பருவம்: முதற் பருவம் **பாடக் குறியீட்டு எண்: LT101S**

அலகு **பாடங்கள்**

1. அலகு – 1 **(மரபு கவிதைகள்)**
   - 1.1 வள்ளலார்
   - 1.2 பாரதியார்
   - 1.3 பாரதிதாசன்
   - 1.4 கவிமணி
   - 1.5 கண்ணதாசன்

2. அலகு – 2 **(புதுக்கவிதைகள்)**
   - 2.1 அப்துல் ரகுமான்
   - 2.2 மு. மேத்தா
   - 2.3 வைரமுத்து
   - 2.4 தமிழச்சி
   - 2.5 நாட்டுப்புறப்பாடல்கள்

3. அலகு – 3 **(இலக்கிய வரலாறு)**
   - 3.1 இருபதாம் நூற்றாண்டுக் கவிஞர்கள்
   - 3.2 புதுக்கவிதையின் தோற்றமும், வளர்ச்சியும்
   - 3.3 சிறுகதையின் தோற்றமும், வளர்ச்சியும்
   - 3.4 நாட்டுப்புற இலக்கியங்கள்

4. அலகு- 4 **(சிறுகதைகள்)** கதவு – கி.ரா
   - 4.1 கதவு
   - 4.2 குடும்பத்தில் ஒரு நபர்
   - 4.3 ஜெயில்
   - 4.4 மின்னல்
   - 4.5 எழுத மறந்த கதை

5. அலகு – 5 **(மொழித் திறன்)**
   - 5.1 வல்லொற்று மிகுமிடம்
   - 5.2 வல்லொற்று மிகாமிடம்

SEMESTER – I ENGLISH THROUGH LITERATURE – I LE101S

UNIT - 1 **[15 HRS]**

RELATIONSHIPS

Freedom at Midnight – Larry Collins and Dominique Lapierre (Prose)
Night of the Scorpion – Nissim Ezekiel (Poem)
Driving Miss Daisy – Alfred Ubry (Play)

UNIT-2 **[15 HRS]**

SELF ENHANCEMENT

Ulysses – Alfred Lord Tennyson (Poem)
Our Urgent Need for Self-esteem – Nathaniel Brandon (Prose)
Emotional Intelligence – Daniel Goleman (Prose)

UNIT - 3 **[15 HRS]**

BASIC GRAMMAR

The Sentence

Parts of Speech

Nouns – Classes and Gender

Nouns – Number and Case

Adjectives

Comparison of Adjectives

UNIT- 4

BASIC LANGUAGE SKILLS **[15 HRS]**

Dialogue Writing
Letter writing – [Formal, Informal]
Comprehension

Text

1. Elango, K. **Insights : A Course in English Literature and Language**. Hyderabad: Orient Black swan Private Limited, 2009.
2. Bhatnagar, R.P., and Bhargava, Rajul. **English for Competitive Examinations**. Chennai: Macmillan India Press, 2002.
3. David Green, **Contemporary English Grammar: Structures and Composition**. Chennai: Macmillan India Limited, 2004.

Reference

1. Prince, Donna. **Skills for Success**, New York: CUP 1998.
2. Wallace, Michael, J. **Study Skills in English**. Kottayam: CUP, 2004.

SEMESTER-I BIOMOLECULES BC101

UNIT I CARBOHYDRATES [30 hrs]

Introduction and definition of carbohydrates, classification – monosaccharides, oligosaccharides, polysaccharides, occurrence, structure and functions of monosaccharides (glucose and fructose).General properties with reference to glucose stereoisomerism, optical isomerism, anomers, epimers, mutarotation .Ring and straight chain structure of glucose (haworth projection formula).Reactions of monosaccharides (oxidation, reduction, osazone reaction), Kiliani synthesis, invert sugar

Structure, occurrence and biological importance of disaccharides (sucrose, lactose, maltose).Structure, occurrence and biological importance of polysaccharides – Storage polysaccharides (starch, glycogen, inulin), Structural polysaccharides (cellulose, chitin, pectin), Heteropolyasaccharides (hyaluronic acid, heparin)

UNIT II LIPIDS [20 hrs]

Introduction,definition,Nomenclature and classification of lipids, Physical properties {emulsification},classification of fatty acids –saturated, unsaturated and essential fatty acids, properties of fatty acids{Iodine number, acid number,RM number,saponification and Rancidity) Structure and function of commonly occurring phospholipids {esp.Lecithin, cephalin,phosphatidyl Inositol and serine} Sphingomyelin, plasmalogen,sterols{cholesterol} and bile acids.

UNIT III AMINOACIDS & PROTEINS [25 hrs]

Definition and classification of Amino acids based on structure, metabolism &Polarity .Essential & Non essential amino acids, Non protein amino acids. Characteristics of amino acids-optical isomerism, zwitter ion, acid base properties of amino acids, Isoelectric point & Isoelectric pH.

Definition ,classification based on size and shape, solubility, composition & functions. General reactions of proteins (Reactions of both NH_2 group & COOH group).Structure of proteins-primary, secondary, tertiary & Quaternary. Determination of amino acids sequence. N terminal determination-Edman's dansylchloride method.

C- terminal-Hydrozinolysis and biochemical method. Chemical synthesis of polypeptide chain and solid phase polypeptide synthesis.

UNIT IV NUCLEIC ACIDS [15 hrs]

Nucleic acids – Bases ,Nucleosides and Nucleotides, Phosphodiester linkage, Nucleic acid types – DNA and RNA, Structure –double helical structure of DNA, Properties of DNA – denaturation, Tm and hyperchromicity, Structure of RNA- t-RNA, m-RNA and r-RNA.

UNIT V HETEROCYLIC COMPOUNDS [10 hrs]

Heterocylic rings of biologic importance, thiazole, indole, pyridine, pteridine, pyrrole,imidazole with the example.

TEXT BOOKS

1. Renuka Harikrishnan.1995. Biomolecules and Enzymes. (2nd ed.) Madurai: Indraj Pathipagam.
2. J.L.Jain, Sanjay Jain and Nitin Jain.1997. Fundamentals of Biochemistry. (6th ed.) New Delhi: S.Chand& company Ltd.

REFERENCE BOOKS

1. Power & Chatwal. *Biochemistry*. (4th ed.) Himalaya Publishing House.
2. Cambell and Farrell. 2007. *Biochemistry*. (5th ed.) Delhi: Baba Borkhanath printers.
3. T.N.Pattabiraman.1993. *Principles of Biochemistry*. (5th ed.) Bangalore: Gajanana book Publishers and Distributors
4. Dr.A.C.Deb. 1983. *Fundamentals of Biochemistry*. (8th ed.) Kolkata: New Central Book Agency.
5. Lehninger,Nelson And Fox. 1982. *Principles Of Biochemistry*. (4th ed.) UK: Macmillan Worth Publishers.

SEMESTER-I CELL BIOLOGY BC102

UNIT I MEMBRANE PROTEINS AND TRANSPORT [15 hrs]

Introduction – Prokaryotic and eukaryotic cell. Cell membrane – structure and functions of Fluid Mosaic Model. Membrane proteins: Carbohydrate, lipids and their function on FMM. Membrane transport – Types of transport, passive and active transport, sodium potassium pump, $Ca^{2+}$and ATP_{ase} pumps, symport and antiport, endocytosis and exocytosis, liposomes.

UNIT II ORGANELLAR FUNCTION –I [10 hrs]

Mitochondria : morphology and function., Golgi complex : structure & function. Microbodies – structure, morphology and function, peroxisomes and glyoxysomes

UNIT III ORGANELLAR FUNCTION –II [10 hrs]

Endoplasmic reticulum – occurrence, morphology and function. Enzymes of the ER membrane. Lysosomes – structure and chemical composition. Ribosomes – structure and functions.

UNIT IV CELL CYCLE [15 hrs]

Nucleus – structure composition and biochemical function, chromosome structure – structure and organisation of chromatin, polytene and lambrush chromosome with example. Cell cycles – Phases of cell cycle, mitotic and meiotic cell cycle

UNIT-V CYTOSKELETON [10 hrs]

Cytoskeleton – structure and biochemical function – Microtubules, Microfilaments: Distribution, chemical composition and function, brief outline of types of IF proteins.

TEXTBOOKS:

1. Verma . P.S and Agarwal .P.K,1999, "Cell biology, Genetics, Molecular biology, Evolution and Ecology",(24th edition) New Delhi, S.Chand & Company Ltd
2. Dr. M. Swaminathan,1987, "Food and Nutrition Vol I&II", Second edition,Bangalore, Bappco Publishers.

REFERENCES:

1. Sheela A. Stanly ,2008,"Cell biology for biotechnologist", (I Edition), Narosa Publishing House Pvt-Ltd
2. Prakash S.Lohar, 2007, "Cell and Molecular biology" (I edition),Chennai, MJP publishers
3. De Robertis EDP and De Robertis EMF,1987, "Cell and Molecular Biology", (8thedition), New Delhi, B.I.Waverly Pvt Ltd
4. Patricia Trueman,2007, "Nutritional biochemistry" (I edition), Chennai, MJ publishers
5. Darnell J, Lodish H, Baltimore D,1986, "Molecular cell biology", England, WH Freeman

SEMESTER – I ALLIED CHEMISTRY – I ACH101S

UNIT I INORGANIC CHEMISTRY

1.1 Chemical bonding - molecular orbital theory - bonding, Anti bonding & Nonbonding orbital - M.O. configurations of H_2, He_2, N_2, O_2 & F_2 - Magnetic properties-Para & Dia.

1.2 Compounds of Sulphur - preparation, properties, uses and structures of Peracids of Sulphur, Sodium hydro sulphite and Hypo.

1.3 Co–ordination chemistry - nomenclature, theories of Werner & Pauling – Chelation – f unctions and structure of Haemoglobin and Chlorophyll.

1.4 Alloys - Role of carbon in the properties of steel, composition & uses of Brass, Bronze & Nichrome.

UNIT II ORGANIC CHEMISTRY

2.1 Covalent Bond - Orbital Overlap, Hybridization & Geometry of Methane, Ethylene, Acetylene & Benzene molecules, Electron Displacement Effect - Inductive Effect - Mesomeric Effect and Steric Effect - Explanation & Examples.

2.2 Aromaticity - Huckel's rule - Mechanism of aromatic electrophilic substitution, nitration & Sulphonation - Heterocyclic Compounds - Structure of Furan, Pyrrole, Thiophene & Pyridine.

