TMH.
2. Essential Computer and IT Fundamentals for Engineering and Science Students, Dr. N.B. Venkateswarlu