ACADEMIC (1-BOARD OF STUDIES) SECTION

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E-mail: bos.srtmun@gmail.com

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>1</td>
<td>Agricultural Microbiology</td>
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<tr>
<td>2</td>
<td>Agrochemicals &amp; Fertilizers</td>
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<td>3</td>
<td>Analytical Chemistry</td>
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<td>B.C.A.</td>
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<td>5</td>
<td>B.Voc. (Food Processing, Preservation and Storage)</td>
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<td>6</td>
<td>B.Voc. (Web Printing Technology)</td>
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<td>7</td>
<td>Biochemistry</td>
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<td>8</td>
<td>Bioinformatics</td>
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<td>9</td>
<td>Biophysics</td>
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<td>10</td>
<td>Biotechnology (Vocational)</td>
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<td>11</td>
<td>Biotechnology</td>
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<td>12</td>
<td>Botany</td>
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<td>13</td>
<td>Chemistry</td>
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<td>14</td>
<td>Computer Application (Optional)</td>
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<td>15</td>
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<td>16</td>
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<td>17</td>
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<td>18</td>
<td>Dyes and Drugs</td>
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<td>Electronics</td>
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<td>Geology</td>
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<td>Industrial Chemistry</td>
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<td>Statistics</td>
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<td>33</td>
<td>Zoology</td>
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The Board of Studies has introduced the CBCS Pattern in the academic year 2019-20. The pattern comprises a variety of courses including Agricultural Microbiology, Agrochemicals & Fertilizers, Analytical Chemistry, and more. The courses are designed to provide a comprehensive understanding of various fields.

For more information, please visit www.srtmun.ac.in.
Distribution of credit for B.Sc. Biochemistry
Under Faculty of Science

**B.Sc. Syllabus structure**
CBSC (Choice Based Credit System)
Semester Pattern effective from June 2019

**Subject: Biochemistry (Honors)**

**B.Sc. Biochemistry first Year (Semester-1)**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Periods/Wk</th>
<th>Total Periods</th>
<th>Internal Evaluation</th>
<th>External Evaluation</th>
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<td>BC-I-101</td>
<td>Communication Skills-1</td>
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<td>45</td>
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<tr>
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<td>BC-I-104</td>
<td>Basic Biotechnology</td>
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<td>BC-I-105</td>
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<td>BC-I-106</td>
<td>Technical Biochemistry</td>
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<td>LC-I-1</td>
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</table>
SWAMI RAMANAND TEERTH MARATHWADA UNIVERSITY,
NANDED -431606, MS. INDIA

Distribution of credit for B.Sc. Biochemistry
Under Faculty of Science

**B.Sc. Syllabus structure**
CBSC (Choice Based Credit System)
Semester Pattern effective from June 2019

**Subject: Biochemistry (Honors)**

**B.Sc. Biochemistry first Year (Semester-II)**

<table>
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<td>Communication Skills-II</td>
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<td>BC-II-202</td>
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<td>Human Physiology</td>
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<td>04</td>
<td>60</td>
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<td>02</td>
</tr>
</tbody>
</table>

1st + 2nd Semester Total Credits (18+18) = **36**

Note:
1. Laboratory Course includes Skill enhanced Practical as mentioned therein.
2. The Practical Examination Will be conducted at the end of year.
3. Practical in the Laboratory course papers will be conducted throughout year i.e. during first and second semester.
4. Internal evaluation includes conduction of One internal test (Theory/ Objective or Both in one paper)
5. Internal evaluation for laboratory course should be for skill enhancement based practical.
Title of the Paper: Communication Skills-I (BC-I-101)

Objectives: To improve the skills in correct English in writing and pronunciation

Unit-I Grammar

Unit-II Vocabulary
Word Formation, Synonyms and Antonyms, One Word Substituitions, Homophones & Homonyms.

Unit-III Communication Skills

Unit-III Writing Skills-

Unit-V
44 sounds of English, Consonants, Vowels and Diphthongs. Transcription of Words.

Course Outcome(s): The student will be able to

1. Gathering basic knowledge of communication skill.
2. Understand the different writing skill in English.
4. Explaining different sounds, consonents, vowels.
5. Learn the mechanism of communication process, barriers in communication.
**Reference Books:**

1. Technical Communication- Raman & Sharma- Oxford
2. Technical Communication: A Reader centered approach, Anderson Thomson
3. English Grammar & Composition – Pal & Suri-S.Chand
4. Course in Technical English- Somaya Publication
6. Written Communication in English- Sarah Freeman A.V. Martinet
7. English for Practical Purpose- Patil, Valke- Mac Milan
8. Developing Communication Skills by Krishna Mohan & Meera Banerjee
9. Personality Development by Dr. T. Bharathi, Neelkamal Publications
Objective(s):
To acquire basic knowledge of chemical bonding, organic compound & different state & laws.