2.3 Cyclo alkanes - Preparation & properties of cyclohexane - Bayer's strain theory.

2.4 Stereoisomerism - Types, causes of optical activity of Lactic Acid & Tartaric acid – Recemisation - Resolution, Geometrical isomerism – Maleic acid & Fumaric acid.

UNIT III PHYSICAL CHEMISTRY

3.1 Electro Chemistry - Specific & Equivalent Conductivity – their determination - effect of dilution on Conductance - Kohlraush law - Dissociation constant of Weak Electrolytes.

3.2 Phase Equilibria - Definitions of terms in it - reduced phase rule - application to a simple eutectic system (Pb-Ag) – Freezing mixtures.

3.3 Thermodynamics - types of systems - Reversible, Irreversible, isothermal & adiabatic system - spontaneous process - Statements & Explanation with example of I, II, III & Zeroth Law of thermodynamics - Efficiency of heat engine.

3.4 Chemical Kinetics – Order & Molecularity - First order rate equation – determination of rate constant of hydrolysis of ester.

UNIT IV ANALYTICAL CHEMISTRY

4.1 Polarography - principle, concentration polarization – DME - advantage and disadvantages – Different types of currents – Ilkovic equation.

4.2 Polarimetry - principle – instrumentation - applications.

4.3 Amperometry - Basic principle, instrumentation, uses & their type of titrations.

4.4 Potentiometry – principle, instrumentation, uses and their type of titrations.

UNIT V APPLIED CHEMISTRY

5.1 **Pharmaceutical Chemistry:** Preparation – uses and mode of action of sulpha drugs - Prontosil, sulphadiazine and sulpha furazole. Definition and one example of analgesics, antipyretics, tranquilizers, sedatives, local and general anaesthetics.

5.2 Dyes - Introduction, Methods of Dyeing, classification of dyes, method of application of Dyes , fluorescent brightening agent, Non – textile uses of dyes.

5.3 Fuels - calorific value of fuels - Non Conventional fuels - need for solar energy - application – Bio-fuels.

5.4 Petro Chemistry - Crude oil - Petroleum refining - Cracking and their applications.

Text Books:

INORGANIC CHEMISTRY

1) P.L. Soni, Inorganic chemistry, Sultan Chand, 2006.

2) B.R.. Puri, L.R.. Sharma and K.C. Kallia, Inorganic chemistry, Vallabh Publications, 2003

ORGANIC CHEMISTRY

1) R.T. Morrison and Boyd, Organic chemistry, Prentice Hall of India, 6th Edition., 2002

2) P.L. Soni, Text Book of Organic chemistry, Sultan Chand, 2000.

PHYSICAL CHEMISTRY

1) B.R. Puri and L.R. Sharma, Principles of physical chemistry, Shobanlal Nagin chand & Co., 2000

2) P.L. Soni, Text Book of physical chemistry, Sultan Chand , 2002

ANALYTICAL CHEMISTRY

1) R. Gopalan, P.S. Subramanian & K. Rangarajan, Elements of analytical chemistry, Sultan Chand & Sons, 2003.

2) G.R. Chatwal & S.K. Anand, Instrumental Methods of Chemical Analysis, Sultan Chand & Sons, 1998

APPLIED CHEMISTRY

1) T. Jacob. Applied chemistry for Home Science & Allied Science. Macmillan, 2004

2) O.P. Veramani and A.K .Naruls. Applied Chemistry-Theory & Practice, Sultan Chand & Sons, 2004

Reference Books

1) B.K. Sharma, Industrial chemistry, GOEL Publishers, 2004.

2) R. Morris, Shreve, J.A. Brink, Chemical Process Industry, Prentice Hill,2000.

3) D.A. Skoog, D.M. West, F.J. Holler & S.R. Crouch Fundamentals of Analytical chemistry, Thomson. Brooks / Cole, 2004

SEMESTER – I ALLIED CHEMISTRY PRACTICAL – I ACHP101

QUALITATIVE ANALYSIS OF AN ORGANIC COMPOUND

- Systematic Analysis of an Organic Compound Containing one functional Group and Characterisation by Confirmatory Tests

- Reactions of Aldehyde (Aliphatic & Aromatic), Carbohydrate, (Reducing & Non-Reducing sugar), Carboxylic Acid (Mono & Di), Phenol (Mono & Dihydric), Primary amine, Amide (Mono & Di).

Reference Books :

1) A.O. Thomas, Practical chemistry- Scientific Book Center.
2) Vogel, Text book of chemical analysis, Longman.
3) S. Sundaram, & S. Viswanathan, Practical chemistry, 3 Volumes.
4) Vogel, Text book of Practical Organic chemistry, Longman

SEMESTER – I VALUE EDUCATION VE101

Unit I
Values-concept-definition-characteristics-division of values-important of value education

Unit II
Personal values;self concept,self esteem,self acceptance,attitude

Unit III
Youth problems;career decision and unemployment,emotional and sexual adjustment, autonomy versus dependence feeling of inferiority,marriage and family,identity of roles,vocational problems and social discrimination,suggestions to cope up with stress.

Unit IV
Social values
Relationship with (family,college,and friendship)and social responsibility
Moral values-honesty love and concern for others-truthfulness-justice.

Unit V
Religious values and cultural values - Various religious of the world - Religions tolerance - Unity in diversity – secularism - Ahimsa vs terrorism

Text Book
Value Education - P. Paul

பருவம்: இரண்டாம் பருவம் **பாடக் குறியீட்டு எண்: LT202S**

அலகு **பாடங்கள்**

அலகு – 1

1.1 திருமூலர்
1.2 சம்பந்தர்
1.3 திருநாவுக்கரசர்
1.4 மாணிக்கவாசகர்
1.5 ஆண்டாள்

அலகு – 2

2.1 பட்டினத்தார்
2.2 மஸ்தான் சாகிபு
2.3 குமரகுருபரர்
2.4 கலிங்கத்துப் பரணி
2.5 நந்திக்கலம்பகம்
2.6 முக்கூடற்பள்ளு

அலகு – 3 **(உரைநடை)**

நம்மால் முடியும் தம்பி நம்பு
எம்.எஸ்.உதயமூர்த்தி

அலகு- **4 (இலக்கிய வரலாறு)**

4.1 சைவ சமயக் குரவர்
4.2 ஆழ்வார்கள் (ஆண்டாள், குலசேகர ஆழ்வார் மட்டும்)
4.3 சிற்றிலக்கியங்கள் (பரணி, பள்ளு, பிள்ளைத் தமிழ், கலம்பகம் மட்டும்)
4.4 இசுலாமும் தமிழும்
4.5 உரைநடை வளர்ச்சி

அலகு – 5 **(மொழித் திறன்)**

5.3 கலைச் சொல் ஆக்கம்
5.3.1 அறிவியல்
5.3.2 ஆட்சித்துறை
5.3.3 கணினி
5.3.4 புழங்கு பொருட்கள்
5.4 மொழிபெயர்ப்புப் பகுதி
5.4.1 கடிதங்கள்

SEMESTER – II ENGLISH THROUGH LITERATURE – II LE202S

UNIT -1 **[15 HRS]**

PROSE : Contemporary Issues

The First Atom Bomb – Marcel Junod

Climatic Change and Human Strategy – E. K. Fedcrov

Corruption : Causes, Consequences and Agenda for Further Research – Paolo Mauro

UNIT- 2

LIFE STORIES **[15 HRS]**

The Diary of a young girl – Anne Frank

Wings of Fire – A.P.J. Abdul Kalam

Mother Teresa – F. G. Herod

UNIT - 3 **[15 HRS]**

BASIC GRAMMAR

Articles

Pronouns – Personal, Reflexive and Emphatic

Pronouns – Demonstrative, Indefinite, Interrogative, Distributive and Reciprocal.

Pronouns – Relative

Verbs – Transitive and Intransitive, Active and Passive Voice

Verbs – Mood and Tense

UNIT - 4.

WRITTEN COMMUNICATION SKILLS **[15 HRS]**

Precis Writing

Note Making

Report Writing

Text

1. Elango, K. Insights : **A Course in English Literature and Language**. Hyderabad: Orient Black Swan Private Limited, 2009.
2. Bhatnagar, R.P., and Rajul Bharagava. **English for Competitive Examinations**. Chennai: Macmillan India Press, 2002.
3. David Green, **Contemporary English Grammar: Structures and Composition**. Chennai: Macmillan India Limited, 2004.

Reference

1. Prince, Donna. **Skills for Success**, New York: CUP 1998.
2. Wallace, Michael, J. **Study Skills in English**. Kottayam: CUP, 2004.

SEMESTER-II BIOMOLECULES-II BC203

UNIT I LIPIDS [15 hrs]

Introduction , definition, Nomenclature and classification of lipids, Physical properties {emulsification},classification of fatty acids –saturated, unsaturated and essential fatty acids, properties of fatty acids{Iodine number, Acid number, RM number, Saponification number and Rancidity}. Structure and function of commonly occurring phospholipids (esp .Lecithin , cephalin , phosphatidyl inositol and serine}Sphingomyelin, plasmalogen, sterols{cholesterol} and bile acids. Glycolipids- cerebrosides and gangliosides.

UNIT II AMINOACIDS [10 hrs]

Definition and classification of Amino acids based on structure, metabolism & Polarity .Essential & Non essential amino acids, Non protein amino acids. Characteristics of amino acids-optical isomerism, zwitter ion, acid base properties of amino acids, isoelectric point & isoelectric pH.

UNIT III PROTEIN-I [10 hrs]

Definition, classification based on size and shape, solubility, composition & functions. General reactions of proteins (Reactions of both NH_2 group & COOH group)

UNIT IV PROTEIN-II [15 hrs]

Structure of proteins-primary, secondary, tertiary & quaternary. Ramachandran plot and forces stabilizing the structure of proteins, Determination of amino acid sequence,
N -terminal determination- Edman's dansylchloride method. C- terminal- hydrazinolysis and biochemical method, solid phase polypeptide synthesis.

UNIT V BIOLOGICALLY IMPORTANT PEPTIDES & PROTEINS [10 hrs]

Structure and functions of biologically important peptides-Glutathione, vasopressin & Insulin. Biologically important proteins-structure and functions of Globular proteins (Haemoglobin, Myoglobin), Fibrous protein (Keratins, collagen) and Lipoproteins.

TEXTBOOKS:

1. Renuka Harikrishnan ,1995, " Biomolecules and Enzymes" (second edition), madurai, Indraja Pathipagam
2. J.L.Jain, Sanjay Jain and Nitin Jain,1997, "Fundamentals of Biochemistry"(6th Edition) ,New Delhi, S.Chand & Company Ltd

REFERENCES:

1. Power & Chatwal "Biochemistry" 4th edition , Himalaya Publishing House
2. Cambell &Farrell, 2007, "Biochemistry" 5th edition, Delhi ,Baba Borkhanath printers
3. T.N.Pattabiraman,1993"Principles of Biochemistry" 5th edition,Bangalore,. Gajanana Book Publishers and Distributors
4. Dr.A.C.Deb ,1983,"Fundamentals of Biochemistry" (8th edition), Kolkata,New Central Book Agency
5. Lehninger,Nelson And Cox ,1982, " Principles Of Biochemistry", (4TH Ed)UK, Macmillan Worth Publishers.

SEMESTER-II NUTRITIONAL BIOCHEMISTRY BC204

UNIT I NUTRITIVE AND CALORIFIC VALUE OF FOOD [15 hrs]

Introduction and definition of food and nutrition, Basic food groups – Energy yielding, body building and protective foods. Basic concepts of energy expenditure, Unit of energy, measurement of food stuffs by bomb calorimeter , calorific value of proteins, carbohydrates and lipids, RQ of foods, Basic metabolic rate (BMR),its measurements and influencing factors, SDA of foods.

UNIT II NUTRITIVE VALUE OF PROTEINS [15 hrs]

Essential amino acids, biological value of proteins (animal and plant proteins), evaluation of proteins by nitrogen balance method – DC, BV, NPU and NAP of animal and plant proteins, proteins sparing action of carbohydrates, single cell proteins (SCPs) (e.g.,spirulina only)

UNIT III PROTEIN MALNUTRITION AND UNDER NUTRITION [10 hrs]

Kwashiorkor and Marasmus- their preventive and curative measures .Vitamins – RDA, sources, deficiency and functions of fat soluble vitamins and water soluble vitamins
(A,D,E,K,B – complex – B_1, B_2, B_5, B_6, B_9, B_{12} and vitamin – C.)

UNIT IV MINERALS [10 hrs]

Minerals – physiological role and nutritional significance of principal and essential trace elements (sodium, potassium, calcium. magnesium, phosphorous, copper, zinc, iron, iodine, fluorine)

UNIT V BALANCED DIET FOR DIFFERENT AGE GROUPS [10 hrs]

Composition of balanced diet and RDA for Indians, Nutritional requirements for infants, children, adolescents and adult (male and female), pregnant and lactating women and old age.

TEXTBOOKS:

1. Verma . P.S and Agarwal .P.K,1999, “Cell biology, Genetics, Molecular biology, Evolution and Ecology”,(24th edition) New Delhi, S.Chand & Company Ltd
2. Dr. M. Swaminathan,1987, “Food and Nutrition Vol I&II”, Second edition,Bangalore, Bappco Publishers

REFERENCES:

1. Sheela A. Stanly ,2008,“Cell biology for biotechnologist”, (I Edition), Narosa Publishing House Pvt Ltd.
2. Prakash S.Lohar, 2007, “Cell and Molecular biology” (I edition), Chennai, MJP publishers
3. De Robertis EDP and De Robertis EMF, 1987, “Cell and Molecular Biology”, (8th edition),New Delhi, B.I.Waverly Pvt Ltd
4. Patricia Trueman, 2007, “Nutritional Biochemistry” (I edition), Chennai, MJ publishers
5. Darnell J, Lodish H, Baltimore D, 1986, “Molecular Cell Biology”, England, WH Freeman publishers.

SEMESTER – II INDUSTRIAL CHEMISTRY ACH202S

UNIT – I SEPARATION TECHNIQUES IN CHEMICAL ANALYSIS

Separation techniques: solvent extraction - principle and process - Application

Chromatography: Classification of chromatographic methods - principles of differential migration - adsorption phenomena, nature of adsorption- solvent system - R_f values - factors affecting R_f value - Column and thin layer chromatography.

UNIT - II SPECTROPHOTOMETRY

General features of absorption spectroscopy, Beer - Lambert's Law, transmittance, absorbance and molar absorptivity - single and double beam Spectrophotometry - application of Beer – Lambert's law for quantitative analysis of Cr in $K_2Cr_2O_7$ and Mn in $MnSO_4$.

UNIT – III AGRICULTURALCHEMISTRY

Fertilizer: Plant Nutrients - nutrient function – micronutrients - fertilizers type - need for fertilizers - essential requirements - Ammonium sulphate - Ammonium Sulphate from gypsum or anhydrite – action of Ammonium sulphate as fertilizer - urea.

Pesticides: Introduction to Pesticides – types – insecticides – fungicides - herbicides. Plant growth regulator - Pheromones and harmones. Synthesis and present status of the following: DDT, BHC, parathion - Baygon. Soil testing-an introduction

UNIT –IV MACROMOLECULES

Classification of polymers - chemistry of polymerization - chain polymerization - step polymerization, co-ordination polymerization - tacticity. Molecular weight of polymers - number average and weight average molecular weight - Degree of polymerization - dendrimers - biopolymers. Chem Sketch – Chem Draw (Lab).

UNIT – V WATER TREATMENT AND DRUG FORMULATIONS

Water treatment: Water quality parameters-Estimation of hardness (EDTA method) - alkalinity (Titrimetry) - Water softening (Zeolite) - Demineralization (Ion Exchange) and desalination (RO) -Domestic water treatment.

Drug formulation: Drug – Introduction - drug and disease - historical evolution - animal and synthetic biotechnology - human gene therapy, formulation - need of conversion of drugs into medicines - additives and their role.

Text Books :

1). J. Awarpara, Introduction to biological chemistry, Prentice Hall, 2003.

2) R. Gopalan, P.S. Subramanian & K. Rangarajan, Elements of analytical chemistry, Sultan Chand & Sons, 2003.

3) D.A. Skoog, D.M. West, F.J. Holler and S.R. Crouch, Fundamentals of Analytical chemistry, Thomson. Brooks / Cole, 2004.

4) B.K .Sharma, Industrial chemistry, GOEL Publishers, 2004.

Reference Books :

1) Anastes-Paul-Warner-Jancy, Green Chemistry –Theory and Practice, 2006.

2) R. Morris, Shreve, J.A. Brink, Chemical Process Industry, Prentice Hill, 2000.

SEMESTER – II ALLIED CHEMISTRY PRACTICAL – II ACHP202

1) Chromatography- TLC Analysis of Oils.
2) Colorimetry- Estimation of Iron.
3) Titrimetry- Estimation of Iron with $KMnO_4$ and $K_2Cr_2O_7$.
4) Analysis of water- Determination of hardness of water by complexometric titration.

Reference Books :

1) B.K. Sharma, Industrial chemistry, GOEL Publishers, 2004.
2) R. Morris, Shreve, J.A. Brink, Chemical Process Industry, Prentice Hill, 2000.
3) S. Sundaram, S. Viswanathan, Practical chemistry, 3 Volumes
4) Vogel, Quantitative Analysis, Longman.

Evaluation pattern

Industrial chemistry practicals
External = 60 marks
Record – 10
Viva voce – 10
Volumetric – 40
Toal -60 marks

பருவம் : இரண்டாம் பருவம் பாடக் குறியீட்டு எண் : **EBT 201**

அலகு – 1

எளிய முறையில் தமிழ் கற்றல்.

1. பட்டம் – சட்டம் – கட்டடம் – தட்டு – வட்டம் – மாமா
2. பாடம் – சட்டி – கட்டி – தட்டி – வடம் – மாமி
3. பட்டி – சடை – கடை – தடை – வடை – மாதா
4. படி – சாதம் - கார் - தார் - வான் - மாதம்
5. படை – சாவி – காவி – தாள் - வான் - அம்மா – அப்பா
6. பாப்பா –
7. பாட்டி –
8. பாட்டு –

சிறு தொடர்.

பாப்பா படி – பாட்டி கடை – கட்டடம் கட்டித்தா –
பாப்பா பாடம்படி – பாட்டி தட்டு –
பாப்பா பாட்டு படி – பாட்டி வடைத்தட்டு

பயிற்சி.

குடும்பத்தினர் (அ) நண்பருடன் பேச்சுத் தமிழில் உரையாடல்
குறில் நெடில் வேறுபாட்டால் பொருள் மாறுபடும் சொற்கள்
பரம் – பாரம் கரம் – காரம் வரம் – வாரம் சரம் – சாரம்
தரம் – தாரம்

அலகு – 2

உயிரெழுத்துக்கள், ஆய்த எழுத்து, மெய்யெழுத்துக்கள் - வகை, எண்ணிக்கையுடன் அறிதல்.

உயிர்மெய் எழுத்துகள் உருவாதலைக் கற்றல்:
(வல்லின மெய்கள்)
க் + அ – க ..... ற் + ஔ – றௌ
K + A – KA ..... RR + OU - RROU

அலகு – 3

உயிர்மெய் எழுத்துகள் மெல்லினம், இடையினம்
ங் + அ = ங ..... ன் + ஔ – னௌ
NG + A – NGA ..... N + OU – NOU

ய் + அ = ய ..... ள் + ஔ – ளௌ
Y + A – YA ..... LL + OU - LLOU

ஒலி வேறுபாட்டால் பொருள் மாற்றம் (ர-ற, ன-ண, ல-ள, ழ)
அரம் - அறம்
உன் - உண்
வால் - வாள் - வாழ்
ஒவ்வொன்றிற்கும் ஐந்து எடுத்துக்காட்டு தருக.

அலகு – 4

சொல்-வகை
ஓரெழுத்து ஒருமொழி
பெயர்:
ஆ, பூ, தீ, தை, கா (சோலை)
வினை:
வா, போ, ஈ (கொடு)
தா, கா (காத்தால்)
ஈரெழுத்து ஒருமொழி:
பெயர்:
கனி, பனி, வான், காடு, வீடு
வினை:
நில், படி, பார், காண், எழு
தொடர்மொழி: பெயர்:
கபிலர், வெள்ளிவீதியார், திருவள்ளுவர், ஆண்டாள், கம்பர், பாரதியார்
முக்கனி, முத்தமிழ், மூவேந்தர், நாற்றிசை, ஐம்பொறி - இவற்றிற்கு விளக்கம் தருக.
முறைப்பெயர் (உறவுப்பெயர்) அம்மா, அப்பா, மாமா, ...