Unit –I: Chemical Bonding 10

Unit –II: Study Of Organic Compounds 10

Unit –III: Mechanism of Organic Reactions 12

Unit –IV: Solid State 13
- Definition of unit cells, space lattice
- Symmetry elements in crystal, Determination of miller indices study of crystal structure- NaCl, KCl, CsCl.
- X-ray crystallography, Derivation of Bragg’s equation.
Course Outcome(s): The student will be able to

10. Gathering basic knowledge of chemical bonding
11. Understand the mechanism of organic reaction
12. Know the different states of compounds
13. Explaining mechanism electrophile and nucleophile
14. Learn the different type of reaction.

Reference Books:-

1. Text Book of Inorganic chemistry - Puri & Shrma
2. Concise inorganic chemistry - J.D.Lee
3. Text Book of inorganic chemistry - Guradeep Raj & Chatwal
4. Advanced Organic chemistry - Bhal & Bhal
5. Physical Chemistry - Bhal & Tuli
7. Fundamentals Of Chemistry - Farooquim, Kuberkar &Wangikar
Objective(s):
To understand basic knowledge about microorganism, history, difference between prokaryotic cell and eukaryotic cell, and different microscopy.

Unit –I 10

Unit –II 10
Prokaryotic Cell: Cell Wall. Distinction between cell wall of Gram positive and Gram negative Bacteria. Cell Membrane, Cytoplasm, nucleoid, endospore, flagella, pili, glycocalyx Structure of Archaea cell.


Unit –III 10
Taxonomy: Naming of microorganism. Contribution of C. Linnaeus, Taxonomy hierarchy, Whittaker’s five kingdom and Carl Woese’s three domain classification system.
Classification of Bacteria and cyanobacteria of fungi and Protistean, Algae

Unit –IV Microscopy 10
General Principle of Microbiology: Image formation, Magnification, Numerical aperture, Resolving Power, Working distance, Focal length, Focal point. Principle, Contribution,

Unit-V

- Definition of Dye and stain.
- Classification of Stains: Acidic, Basic, Neutral
- Principle, Procedure, Mechanism of: Simple Staining, Negative Staining, Gram’s staining, Acid fast staining, Cell Wall, Capsule Staining

Course Outcome(s): The student will be able to

8. Gathering basic knowledge of microbiology.
9. Understand the different staining method.
10. Know the microbial taxonomy
11. Explaining diversity of microorganism
12. Learn the fluorescence technique

Reference Books:

1. Introduction to Microbiology : Anderson D.A.
3. Industrial Microbiology : Casida
5. General Microbiology 5th edition : Stainer R.Y., Ingraham J.L. & Painter P.R.
7. Practical Microbiology : Dr. R.C. Dubey, Dr. D.K. Maheshwari.
Objective(s):
To acquire basic knowledge about food, enzyme, agriculture and health biotechnology. Different type vector.

Unit I: Introduction
Definitions of Biotechnology, Historical account of traditional biotechnology, brewing, cheese making & silage prediction. Recent discoveries from cell biology to biotechnology including the use of r-DNA Technology & hybridoma.

Unit II: Food & Enzyme Biotechnology

Unit III: Agriculture & Health Biotechnology

Unit IV: Vectors and their use in Biotechnology
Molecular cloning, Enzymes used in molecular cloning, and use of vector in molecular cloning. Vectors: - Definition, properties for ideal vectors, types of vectors- Plasmid, Cosmid, Phagemid, BAC,YAC Prokaryotic expression vectors, Eukaryotic expression vectors, Shuttle vector.
Course Outcome(s): The student will be able to

13. Gathering basic knowledge of biotechnology.
14. Understand the enzyme involved in molecular cloning.
15. Know the different vector
16. Explaining event of transgenic plant.
17. Learn the mechanism rDNA technology.

Reference Books:

1. Basic Biotechnology: Bullol & Bullok
2. Basic Biotechnology: S.Ignacimuthu
3. Introduction of Biotechnology: Brown, Camball & Triest
4. Fundamentals of Biochemistry: A.C. Deb
Title of the Paper:- Bio-molecule (BC-I-105)

Periods: 45

Objective(s):
To acquire basic knowledge about structure, function of carbohydrate, protein, lipid and nucleic acid.