அலகு – 5
உடலுறுப்புப் பெயர்கள்:
தலை முதல் அடி வரை உள்ள உறுப்புகள்

முதலெழுத்து மாற்றத்தால் பொருள் மாற்றம் பெறும் உடலுறுப்புகள் சான்றாக:

உதயம் – இதயம்	ஊக்கு – மூக்கு
பண், மண் – கண்	படி – அடி
மரம், வரம் – கால்	கல் – பல்
ஆல், பால் – கால்	கொடை – தொடை
அலை, இலை – தலை	மாது – காது
பாக்கு, வாக்கு – நாக்கு	கிழி – விழி
எழுத்து – கழுத்து	

பறவைப் பெயர்கள்:
மயில், அன்னம், கிளி, புறா, குயில்
வீட்டு விலங்குகள்:
பசு, ஆடு, குதிரை, நாய், பூனை
மலர்கள்:
தாமரை, மல்லிகை, முல்லை, செண்பகம், அல்லி
நிறங்கள்:
வானவில்லின் வண்ணங்கள் - அறிதல்
எண்கள்:
ஒன்று முதல் ஐம்பது வரை எழுத்தால் எழுதுதல்
சிறுகதை:
“புலியை ஏமாற்றிய நரி” தமிழ் - நான்காம் வகுப்பு, தமிழ் நாட்டுப் பாடநூல் கழகம், சென்னை.

SEMESTER – II PERSONALITY DEVELOPMENT EPD201

Unit I
Personality
Meaning-definition-major determinants of personality genetic determinants, social determinants, cultural determinants, psychological determinants, theories Jung's typology trait theory psychoanalytical theory importance of personality development guidance to improve personality.

Unit II
Mental health
Meaning-concept-definition-characteristics - influential factors - biological factors - psychological factors - socio-economic and cultural factors

Unit III
Stress and its management
Meaning,definition causes of stress, major life changes and environmental events - conquence of stress,stress manangement techniques.

Unit IV
Part-a
Anger and its manangement;
Meaning, definition, nature-causes-symtoms and consequence of anger - physiological effects and psychological effects ,techniques to control anger.
Part-b
Suicidal prevention

Unit V
Soft skills development - Presentation skill - Interpersonal skill - Body language

Text Book;
Mental health of rural youth

Reference;
Personality development-Elizabeth .B.Hurlock

BCP 201 - MAIN PRACTICAL SYLLABUS-1
(I & II SEMESTER)

VOLUMETRIC ANALYSIS

1. Estimation of Glycine by formal titration method
2. Estimation of ascorbic acid using dichlorophenol indophenol dye as link solution
3. Determination of Saponification value of an edible oil
4. Determination of acid number of an edible oil
5. Determination of iodine value of an edible oil
6. Estimation of chloride by Mohr's method and Volhard's method
7. Estimation of reducing sugar from biological fluids by benedict's method
8. Titration curve of amino acids

NUCLEIC ACID EXTRACTION

1. Isolation of genomic DNA (saline citrate method)
2. Isolation of RNA (Phenol extraction method)

QUALITATIVE ANALYSIS

a) Qualitative analysis of carbohydrates
Glucose, fructose, arabinose, maltose, lactose,galactose,dextrin,mannose,sucrose and starch
b) Qualitative analysis of aminoacids
Tyrosine,. tryptophan, arginine, histidine,Proline and cysteine
c) Reactions of lipids – solubility, saponification , tests for unsaturation, Libermann Burchard test for cholesterol

பருவம்: மூன்றாம் பருவம் **பாடக் குறியீட்டு எண்: LT303S**

அலகு **பாடங்கள்**

அலகு -1

1.1 சிலப்பதிகாரம் - வழக்குரை காதை
1.2 மணிமேகலை – பாத்திரம் பெற்ற காதை

அலகு – 2

2.1 சீவகசிந்தாமணி – கேமசரியார் இலம்பகம்
2.2 கம்பராமாயணம் - மந்தரை சூழ்ச்சிப் படலம்

அலகு – 3

3.1 பெரியபுராணம் - பூசலார் நாயனார் புராணம்
3.2 தேம்பாவணி – வளன் சனித்த படலம்
3.3 சீறாப்புராணம் - மானுக்குப் பிணை நின்ற படலம்

அலகு- 4 **(இலக்கிய வரலாறு)**

4.1 ஐம்பெருங்காப்பியங்கள்
4.2 கிறிஸ்துவக் காப்பியங்கள்
4.3 இசுலாமியக் காப்பியங்கள்
4.4 சோழர்காலக் காப்பியங்கள்
4.5 இரட்டைக் காப்பியங்கள்

அலகு – 5

5.1 பண்பலை வானொலி நிகழ்ச்சித் தொகுப்பு
5.2 வாடிக்கையாளர் சேவை மைய அலுவலர்
5.3 சுற்றுலா வழிகாட்டி
5.4 கடிதங்கள்
5.5 பொதுக்கட்டுரை

SEMESTER – III ENGLISH THROUGH LITERATURE –III LE303S

OBJECTIVES:

1. To enable the students learn the art of communication through reading literature.
2. To enable them appreciate literary works.
3. To make them learn the relationship between Language & Literature.

UNIT- I SPORTS

1. Swami and Friends – R.K. Narayan (Prose)
2. See Off the Shine – Imogen Grosberg (Poem)
3. The Sporting Spirit – George Orwell (Prose)

UNIT–II MASS MEDIA

1. Building an Internet Culture – Philip Agre (Prose)
2. Odds against Us – Satyajit Ray (Prose)
3. TV as Babysitter – Jerzy Kosinski (Prose)

UNIT – III BASIC GRAMMAR

1. Agreement of the Verb with the subject
2. Non – Finite Verbs
3. Strong and Weak verbs
4. The Auxiliaries
5. Anomalous Finites

UNIT – IV BASIC LANGUAGE SKILLS

1. Paragraph Writing
2. Phonetic symbols, transcription (words)
3. Idioms & Phrases:
   i. List of Idioms: An absent minded person, apple- pie order, an armchair critic, a big shot, a burning question, a cock and bull story, crocodile tears, a flying visit, laughing stock, asquare deal, a tall order, birds of a feather, fish out of water, the lion's share, storm in a tea cup.

ii. List of Phrases: Bear with, call on, call off, carry out, find out, give up, hand over, keep on, keep up, look after, set out, take over, turn down, wind up, work out.

Text

1. Elango, K. **Insights**: ***A Course in English Literature and Language.*** Hyderabad: Orient Black Swan Private Ltd, 2009.
2. Bhatnagar, R.P., and Bargava, Rajul. ***English for Competitive Examinations***. Chennai: Macmillan, 2002.
3. David Green, ***Contemporary English Grammar Structures and Composition***. Chennai: Macmillan, 2010.

Reference

1. Murphy, Raymond, ***Essential English Grammar***. New Delhi: Cambridge UP, 2009.
2. Jones; Daniel, ***English Pronunciation Dictionary.*** Singapore: Cambridge UP, 2009.

SEMESTER-III INTERMEDIARY METABOLISM- I BC303

UNIT I ENZYMES [15 hrs]

Introduction about Enzymes-Classification- chemical nature and general characterization-active site, mechanism of enzyme action – Lock and key theory and induced fit theory, coenzymes, cofactors, isoenzymes ,factors affecting enzyme activity, units of enzyme activity.

UNIT II ENZYME KINETICS [10 hrs]

Michaelis- Menten equation -determination of Km and Vmax value- Line weaver Burk plot- Enzyme inhibition – competitive, non-competitive and uncompetitive inhibition (no derivation)

UNIT III CARBOHYDRATE METABOLISM – I [15 hrs]

Glycolysis – aerobic and anaerobic, energetics , pyruvate dehydrogenase complex, oxidation of pyruvate – citric acid cycle (energetics included) – glycogenesis and glycogenolysis (key enzymes and regulation of these metabolic pathways are included).

UNIT IV CARBOHYDRATE METABOLISM – II [10 hrs]

Pentose phosphate pathway - gluconeogenesis – glyoxalate cycle.Shuttle Systems- Malate-oxaloacetate-aspartate shuttle and glycerophosphate-dihydroxyacetone phosphate shuttle

UNIT V ELECTRON TRANSPORT CHAIN [10 hrs]

The Electron transport chain - components and reactions of ETC- oxidative phosphorylation – chemiosmotic theory, P/O ratio, uncouplers of oxidative phosphorylation.

TEXT BOOKS :

1. M.N Chatterjea and Rana Shinde," Text book of Medical biochemistry",4th edition, Jaypee Publishers, New Delhi
2. J.L.Jain, Sanjay Jain and Nitin Jain,1997, "Fundamentals of Biochemistry",6th Edition, S.Chand& Company Ltd ,New Delhi.

REFERENCES:

1. Lehninger . David L.Nelson, Michael M.Cox, 1982, "Principles Of Biochemistry", (4th ed)UK, Macmillan Worth Publishers.
2. Robert K. Murray, Daryl K. Grammer "Harper's Biochemistry",(25th Edition) McGraw Hill, Lange Medical Books.
3. Sathya Narayanan U,1999, "Biochemistry", (2nd Edition),Kolkata, Allied Publishers.
4. Donald Voet and Judith Voet,"Biochemistry",2nd edition,John Wiley & Sons,Inc,NY

SEMESTER-III ANALYTICAL BIOCHEMISTRY- I BC304

UNIT I ELECTROPHORESIS [15 hrs]

Units of measurements : units of measurement of solutes in solution, eg. Normality, molality, molarity and millisomol, ionic strength. Examples for this concept. Electrophoresis-Factors affecting migration rate ,Tiselius moving boundary electrophoresis, Paper, Cellulose acetate ,Polyacrylamide, SDS-PAGE and Immunoelectrophoresis

UNIT II ELECTROCHEMICAL TECHNIQUES [15 hrs]

Electro chemical techniques : Principles of electro chemical techniques pH, pOH, buffer, buffer capacity , Henderson-Hasselbach equation, buffers in body fluids, Red blood cells and tissues, Titration curve of amino acids. Measurement of pH using indicator – Glass electrode, oxygen electrode – principle and application of clark electrode.

UNIT III CHROMATOGRAPHY-I [10 hrs]

General principles of chromatography- partition and adsorption. Principle, operational procedure and applications of paper chromatography, column chromatography, ion exchange chromatography, thin layer chromatography

UNIT IV CHROMATOGRAPHY-II [10 hrs]

Procedure and applications of molecular sieve chromatography, affinity chromatography, gas liquid chromatography, HPLC ,reverse phase chromatography (elementary knowledge)

UNIT V CENTRIFUGATION [10 hrs]

Centrifugation technique: Basic principles - types of centrifugation, rotors, Sedimentation rate, Svedberg unit, differential, density gradient, isopycnic and equilibrium centrifugation. Preparative and analytical ultracentrifugation techniques. Determination of molecular weight of proteins by Analytical Ultracentrifuge(derivation not included).

TEXTBOOK:

Upadhyay, Upadhyay & Nath ,"Biophysical Chemistry –Principles and Techniques",
3rd edition,Himalaya Publications,Mumbai.

REFERENCES:

1. A biochemical guide to principles and techniques of practical biochemistry, Keith Wilson & Kenneth Goulding, Cambridge Press.
2. Principles & Techniques of Practical Biochemistry – Keith Wilson, John Walker, Cambridge press.
3. Introduction to Practical Biochemistry – Shawney, Randhir Singh, Narosa Pub, N. Delhi.
4. Analytical Biochemistry – RB Turner, Elsevier, NY.

SEMESTER – III ALLIED MICROBIOLOGY AMBC302

Unit – 1 **(15 Hrs)**

Introduction - History and scope of Microbiology - Shape and Size of bacterial cells - Structure of bacterial cell -Structure and functions of cell organelles (Cell wall, structures found outside the cell wall and within the cell wall) - Structure of Endospore

Unit – 2 **(15 Hrs)**

Microscopy - Simple, Compound, Dark field, Phase contrast, Fluorescent, Electron Microscopes - Staining – Classification Microorganisms - Haeckel's, Whitaker's - Prokaryotes and eukaryotes - Taxonomical ranks - Binomial Nomenclature - Characteristics used in Taxonomy

Unit – 3 **(15 Hrs)**

Sterilization - Physical agents - Moist heat, Dry heat, Radiation, Filtration -Chemical agents - Phenols and phenolic compounds, Alcohols, Gaseous agents - Antibiotics – Classification, Mode of action - Antifungal and antiviral agents – examples

Unit – 4 **(15 Hrs)**

Motility of bacteria - Nutrient requirements of microorganisms - Growth factors - Nutritional types - Culture media - Pure culture - Microbial growth - Growth curve - Measurement of microbial growth - Continuous culture - Environmental factors affecting growth - Bacterial reproduction

Unit – 5 **(15 Hrs)**

Brief description of important groups of bacteria - Archaeobacteria, Spirochetes, Mycoplasma, Actinomycetes, Photosynthetic bacteria, Cyanobacteria, Methanogenic bacteria, Sulfate utilizing bacteria - General characteristics of Algae, Fungi, Protozoa and viruses - Human diseases and the pathogen involved – Role of microorganisms in the environment

Text Books

- Michael J. Pelzar.1993. Jr., E.C.S. Chan, Noel R. Krieg, Microbiology, (Fifth edition), New Delhi.,Tata McCraw Hill.
- Prescott, L. M., J. P. Harely and D. A. Klain, 2003. Microbiology, (5th Edition)
- New York, McGraw Hill,.

Reference Books

- Roger Y. Stanier, John L. Ingraham, Mark L. Wheelis, Page R. Painter, Microbiology, (5th edition), Macmillan.
- Atlas R. A.,1997. Principles of Microbiology (2nd Edition), Iowa, Wm. C. Brown Publishers.
- Talaro K. P. and A. Talaro, 1999 Foundations in Microbiology, (3rd Edition), WCB McGraw Hill

SEMESTER-III FIRST AID AOFA301

UNIT 1: PRINCIPLES AND EMERGENCY FIRST AID

Definition of first aid-objects of first aid –principles of first aid-Responsibilities-golden rules of first aid - kit for first aider

Diagnosis –blood pressure-bleeding or hemorrhage-types of hemorrhage- Wounds-types-open and closed wounds-emergency care for general wounds-wound with foreign body-special wounds-wounds to the palm of the hand, abdominal wounds-

UNIT II: MEDICAL EMERGENCIES

choking-symptoms –signs and treatment –methods of back slap-adults –infants and children-asphyxia –causes-symptoms and signs and treatment- drowning -effects-symptoms and signs and treatment-suffocation – suffocation by poisonous gases.

Diabetic emergencies –Hyperglycemia, Hypoglycemia-symptoms and signs treatment-Liver emergency-Kidney Emergency

UNIT III: INJURIES AND ANAPHYLACTIC SHOCK

Poisoning –Routes of poisoning- Effects of poisoning-treatment and measures-Stroke-Heart Attack-coronary obstruction and cardiac arrest- signs and symptoms –Treatment-insect bites- snake bites-dog bites-symptoms and treatment

-Injuries-head injuries-burns and scalds-chemical burns-electric burns-radiation burns-and cold burns-sign-symptoms and treatment

UNIT IV: COMMON AILMENTS

Head ache- causes-signs and symptoms-treatment-tooth ache-ear ache –causes and treatment-Common cold –cough –Diarrhoea and dysentery-causes-symptoms and signs-treatment-constipation-travel sickness-signs and symptoms-treatment

UNIT V: FOOD AND NUTRITION

Importance of carbohydrates-proteins-fats –their physiological function –Vitamins –fat soluble – water soluble-daily requirements –functions and deficiency

References

1. Sathya Narayanan U,1999, "Biochemistry", (2nd Edition),kolkata,Allied Publishers

2. Manual of First aid –L.C.Gupta Abhitab-2004, jaypee brothers, medical publishers (p)ltd,new delhi,India.

3.Dr. M. Swaminathan,1987, "Food and Nutrition Vol I&II", Second edition,Bangalore, Bappco Publishers

SEMESTER-III AMBCP301 ALLIED MICROBIOLOGY PRACTICAL

பருவம்: நான்காம் பருவம் **பாடக் குறியீட்டு எண்: LT404S**

அலகு **பாடங்கள்**

1 1.1 புறநானூறு – 74,192,312
1.2 அகநானூறு – 02,07,34
1.3 குறுந்தொகை – 23,38,40
1.4 நற்றிணை – 149,60,110
1.5 ஐங்குறுநூறு – வேட்கைப் பத்து (1-5)
1.6 கலித்தொகை – பாலைக் கலி (9.11)

2 2.1 பட்டினப்பாலை (120-192)
2.2 சிறுபாணாற்றுப்படை
2.3 மதுரைக்காஞ்சி
2.4 முல்லைப்பாட்டு

திருக்குறள்

3 3.1 அறிவுடைமை
3.2 நட்பாராய்தல்
3.3 புலவி நுணுக்கம்

இலக்கிய வரலாறு

4 4.1 எட்டுத்தொகை,
4.2 பத்துப்பாட்டு
4.3 ஆற்றுப்படைகள்
4.4 திருக்குறள் கீழ்க்கணக்கில் பெறுமிடம்

மொழித்திறன்

5 5.1 விண்ணப்பங்கள்
5.2 சுருக்கி வரைதல்
5.3 நேர்காணல்

SEMESTER – IV ENGLISH THROUGH LITERATURE –IV LE404S

OBJECTIVES:

1. To enable students be aware of career prospects.
2. To make them prepare for their career.
3. To introduce students to the realm of fiction with special emphasis on character study.

UNIT- 1 SELECTED SCENES FROM SHAKESPEARE

i. HE KILLS SLEEP
MACBETH

Act One Scene VII and Act Two Scene II

ii. PLAY OUT A PLAY??
HENRY IV PART I

Act Two Scene IV

iii. PATTERNS OF LOVE
AS YOU LIKE IT

Act Four Scene I

UNIT- II POETRY

1. The Road Not Taken – Robert Frost
2. La Belle Dame Sans Merci – John Keats
3. Punishment in Kindergarten- Kamala Das

UNIT- III SHORT STORY

1. The Purple Dress – O'Henry
2. Chameleon – Anton Chekhov
3. The Reaping Race- Liam o' Flaherty

UNIT- IV

1. Phonetic Transcription (Sentences)

UNIT- V Basic Grammar

1. Use of wrong prepositions
2. Unnecessary use of Articles.
3. Use of wrong Tenses
4. Punctuation & Capitals
5. The uses of prefixes & suffixes

Text

1. ***Selected scenes from Shakespeare's plays***. ed., Board of Editors. Chennai: Emerald publishers, 2002.
2. Mohanty P.K and Mahapatra, S. ***An Anthology of Short Stories***. New Delhi: S. Chand & Company Ltd, 1997.
3. Ambika Sen Gupta. ***Selected College Poems***, Madras: Orient Longman, 1994.
4. O' Conor, J.D.***Better English pronunciation.*** New Delhi: Cambridge UP
5. ***Popular Short Stories*** ed. Board of Editors. Chennai: Oxford UP, 1998.

Reference

1. Krishnasamy, N& Sriraman T. ***Creative English for Communication***. Chennai: Macmillan, 2006.
2. Burton, S.H: Macmillan Master Series, Macmillan.
3. Jones, Daniel. ***English Pronouncing Dictionary***. Singapore: Cambridge UP, 2006.

SEMESTER-IV INTERMEDIARY METABOLISM- II BC405

UNIT I LIPID METABOLISM – I [15 hrs]

Biosynthesis of fatty acids -saturated and unsaturated, fatty acid synthase complex ,biosynthesis of cholesterol (regulation included), Biosynthesis of triglycerides and phospholipids(lecithin and cephalin only)

UNIT II LIPID METABOLISM – II [15 hrs]

Degradation of fatty acids – oxidation of fatty acids – alpha, beta , and omega oxidation – metabolism of ketone bodies.

UNIT III PROTEIN METABOLISM [10 hrs]

Introduction – fate of dietary proteins – glucogenic and ketogenic amino acids, catabolism of amino acids – transamination , oxidative and nonoxidative deamination, decarboxylation – urea cycle .

UNIT IV NUCLEIC ACID METABOLISM [10 hrs]

Biosynthesis of purine and pyrimidine – de novo and salvage pathway – degradation of purine and pyrimidine – biosynthesis of nucleotide coenzymes – NAD and FAD. Conversion of ribonucleotides to deoxyribonucleotides.

UNIT V DETOXIFICATION [10 hrs]

Detoxification – definition – types of detoxification, Phase I and Phase II - oxidation, reduction, hydrolysis , conjugation and sulfation with example

TEXT BOOKS:

1. M.N Chatterjea and Rana Shinde," Text book of Medical biochemistry",4th edition, Jaypee Publishers, NewDelhi
2. J.L.Jain, Sanjay Jain and Nitin Jain,1997, "Fundamentals of Biochemistry",6th edition, S.Chand& Company Ltd ,New Delhi.