Unit I: Carbohydrates.

08
Introduction to carbohydrate, Classification, Properties of monosaccharide, osazone formation, mutarotation. Introduction to disaccharide (Lactose, Maltose, sucrose) and polysaccharide (Heparin, Strach, and glycogen) biological function of carbohydrate

Unit II: Lipids and Fatty acids

10

Unit III: Amino Acid and Protein

15
Unit IV: Nucleic Acids

Introduction to nucleic acid, Difference between nucleoside, composition of DNA & RNA
Structure of Nitrogen bases in DNA and RNA along with the nomenclature.

- DNA Double Helix (Watson and crick) model
- Introduction of A.B.Z. DNA
- Gene, genome and chromosome.
- Types of RNA, structure of t-RNA (clover leaf model)

Course Outcome(s): The student will be able to

1. Gathering basic knowledge of carbohydrate, protein, lipid and nucleic acid.
2. Understand the different structure biomolecule.
3. Know the function of biomolecule.
4. Explaining disease related biomolecule
5. Learn the different type RNA.

Reference Books:

- Biochemistry : U.Satyanarayana
- Biochemistry : Lubest stryer
- Fundamental of Biochemistry: A.C. Deb
- Textbook of Biochemistry : Jain & Jain
B.Sc. Biochemistry first Year (Semester-I)

Title of the Paper: Technical Biochemistry (BC-I-106)

Periods: 45

Objective(s):
To acquire basic knowledge about technique centrifugation, PH meter, Colorimeter and different solvent system.

Unit I:


Unit II:

Properties of Light – Light spectra, wave length, Plane polarized light, optical rotation, Optical Rotatory Dispersion & Circular Dichroism, Absorbance – chromophore, Auxochrome, Colorimeter – Instrumentation, Principal, working Application, X-ray Diffraction studies

Unit III:

pH and Buffer : Hydrogen ion concentration, Handerson- Hasselbalch equation, Buffer-definition, Types & its Preparation, Buffers of biological importance such as carbonate-bicarbonate, phosphate, acetate, etc., Hemoglobin buffering capacity, Mechanism of action of buffers in biological system, PH meter- instrumentation and application

Unit IV:

Use of Different solvent system- for amino acid, Carbohydrate and Lipid separation. Types of techniques- Analytical Technique- Definition, Examples. Separation Techniques- Examples,
Application of Technical Biochemistry in Medical field, in research field & In Industrial field.

**Course Outcome(s):** The student will be able to

1. Gathering basic knowledge preparation Normality, Molarity.
2. Understand the pH meter and Balance
3. Know the handling Centifugation
4. Explaining different solvent system for biomolecule
5. Learn the application of biochemistry.

**Reference Books:**

- Biophysical and biochemical technique : Nath and Upadhya
- Fundamental of Biochemistry : A.C. Deb
- Textbook of Biochemistry : Jain & Jain
Objective(s):
To acquire basic knowledge about preparation of standard solution and analysis of organic compound.

1. Preparation of standard solutions (% Molar, and Normal) of acids and alkali, Stock and working solution.
3. Estimate of glycine.
4. Estimate of unsaturation.
5. Estimate phenol.
7. Estimate of Acid.

Reference Books:

1. Textbook of Inorganic Qualitative Analysis : vogel’s
2. Practical of physical chemistry : T.K.Chaudekar,
   Rajbhoj
3. Practical of physical chemistry : Jahagirdar.
4. Textbook of organic Qualitative Analysis : Hynes
5. Vogel’s Textbook of Practical Organic chemistry.
Objective(s): To acquire basic knowledge about instrument, media preparation. Streak, spread and pour plate method.

1. Determination of equipment
   a) Microscope
   b) Hot air oven
   c) Autoclave
   d) Incubator
   e) pH meter
2. Hanging drop method for motility.
3. Micrometry measurement of size of bacteria
4. Bacterial staining: Simple, Negative, Grams staining.
5. Preparation of Media
   a) Nutrient broth
   b) Nutrient Agar
   c) Mac Conkeys broth
   d) Mac Conkeys Agar
6. Isolation of micro-organism by
   a) Streak plate method
   b) Spread plate method
   c) Pour plate method
7. Capsule staining (His and Meneval’s method)
8. Flagella staining.
9. Cultivation of anaerobes – (Candle jar method)
10. Replica plate technique
11. Effect of UV as mutagenic agent and photo reactivation.
12. Alcohol production by S. cerevisae
13. Enumeration of air Microorganism by Solid & Liquid impingement method
Objective(s):
To acquire basic knowledge about preparation of reagent, principal and procedure.

1. Preparations of Different biochemical reagents
   a. Ninhydrin Reagent
   b. Benedicts Reagent
   c. Barfoeds Reagent
   d. Biuret Reagent

2. Qualitative test for amino acid
   a. Ninhydrin test for amino acid
   b. Millions test
   c. Sakaguchi test

3. Qualitative test for protein.
   a. Precipitation with organic solvent
   b. Precipitation with TCA
   c. Precipitation with Ammonias sulphate

4. Qualitative test for carbohydrate
   a. Molish test
   b. Iodine test
   c. Benedicts test
   d. Barfoeds test
   e. Osazone formation

5. Qualitative test for Nucleic acid
   a. Orcinol test
   b. Diphenyl amine test
   c. Neumann’s test

6. Qualitative test for lipid
a. Iodine test
b. Saponification test
c. Emulsification

7. Qualitative test for Vitamin
a. Thiamine
b. Acorbic Acid
c. Riboflavine

Reference Books :-

- An Introduction to Practical Biochemistry : David Plummer(TMH)
- Hawke’s Physiological chemistry :
- Laboratory Manual in biochemistry : J. Jayaraman
**Objective:** To improve the skills in correct English in writing and pronunciation

**Unit I : Grammar**

Word Classes (Open & Closed), Sentences – kinds- Transformation, Phrase, Clause and its kinds.

Simple, Complex & Compound sentences, (Only definition & Structure)

**Tenses** – Use of Verbs in the Sentences

**Unit II : Vocabulary**

Morphology, Synonyms & Antonyms, One Word Substitution, Homophones & Homonyms

**Unit III : communication Skills**

Definition & its all types, Communication Cycle & Barriers, Principles for Effective Communication,

Varieties in English (Indian, British & American.)

**Unit IV : Writing Skills**

Letters (Formal & Informal), Report Writing (Scientific and format), Memorandum, Curriculum vitae,

Personal Employment Interview, Group Discussion.

**Phonetics**: 44 sounds, consonants, vowels & Diphthongs, Transcription of words, Accent Syllable

Cluster and Intonation.

**Course Outcome(s):** The student will be able to
1. Gathering basic knowledge of development, specification of cell, competence of cell and genomic equivalence.
2. Understand the different event of fertilization
3. Know the stages of embryogenesis
4. Explaining event of morphogenesis
5. Learn the mechanism of apoptosis involved in pattern formation and PCD

Reference Books:
1. Developing of Communication Skills – Krishna Mohan & Meera Banerji
5. Written Communication in English – Sarah Freeman Orient Longman Pvt. Ltd.
6. A Course in Phonetics & Spoken English – J. Sethi & P.V. Dhamija
7. Radiance- Tengse
Objective(s):
To acquire basic knowledge about thermodynamic, Chemical equilibrium, trace element and its toxicity.

Unit I: Essential trace elements & its toxicity system. 10

Introduction of Trace elements, criteria for essential elements, Ultra trace metal & non- metals, toxicity & deficiency of trace elements.

Unit II: Role of Metal & non-metal ion in biological system 10

Role of metals in biological systems.
- Function of Biomineral, Biomineralisation.
- Role of Hydrolysis, Oxido- reductases, Isomerases & synthatase enzymes.
- Role of Non-metal In biological system.

Unit III: Themodynamics 10

Definition of thermodynamics, terms-system, surrounding etc. Types of systems, Intensive & extensive properties, state & path function & their differentials. Thermodynamic process, concept of Heat & Work. First law of thermodynamics- Statement, definition of internal energy & enthalpy Heat capacity, heat capacities at constant volume & pressure & their relationship, Joule’s Law, Joule Thomson effect, Joule Thomson coefficient & Inversion temperature.

Unit IV: Chemical Equilibrium & Phase Equilibrium 15

Chemical Equilibrium : Equilibrium constant & free energy, thermodynamics derivation of law of mass action. Reaction isotherm & isochore. Clapeyron
equation, clausius claweyron equation, applications, Numerical on vant Hoff’s isochore.

Phase Equilibrium:

Statement & meaning of the terms, phase components & degree of freedom in phase rule equation, phase equilibrium of one component systems, water & sulphur systems. Application of phase rule to Co₂ systems.