REFERENCES:

1. Lehninger , David L.Nelson, Michael M.Cox, 1982, "Principles Of Biochemistry",(4th Ed) UK, Macmillan Worth Publishers.
2. Robert K. Murray, Daryl K. Grammer, "Harper's Biochemistry",(25th Edition) Mc Graw Hill, Lange Medical Books.
3. Sathya Narayana. U,1999, "Biochemistry", (2nd Edition),Kolkata,Allied Publishers.
4. Donald Voet and Judith Voet, "Biochemistry", 2nd edition, John Wiley & Sons, Inc, NY

SEMESTER-IV ANALYTICAL BIOCHEMISTRY- II BC406

UNIT I SPECTROSCOPY-I [15 hrs]

Electromagnetic radiation: Basic Principles of electromagnetic radiation. energy, wavelength, wave number and frequency, absorption and emission spectra,, Beer-Lambert's Law, light absorption and its transmittance. UV and visible spectrophotometry – principles, instrumentation and applications with examples

UNIT II SPECTROSCOPY-II [15 hrs]

Spectrofluorimetry techniques-Principle, instrumentation and applications in vitamin assays (riboflavin and thiamine), Flame photometry – Principle, instrumentation and applications in trace elements (Na^+, K^+ analysis), Principle, instrumentation of Atomic absorption spectrophotometer with one example.

UNIT III BLOTTING TECHNIQUES [10 hrs]

Blotting techniques- Southern Blot, Northern blot, western blot, PCR (elementary knowledge)

UNIT IV RADIATION BIOLOGY-I [10 hrs]

Radio isotope Techniques: Atomic structure, radiation, type of radio active decay, half-life, and units of radioactivity. Detection and measurement of radioactivity – Methods based upon ionization -GM counter and Scintillation counter.

UNIT V RADIATION BIOLOGY-II [10 hrs]

Radio isotope Techniques: Auto radiography and isotope dilution techniques. Applications of radio isotopes in biology, clinical scanning and radio dating, Radio immuno assay. biological hazards of radiation and its safety aspects.

TEXTBOOKS:

Upadhyay, Upadhyay & Nath ,"Biophysical Chemistry –Principles and Techniques",
3rd edition,Himalaya Publications, Mumbai.

REFERENCES:

1. A biochemical guide to principles and techniques of practical biochemistry, Keith Wilson & Kenneth Goulding, Cambridge Press.
2. Principles & Techniques of practical biochemistry – Keith Wilson, John Walker, Cambridge Press
3. Introduction to Practical Biochemistry – Shawney, Randhir Singh, Narasa Pub, N. Delhi.
Analytical Biochemistry – RB Turner, Elsevier, NY.

SEMESTER – IV ADVANCED ZOOLOGY AZBC401S

Unit: 1

BIODIVERSITY OF INVERTEBRATES AND CHORDATES- Classification, Structural and Functional details of Invertebrates –Protozoa: Plasmodium, Helminthes: *Taenia solium*, Annelida: Earthworm- Diversity, Habitat, Adaptations and Taxonomic status of chordates- Prochordata, Amphibia: Frog, Mammalia: Rat.

Unit: 2

ANIMAL PHYSIOLOGY AND ENDOCRINOLOGY- **Nutrition:** Digestion and absorption of carbohydrates proteins and lipids. **Respiration** –Properties and functions of Respiratory pigments - exchange and transport of Gases (CO2 & O2) Bohr's effect. **Circulation:** Composition and function of blood – Types of Hearts – Neurogenic – Myogenic - ECG. Blood pressure- Mechanism of Blood clotting **Excretion** – Classification of animals based on the nature of excretory products, ornithine cycle Osmo regulation in fresh water and marine animals. **Nerve Physiology:** Types of Neuron – Conduction of Nerve impulse. Synapse and synaptic transmission of impulses. **Muscle Physiology:** Types of Muscle – Ultra structure and properties – Muscle proteins – Theories of Muscle contraction. **Endocrinology:** Structure, secretions and functions of Pituitary, Thyroid, adrenal, islets of langerhans, Gonads –Pheromones.

Unit: 3

MOLECULAR BIOLOGY AND HUMAN GENETICS – Histological techniques – Fixation- selective fixatives- Embedding- Sectioning and Staining Principles. Fine structure of Gene – Cistron, Recon, Muton – DNA as genetic material – Genetic code. Mutation –Gene Mutation. Linkage and crossing over, sex linked Inheritance, Chromosomal aberration - Eugenics. Human chromosome, Chromosome number, Idiogram. Population genetics, Hardy-Weinberg principle and its application in human population. Genetic engineering and its applications in human being. Genetic counseling, definition, aims, procedure in genetic counseling and its limitation. Pedigree chart and its uses.

Unit: 4

DEVELOPMENTAL BIOLOGY- Gametogenesis in mammals – Spermatogenesis – Oogenesis – Fertilization. Types of Eggs, Pattern of cleavage & Blastulataion in chick. Gastrulation, morphogenetic movement in chick. Organogenesis (Eye and Heart) in chick. Regeneration – Definition – Types, Human Reproduction- puberty, Menstrual cycle. Menopause, Pregnancy and related problems parturition and lactation- Human cloning- Ethics- Embryo manipulation.

Unit: 5

ECOLOGY AND EVOLUTION- Principles and Applications of Environmental biology and understanding the nature. Habitat Study, Population Study, Animal communities, Structure, growth, stratification, ecological succession, ecological niche. Animal relationships - Interspecific – Antagonism, symbiosis, Parasitism, Mutualism, commensalisms. Fossil and Fossilization, Dating of Fossils, Geological timescale, Neo Darwinism.

Books for reference:

BIODIVERSITY OF INVERTEBRATES AND CHORDATES:

1. Ekambaranatha Ayyar & T.N.Ananthakrishnan (1992) Manual of Zoology Vol – I, part I & II S.Viswanathan Pvt. Ltd. Chennai.
2. Jordan.E.L & P.S.Verma (2000) 'Chordate Zoology' S.Chand & Co New Delhi.

ANIMAL PHYSIOLOGY AND ENDOCRINOLOGY:

3. Parameswaran.R.S.Viswanathan – Animal Physiology Printers & Publishers Pvt. Ltd.
4. Verma.P.S and Agarwal.V.K Animal Physiology S.Chand & Co NewDelhi.

MOLECULAR BIOLOGY AND HUMAN GENETICS:

5. Verma.P.S and Agarwal.V.K (2004) Genetics, S.Chand & Co., New Delhi
6. Dalela.R.C and Verma.S.R (1970) A Textbook of Genetics, Jaiprakash Nath and Company., Meerut.
7. Max Levitan Tex Book of Human Genetics - Oxford University Press.

DEVELOPMENTAL BIOLOGY

8. Verma.S and Agarwal V.K(2000) Chordate Embryology S.Chand & Co. New Delhi.
9. Balinsky.B.I (1981) An Introduction to Embryology S.Chand & Co. New Delhi.
10. Saunders.J.W (1982) Developmental Biology – Pattern and Principles, Macmillan New York.

ECOLOGY AND EVOLUTION

11. Text book of Ecology & Animal Distribution by P.S.Verma V.K.Agarwal S.Chand & Co. New Delhi.
12. Odum E.P.Basic Ecology (1983) Saunders College Publishing's New York.
13. Arumugam.N (2002) Organic Evaluation, Saras Publication., Nagercoil.

SEMESTER – IV ENVIRONMENTAL STUDIES EVS401

Unit I : Environmental studies and Natural resources (20 Hrs)

Definition, scope and importance of environmental studies – forest resources: deforestation, mining, dams – water resources: over – utilization, floods, drought – mineral resources: exdploitation, extraction and usage – food resources: food problems, overgrazing, pesticide problems, water logging, salinity – energy resources: energy needs, renewable and non renewable energy – land resources: land degradation, landslides, soil erosion and desertification – conserving natural resources.

Unit II: Ecosystems : (20 Hrs)

Concept, structure and function of an ecosystem – producers, consumers and decomposers – energy flow – ecological succession – food chains, food webs and ecological pyramids – types, characteristics, structure and function of forest ecosystem, grassland ecosystem, desert ecosystem and aquatic ecosystem –

Unit III: Biodiversity: (20 Hrs)

Definition of biodiversity – genetic, species and ecosystem diversity – value of biodiversity – India as a mega diversity nation – hot spots – threats to biodiversity – endangered and endemic species of India – In-situ and Ex-situ conservation of biodiversity.

Unit IV: Environmental Pollution: (20 Hrs)

Cause, effects and control measures of air pollution, water pollution, soil pollution, marine pollution, noise pollution, thermal pollution and nuclear hazards – solid waste management: causes, effects, control measures and disposal of wastes – disaster management: floods, earthquakes, cyclone, land slides and tsunami.

Unit V: Social Issues, Human population and the Environment: (20 Hrs)

Water conservation, rain water harvesting, watershed management – environmental ethics: issues and possible solution – climate change, global warming, acid rain, ozone depletion, nuclear accidents and holocaust – wasteland reclamation – Environment protection Act – Wildlife protection Act – Forest Conservation Act – public awareness – Population explosion – Environment and human health – Role of Information Technology in Environment and human health.

Field work: (20 Hrs)

1. Visit to a local area to document environmental assets – river / forest / grassland/mangrove.
2. Visit to a local polluted site – urban / rural / industrial / agricultural.
3. Study of common plants, insects, birds.
4. Study of simple ecosystems – pond, river, forest, etc.,
5. Practical work

Reference Books:

1. Joseph C.Daniel,2004. Principles of Environmental Science. Brightson's Publications,Chennai.
2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
3. Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad - 380 013, India, Email:mapin@icenet.net
4. Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi
5. Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co.
6. Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA,
7. Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
8. Trivedi R.K., Hand book of Environmental Laws, Rules Guidelines, Compliances and Standards. Vol I and II, Enviro Media9.Wanger K.D., 1998. Environmental Management. W.B. Saunders Co. Philadelphia, USA

BCP402 - MAIN PRACTICAL II

1. PREPARATION OF BUFFERS

Saline
Bicarbonate buffer
Phosphate buffer
Tris buffer

2. FOOD AND BIOCHEMICAL ANALYSIS

Carbohydrate content
Protein content
Fibre content
Water content
Ash content

3. COLORIMETRIC ANALYSIS

Estimation of proteins by Biuret method
Estimation of phosphorous –Fiske and Subarrow method
Estimation of DNA
Estimation of RNA

4. BIOCHEMICAL ANALYSIS (Demonstration)

Aminoacids by paper chromatography
Lipids by thin layer chromatography
SDS-PAGE electrophoresis

4. BIOCHEMICAL PREPARATION

Preparation of starch from potatoes
Preparation of casein and lactalbumin from milk
Preparation of albumin from egg

6. VOLUMETRIC ANALYSIS

Estimation of iron, copper, oxalate, potassium dichromate
And calcium

PRACTICAL MARKS: 60

Volumetric analysis	- 24
Biochemical preparation/ Colorimetric analysis	- 20
Spotters	- 6
Record	- 10

SEMESTER – IV ADVANCED ZOOLOGY PRACTICAL AZBP401

SEMESTER-V MOLECULAR BIOLOGY BC507

UNIT I INTRODUCTION [15 hrs]

DNA-genetic material-Griffith, Avery et al and Hershey and Chase experiment, C value paradox, Cot value, organization of chromosomes and nucleosomes, Euchromatin, heterochromatin, centromeres and telomeres (brief description),central dogma of molecular biology.