- Solid Solution: Compound formation of congruent melting point (Mn-Zn) system & incongruent melting point (Nacl-H₂O) system, freezing mixture, acetone, and dry ice melting
- Liquid-Liquid mixture – Ideal liquid mixture, Rault’s & Henry’s law
- Non-ideal systems, azeotropes Hcl- H₂O system & ethanol – water.

Course Outcome(s): The student will be able to

1. Gathering basic knowledge of thermodynamic
2. Understand the different phase of equilibrium.
3. Know the different trace element.
4. Explaining role metal and non-metal
5. Learn the solid solution

Reference Books :

1. Principle of physical chemistry : Puri & Sharma
2. Elementals of physical chemistry : T.W. Atkin
3. Essential of physical chemistry : Bhal & Tuli
Subject: Biochemistry (Honors)
B.Sc Biochemistry First Year (Semester-II)
Title of the Paper: Developmental Biology (BC-II-203)

Period: 45

Objective(s):
To acquire basic knowledge about stages of development, fertilization, gametogenesis, embryogenesis, morphogenesis, metamorphosis and apoptosis.

Unit 1
Basic, Concept of development, potency, commitment, specification, induction, competence, determination and differentiation, morphogenetic gradients, cell fate, cell lineages, stem cell, genomic equivalence, imprinting, mutants and transgenic in analysis of development.

Unit-II
Gametogenesis, fertilization, and early development, Production of gametes, embryo sac development and double fertilization in plants, Zygote formation, cleavage, blastula formation, embryonic fields, gastrulation and formation of germ layers in animals, embryogenesis, establishment of symmetry in plants, seed formation and germination.

Unit-III
Morphogenesis and organogenesis in animals, axes and pattern formation in Drosophila, amphibian and chick, larval formation, metamorphosis

Unit-IV
Programmed cell death (apoptosis and autophagy), aging and senescence,

References:
Development Biology by Freshney
Development Biology by Gilbert
Development Biology by Lewis Wolport
The Shape of Life by Rudolfaleraff
Essential Development Biology by J.M.W. Slack
Course Outcome(s): The student will be able to

15. Gathering basic knowledge of development, specification of cell, competence of cell and genomic equivalence.
16. Understand the different event of fertilization
17. Know the stages of embryogenesis
18. Explaining event of morphogenesis
19. Learn the mechanism of apoptosis involved in pattern formation and PCD
Objective(s):
To acquire basic knowledge about origin of life, evidence evolution, theories of evolution, concept of species.

Unit I: 10
Theories of the origin of life special creation, spontaneous generation abiogenic synthesis of organic monomers and polymers, experiment of Milar’s & Urey

Unit II: 13
Theories of Evolution- Lamarck Darwin theory, concept of variation, adaption, struggle fitness & natural selection, Mendelism, Evidence of Evolution- palentology, Anatomy embryology

Unit III: 12

Unit IV: 10
Concept of species- Morphological, biological & Evolutionary concept. Evolution of Prokaryotic & Eukaryotes mutation theory by Hugo de Veries.

Reference Book
- Cell biology Molecular Biology, Evolution & Genetics by Verma & Agrawal.
- Evolution of Vertebrates – Colbert
- Evolution – Lull
Course Outcome(s): The student will be able to

1. Gathering basic knowledge of origin of life.
2. Understand the different event of evolution
3. Know the stages of evolution
4. Explaining event species
5. Learn the mechanism of theories of evolution.
Objective(s):
To acquire basic knowledge about stages of carbohydrate, protein, lipid metabolism and disease related inborn error of metabolism.

Unit I : a) Introduction to Metabolism

General features of metabolism, experimental approaches to study metabolism use of intact organism, bacterial mutants, tissue slices, stable and radioactive isotopes.

Unit I : b) Carbohydrate Metabolism


Unit II : Electron Transport chain and Oxidative Phosphorylation

Structure of Mitochondria, Sequence of electron carriers, site of ATP production, Inhibitors of electron transport chain. Hypothesis of mitochondrial oxidative phosphorylation,(Basic concept).Inhibition and uncouplers of oxidative phosphorylation. Transport reducing potentials into mitochondria.

Unit III : Lipids Metabolism

Introduction hydrolysis of triacyglycerol transport of fatty acids into mitochondria, oxidation of saturated fatty acid. ATP yield from fatty acid oxidation. Biosynthesis of saturated and unsaturated fatty acid. Metabolism
of ketone bodies oxidation of unsaturated and odd chain fatty acids. Biosynthesis of triglycerides and important phospholipids glyeolipid, sphingolipids and cholesterol. Regulation of cholesterol metabolism.

Unit IV : Amino acid Metabolism

General reaction of amino acid metabolism transmination oxidative deamination and decarboxylation. Urea cycle, Glycogenic and ketogenic amino acids

Course Outcome(s): The student will be able to

1. Gathering basic knowledge of metabolism.
2. Understand the different step in metabolism
3. Know the stages of animo acid metabolism
4. Explaining event of glycogenesis and glucogenesis
5. Learn the mechanism cholesterol metabolism.

Reference Books:

- Fundamentals of Biochemistry : Donald voet, j.g. voet & pran
- Biochemistry : Geoffrey L.Zubay
Objective(s):
To acquire basic knowledge about digestive system, circulatory, respiratory, nervous, excretion and osmoregulation.

Unit-I Digestive System 08
Generalized structure of digestive tract and associated digestive gland. Function of different parts peristalsis, regulation of olive, gastric, pancreatic Intestinal and bile secretion. Absorption-(Carbohydrate, protein, lipid minerals and vitamin) transport and excretion of nutrients.

Unit-II Circulatory System 08

Unit-III Respiratory System 08

Unit-IV Excretion and Osmoregulation 08

Unit-V Nervous System 08

**Unit-VI Reproductive System**

Male Reproductive System and physiological role of testis. Female reproductive system and physiology role of ovary. Spermatogenesis, menstrual cycle ovarian & uterine cycle.

**Course Outcome(s):** The student will be able to

1. Gathering basic knowledge of digestive system, circulatory, respiratory, nervous, excretion and osmoregulation.
2. Understand the structure and function of system.
3. Know the stages of spermatogenesis.
4. Explaining event of excretion and osmoregulation
5. Learn the mechanism of acetyl cholinesterase.

**Reference Books :**

2. Text Book of Medical Physiology - Guyton
3. Text Book of Human Biochemistry - G.P.Talwar
Objective(s):
To acquire basic knowledge about preparation of buffer solution and qualitative analysis of inorganic radical.

1. Preparation of buffer solutions of known pH and molarity using pH meter (Bicarbonate/ phosphate/ acetate)
2. Prepare standard Na₂CO₃ Solution. Standardize the given HCl solution and estimate the amount of NaOH in the given solution
3. Qualitative Analysis of Inorganic radicals( Two Acidic & Two basic radicals)
4. To Study kinetics of cooling of H₂O.
5. Determination of Viscosity of liquid by Ostwald’s Viscometer
6. To Determine Surface tension of a given liquid by stalagno meter method
7. To Study Critical solution Temperature(CST) Of Phenol water system
8. Determination of Heat of Reaction of Displacement of copper by zinc

Reference Books:

6. Textbook of Inorganic Qualitative Analysis : vogel’s
7. Practical of physical chemistry : T.K.Chaudekar, Rajbhøj
8. Practical of physical chemistry : Jahagirdar.
Subject: Biochemistry (Honors)

Annual Pattern Practical Paper

B.Sc. Biochemistry

B.Sc. first Year (II Semester)

Title of the Paper: Lab course- Human physiology (LCBC-II-2)

Periods: 60

Objective(s):

To acquire basic knowledge about histological specimen and preservation of blood serum and plasma.

1. Identification of histological specimen – liver, adrenal, pancreas, thyroid, testis and ovary.
2. Preparation and preservation of blood serum and plasma.
3. Preparation of blood smear and DLC (Importance in various disease conditions.)
4. Enumeration of RBC’s and WBC’s determining health status.
5. Bleeding time and Clotting time.
6. Determination of blood groups (A, B, AB, O and Rh) and it’s significance.

Reference Books:

6. Text Book of Medical Physiology - Guyton
Objective(s):

To acquire basic principal of separation and estimation of biomolecule.

1. Separation and Identification of amino acids by paper chromatography.
2. Separation and Identification of sugars by paper chromatography.
3. Separation of Plant pigment on starch column.
4. Determination of Lambda max of COCl₂ verification of Beer-Lambert’s and determination of molar absorption coefficient.
5. Estimation of proteins by Biuret method.
6. Estimation of Proteins by Lawreys method
7. Estimation of maltose by DNSA methods.
8. Separation of triglycerides (Oils) on TLC.
10. Demonstration on spectrophotometer.

Reference Books:

1. Practical of biochemistry : Palmer
2. Practical of physical biochemistry : T.K. Chaudekar,
3. Practical of physical biochemistry : Jahagirdar
4. Textbook of organic Qualitative Analysis : Hynes