UNIT II REPLICATION [20 hrs]

Replication-conservative and semiconservative- experimental proof for semiconservative replication-factors involved in prokaryotic and eukaryotic replication-DNA polymerases in prokaryotes and eukaryotes-inhibitors of replication-repetitive DNA-Highly repetitive, moderately repetitive and unique DNA sequences. satellite DNA, transposons(brief explanation)

UNIT III TRANSCRIPTION [20 hrs]

Transcription-promoters, RNA polymerase in prokaryotes and eukaryotes-initiation, elongation and termination of transcription process in prokaryotes-inhibitors of transcription-post transcriptional modification of mRNA, tRNA and rRNA

UNIT 1V TRANSLATION [20 hrs]

Genetic code-features and deciphering of genetic code, wobble hypothesis,translation- activation of amino acids, initiation, elongation and termination process in prokaryotes. Inhibitors of protein synthesis -post translational modification Operon concept-lac and trp operon.

UNIT V REPAIR [15 hrs]

DNA repair-photoreactivation, Excision repair, recombination and SOS repair.Restriction endonucleases, SNP

TEXTBOOKS:

1. David Friefelder,,"Molecular Cell Biology"(2nd edition),Narosa Publishing House.
2. Lehninger,Nelson And Cox ,1982, " Principles Of Biochemistry", (4th ed)UK, Macmillan Worth Publishers.

REFERENCES:

1. Lehninger,Nelson And Cox ,1982, " Principles Of Biochemistry", (4th ed)UK, Macmillan Worth Publishers.
2. De Robertis EDP and De Robertis EMF,1987, "Cell and Molecular Biology",(8th edition), New Delhi, B.I.Waverly Pvt Ltd
3. Darnell J, Lodish H, Baltimore D,1986, "Molecular cell biology", England, WH Freeman
4. L Stryer, 'Biochemistry', W.H.Freeman and Company, New York.
5. Benjamin Lewin , Genes VIII.
6. Donald Voet and Judith Voet,'Biochemistry',JohnWiley and Sons,New York.

SEMESTER-V IMMUNOLOGY BC508

UNIT I CELLS OF IMMUNE SYSTEM [20 hrs]

Introduction, characteristics of immune system,classification of immunity-innate and acquired immunity. Structure and function of primary and secondary lymphoid organsStructure and function of immune cells(macrophage, T cell, B cell, NKC, KC, dendritic cell and APC), T and B cell mediated immune response. Phagocytosis,pinocytosis.

UNIT II ANTIGEN & ANTIBODY [20 hrs]

Antigen-properties, epitope, paratope, specificity, cross reactivity, antigenicity ,immunogenicity, haptens, adjuvants.

Antibody-structure, specificity and distribution of antibodies. Different class and subclasses of immunoglobulins, clonal selection theory.

UNIT III COMPLEMENT & MHC [20 hrs]

Complement components- complement cascade-classical, alternate and lectin pathway.

Major Histocompatibility Complex(MHC)- Structure and function of MHC-I,II,III molecules.

Transplantation – Graft – types – mechanism of graft rejection.

UNIT IV HYPERSENSITIVITY [15 hrs]

Allergy and hypersensitivity-type I,II,III and IV, their clinical manifestations, autoimmune diseases-myasthenia gravis,rheumatoid arthritis,thyrotoxicosis and SLE.

UNIT V ANTIGEN –ANTIBODY INTERACTIONS [15 hrs]

Antigen-antibody interaction-precipitation reaction, precipitation reaction in gel(double and radial immune diffusion).Agglutination reaction- widal , agglutination inhibition reaction, pregnancy test. Principle and application of immunoelectrophoresis, RIA and ELISA.

TEXTBOOKS:

1) Abbas,Lightman and Pober.W.B.Sounders,"Cellular and Molecular Immunology",2nd edition,1994.
2) Ananthanarayanan.K and Jayaraman Paniker, "Textbook of Microbiology",1996.

REFERENCES:

1) I. Roitt. Essential Immunology. 10th ed. Blackwell Science,2005
2) Richard A. Goldsby, Thomas J. Kindt and Barbara A.Osborne. Kuby Immunology. 4th ed. W. H. Freeman &Company, 2000.
3) Tizard.R, "Immunology-An introduction", Jan 1995.

SEMESTER-V MEDICAL BIOCHEMISTRY EBC509

UNIT I BASIC CONCEPTS OF CLINICAL BIOCHEMISTRY [15 hrs]

Biological samples-Specimen collection-anticoagulant-preservatives for blood and urine-transport of specimens. normal and abnormal values of different parameters.

UNIT II DISEASES RELATED TO CARBOHYDRATE METABOLISM [15 hrs]

Diabetes mellitus- definition-WHO criteria-classification of diabetes mellitus-signs,symptoms and complications-GTT- galactosemia,galactosuria,fructosuria.

UNIT III

DISEASE RELATED TO AMINO ACID AND LIPID METABOLISM [20 hrs]

Inborn errors of metabolism- phenylketonuria, alkaptonuria, albinism, cystinuria, fanconi syndrome. Exogenous and endogenous transport of lipids- chylomicron transport, VLDL transport-reverse cholesterol transport- atherosclerosis- fatty liver- risk and anti-risk factors.

UNIT IV ORGAN FUNCTION TEST [20 hrs]

Liver function test-heme catabolism- jaundice- classification- biochemical findings-liver function test based on bile pigments- Vanderbergh test, Detoxification-hippuric acid excretion and BSP dye test, metabolism-galactose tolerance test, Prothrombin Time- Gastric function test-gastric contents, resting stage gastric analysis-stimulation test (histamine, pentagastrin) - FTM-AZURE-A test. Hypo and hyperacidity. Renal function test-renal concentration test-PSP dye test-urea, creatinine and inulin clearance test.

UNIT V DIAGNOSTIC ENZYMOLOGY [20 hrs]

Plasma enzymes-functional and non-functional enzymes-isoenzymes-enzyme patterns in acute pancreatitis, liver diseases and myocardial infarction .

TEXTBOOKS:

1. Textbook of Biochemistry for medical students-DM.Vasudevan, 5th edition,Jaypee publishers, 2008
2. Textbook of Medical. Biochemistry, Chatterjee, M.N. and Rana Shinde, 5th ed. Jaypee Medical Publishers, 2002.

REFERENCES:

1. Robert K. Murray, Daryl K. Grammer “Harper’s Biochemistry”,(25th Edition) Mc Graw Hill, Lange Medical Books.
2. Sathya Narayana U,1999, “Biochemistry”, (2nd Edition),Kolkata,Allied Publishers..
3. Mallikarjuna Rao N,2002, “ Medical Biochemistry”,2nd Edition, New Delhi,New Age International publishers
4. Thomas .M.Devlin ,1997,”Textbook of Biochemistry with clinical correlations”,4TH Edition,U,S, Wiley-Liss
5. Bhagavan.N.V(2004),”Medical Biochemistry”,(4th ed) Noida, Academic press
6. Harrison,T.R.Fauci,Braunwalad,and Isselbaeher,”Principles of Internal Medicine,1998,McGraw Hills

SEMESTER-V PLANT BIOCHEMISTRY EBC510

UNIT I PLANT CELL & ABSORPTION OF MINERAL SALTS [10 hrs]

Discovery and definition of plant cell . Mechanism of absorption .Ion exchange passive absorption. Active absorption .The carrier concept. Donnan's equilibrium.

UNIT II NATURAL GROWTH HORMONES IN PLANTS [10 hrs]

Structure ,biosynthesis ,mode of action &physiological effects of auxins, giberellins, cytokinins and IAA.

UNIT III PHOTOSYNTHESIS PIGMENTS [15 hrs]

Structure &synthesis of chlorophyll, phycobilins and carotenoids. Photosynthesis photosystem –I &II.Light absorption,Hill reaction, Red drop & Emerson's enchancement effect.Cyclic and non-cyclic photophosphorylation,calvin cycle.Factors and regulation of photosynthesis.

UNIT IV SECONDARY METABOLITES [15 hrs]

Secondary metabolites in plants –classification & function of alkaloids, terpenoids, tannins, lignin and pectin.

UNIT V NITROGEN FIXATION [10 hrs]

Nitrogen fixation-symbiotic&non symbiotic, nitrogenase enzyme-nodule development carbon dioxide fixation, glyoxalate cycle.

TEXTBOOKS :

1.Jain.V.K., 'Fundamentals of Plant Physiology', Revised 1st edition 2005,S.Chand & Company Ltd
2.Pandey.S.N.,and Sinha.B.K.,Plant Physiology,1999,Vikas Publishing House.

REFERENCES:

1.Solisbury and Ross,Plant Physiology,3rd edition,CBS Publishers and Distributors.
2.Hans-Walter Held,Plant Biochemistry, 3rd edition,Elsevier India Pvt.Ltd.
3.Bonner and Varner, Plant Biochemistry, 3rd edition,Academic Press.

SEMESTER-VI HUMAN PHYSIOLOGY BC611

UNIT I BLOOD AND CIRCULATORY SYSTEM [15 hrs]

Composition of blood –functions , types of blood cells, morphology and function, Blood groups - ABO group and Rh group. Composition of lymph, circulatory system-Heart-- basic anatomy,cardiac cycle, cardiac out put ,pace maker(general circulation).

UNIT II DIGESTION [20 hrs]

Definition, digestive system (alimentary canal) - chemical process of digestion.
Role of bile salt in Digestion, Mechanism of HCl secretion in stomach, Digestion and absorption of carbohydrates, proteins, and lipids.

UNIT III RESPIRATORY SYSTEM AND EXCRETORY SYSTEM [20 hrs]

Respiration, types of Respiration , respiratory medium, Respiratory system of man, Transport of $O_2$and CO_2.Role of Hb in transport of O_2 and CO_2 . Oxygen Dissociation curve, Bohr effect, Chloride shift.
Kidney of man , structure of nephron- Formation of urine – Ultra filtration, Reabsorption and Secretion.

UNIT IV NERVOUS SYSTEM [20 hrs]

Neuron, types of neuron , conduction of nerve impulse, synaptic transmission ,neuro muscular junction, reflex action. Human brain-anatomy, meninges, cerebrum, brain stem, cerebellum, spinal cord and function.

UNIT V MUSCLE [15 hrs]

Introduction, types of muscle, structure and their functions. Ultra structure of skeletal muscle –light band, dark band, thick filament , thin filament-, myofilament , contraction and relaxation of skeletal muscle.

TEXTBOOKS:

1.A Text book of Animal Physiology , KA Goel, KV Sastri, Rastogi publications,Meerut.
2. Textbook of Medical Physiology by A.C. Guyton and J. E. Hall, W.B.Saunders Publication, 9th Edition , 1996

REFERENCES:

1.Human Physiology, 2nd edition –BJ Meyer, Hs Meij, AC Meyer, AITBS Publishers and distributon.
2.Cell Physiology by Giese, 5th edition, W .B Saunders company, Tokyo, Japan.
3.Animal Physiology and biochemistry –RA Agarval, Anil. K,Srivastav, Kaushal Kumar, S .Chand &CO.,
4.Review of Medical Physiology, Ganong W. E.. 21st ed. Mc Graw Hill, 2003.

SEMESTER-VI BIOTECHNOLOGY BC612

UNIT I VECTORS [15 hrs]

Biotechnology-definition, history and scope. Restriction and modification enzymes, vectors, plasmids-pBR322,Ti plasmid, bacteriophages-lambda, phage M_{13},cosmids,YAC,shuttle vectors.

UNIT II ANIMAL CELL CULTURE [20 hrs]

Animal cell culture- requirements,sterilization &applications.culture media-natural and artificial,properties& use of serum and serum-free media,cell adhesion molecules.Primary cell culture-mechanical disaggregation,enzymatic disaggregation and primary explants technique (brief description).Cell lines-finite and continuous.subculture-mono layer and suspension cultures.Transformation of cell-characteristics,types of culture process-batch,fed batch, ,semi-continuous ,continuous perfusion and continuous flow culture (brief description).

UNIT III TRANGENESIS [20 hrs]

Production of vaccines in animal cells-traditional and recombinant vaccines-subunit vaccines-Hepatitis B,Herpes simplex virus, DNA and RNA vaccines. Production and Applications of monoclonal antibodies. Transgenic Animals-techniques and applications -transgenic mice and sheep

UNIT IV PLANT TISSUE CULTURE [20 hrs]

Totipotency,tissue culture-media,composition,nutrients,growth regulators,regeneration of plants-organogenesis and somatic embryogenesis, callus and cell suspension culture,micropropagation,production of haploid plants,protoplast isolation,fusion and regeneration, production of secondary metabolites,transgenic plants.

UNIT V FERMENTATION [15 hrs]

Fermentation –fermenter-common features and operation for a conventional bioreactor,classification of fermentation processes-type 1, type 2 and type 3-fermentation process-factors affecting fermentation process-media for fermentation –synthetic and crude media.

TEXTBOOKS:

1.Sathya Narayana U,1999, "Biotechnology", (2nd Edition), Kolkata,Allied Publishers..
2.P.K.Gupta,"Biotechnology and Genomics",2004,Rastogi Publications.

REFERENCES:

1.Bernard, Glick Jack.R,Pasternak.J,Molecular Biotechnology-Principle and Application of Recombinant DNA, 3rd edition,2003,Library of Congress Cataloging in Publication Data.
2.Dubey.R.C.,A Textbook of Biotechnology,S.Chand & Company Ltds.,
3.Prakash.S.Lohar,Biotechnology,MJP Publishers,Chennai.

SEMESTER-VI ENDOCRINOLOGY EBC613

UNIT I HORMONES [15 hrs]

Hormones-definition, classification-both receptor and chemical classification-transport-functions-feedback regulation.

UNIT II SECONDARY MESSENGERS [15 hrs]

Different mechanisms of signal transduction,secondary messengers-cAMP mediation, calcium and DAG mediation, cGMP mediation,ionic conduction.

UNIT III PITUITARY HORMONES [20 hrs]

Hormones of anterior pituitary-FSH,LH,TSH and its functions.Posterior pituitary-oxytocin and vasopressin with its functions.
Hormones of hypothalamus.

UNIT IV THYROID HORMONES [20 hrs]

Thyroid hormones-structure-functions-hypothyroidism-cretinism,myxedema,simple goiter,grave's disease. Parathyroid hormones-regulation of calcium homeostasis by PTH and calcitonin. Hormones of pancreas-insulin & glucagon.

UNIT V STEROID HORMONES [20 hrs]

Hormones of adrenal cortex-cortisol-biosynthesis(structure not required) and its functions,cushing's syndrome,addison's disease-aldosterone-biosynthesis and its functions- renin-angiotensin mechanism,conn's syndrome.
Medullary hormones-biosynthesis of epinephrine,norepinephrine.dopamine and its metabolic functions,pheochromocytoma.
Sex steroids-male sex hormones- biosynthesis and its metabolic functions-female sex hormones-biosynthesis and its metabolic functions.

TEXTBOOKS:

1.Textbook of Medical. Biochemistry, Chatterjee, M.N. and Rana Shinde, 5th ed. Jaypee Medical Publishers,2002.
2.Textbook of Biochemistry for medical students-DM.Vasudevan, 5th edition, Jaypee Publishers, 2008
3.Robert K. Murray, Daryl K. Grammer "Harper's Biochemistry",(25th Edition) Mc Graw Hill, Lange Medical Books.

REFERENCES:

1. Sathya Narayana U,1999, "Biochemistry", (2nd Edition),Kolkata,Allied Publishers..
2. Mallikarjuna Rao N,2002, " Medical Biochemistry",2nd Edition, New Delhi,New Age International Publishers
3. Thomas .M.Devlin ,1997,"Textbook of Biochemistry with clinical correlations",4th Edition,U,S, Wiley-Liss
4. Ramakrishnan S, Prasanna K.G. and Rajan R,1980, " Textbook of Medical Biochemistry",3rd Edition,Chennai, Orient Longman
5. Bhagavan.N.V(2004),"Medical Biochemistry",(4th ed) Noida, Academic Press

SEMESTER-VI MEDICAL LAB TECHNOLOGY EBC614

UNIT I LABORATORY CARE AND INSTRUMENTATION [10 hrs]

Instrumentation to laboratory equipments and basic laboratory operation and operation and role of laboratory technician. Types of specimen collection and collection procedure-blood, urine,sputum,throat swab,stool and CSF.Unit of measurement,reagent preparation and laboratory calculation-metric system.Reagent solution,preparation of reagent solution.

UNIT II HEMATOLOGY [15 hrs]

Blood grouping and Rh factor, cross matching, clotting time,bleeding time,hemoglobin estimation,total count-RBC count and WBC count, Differential WBC count, Erythrocyte Sedimentation Rate (ESR),Hematocrite value (Packed Cell Volume).Screening test-HIV,HBs Ag,TPHA,etc.

UNIT III CLINICAL PATHOLOGY [10 hrs]

Brief outline of histopathology: Tissue cutting,fixation,embedding,tissue slicing by microtome,slide mounting and staining techniques.

UNIT IV CLINICAL BIOCHEMISTRY [15 hrs]

Blood glucose, urea, uric acid, triglycerides,SGOT,SGPT,serum alkaline and acidic phosphates, calcium,phosphorous,total protein,albumin,electrolytes,amylase,lactic dehydrogenase,electrolytes-sodium,potassium-explanation of its role and abnormalities.

UNIT V MICROBIOLOGY [10 hrs]

Culturing of organisms from various specimens, culture media and antibiotic sensitivity test (pus, urine, blood, sputum, throat swab).Gram stain,Ziehl-Neilson staining (TB,Lepra bacilli). Safety procedure in microbiological techniques.

TEXTBOOKS :

1.Kanai L. Mukherjee, Medical Laboratory Technology Vol. I.Tata McGraw Hill 1996, New Delhi.
2. GradWohl, Clinical Laboratory-Methods and Diagnosis, Vol-I

REFERENCES

1.Henry, John Bernard, Todd Sanford and Davidson, 2002. Clinical diagnosis and management by laboratory methods. W.B. Saunders & Co.
2. Fischbach Francis A, 2003. Manual of laboratory and diagnostic tests. Philadelphia,J.B. Lippncott & Co, N.Y.
3. Gradwohls, 2000. Clinical laboratory methods and diagnosis Alex.C. Sonnenwirth & Leonard Jarret.M.D.B.I.Publications, New Delhi,
4. Sood, R, 2005, Medical Laboratory methods and interpretation, Jaypee Brothers Medical Publications, New Delhi.

MAIN PRACTICAL SYLLABUS-III BCP 603

1. COLORIMETRIC ESTIMATION

a.Estimation of creatinine by Jaffe's method
b.Estimation of urea by Diacetyl Monoxime method.
c.Estimation of DNA.
d.Estimation of RNA.

2.ELECTROPHORETIC TECHNIQUES

Separation of protein by SDS-PAGE and Agarose.

3.EXPERIMENTS ON ENZYMES BY COLORIMETRY

.Effects of pH,temperature and substrate concentration for amylase and urease.

4.HAEMATOLOGY

RBC count,PCV,ESR,total and differential WBC count

MAIN PRACTICAL SYLLABUS-IV BCP 604

1. COLORIMETRIC ESTIMATION

a.Estimation of glucose by
  i. Folin Wu and
  ii. Ortho toluidine methods
b.Estimation of albumin andA/G ratio in serum.
c.Estimation of cholesterol by Zak's method
d. Estimation of protein by lowry method
e. Estimation of protein concentration by $A_{280\ nm}$
f. Estimation of purity of DNA

2.ENZYME ASSAY

a.Assay of activity of alkaline phosphatase in serum.
b.Assay of activity of acid phosphatase in serum.
c. Estimation of SGOT and SGPT

3.URINE ANALYSIS

a.Collection of urine sample.
b.Qualitative analysis of urine for normal and pathological conditions.

4. PREPARATION OF SOLUTIONS

Normal, molar, percentage solution

REFERENCE BOOKS:

1.Practical Clinical Biochemistry-Harold Varley,CBS,New Delhi.
2.Medical Laboratory Technology- Kanai L.Mukherjee,Tata McGraw Hill Publication and Co.Ltd.,Vol I,II and III.
3.Clinical Chemistry-Ranjana Chawla.
4.Laboratory manual in Biochemistry-Jayaraman.
5.Biochemical methods-S.Sadasivam and Manickam.
6.Introduction to Practical Biochemistry-David T.Plummer