



**VEL TECH MULTI TECH  
Dr RANGARAJAN Dr.SAKUNTHALA  
ENGINEERING COLLEGE**

(An ISO 9001: 2008 Certified Institution)

(Owned by Vel Trust)

(Approved by Govt. of Tamil Nadu and affiliated to Anna University)



**SYLLABUS**

**WEEKLY SCHEDULE**

**III SEMESTER**

**2014 - 2015**

**DEPARTMENT OF BIO MEDICAL ENGINEERING**

**IV YEAR DEGREE COURSE**

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## **WEEK DETAILS**

| <b>SL.NO.</b> | <b>WEEK</b>   | <b>FROM</b>       | <b>TO</b>         |
|---------------|---------------|-------------------|-------------------|
| 1             | <b>WEEK1</b>  | <b>24-06-2014</b> | <b>27-06-2014</b> |
| 2             | <b>WEEK2</b>  | <b>30-06-2014</b> | <b>04-07-2014</b> |
| 3             | <b>WEEK3</b>  | <b>07-07-2014</b> | <b>11-07-2014</b> |
| 4             | <b>WEEK4</b>  | <b>14-07-2014</b> | <b>18-07-2014</b> |
| 5             | <b>WEEK5</b>  | <b>21-07-2014</b> | <b>25-07-2014</b> |
| 6             | <b>WEEK6</b>  | <b>28-07-2014</b> | <b>01-08-2014</b> |
| 7             | <b>WEEK7</b>  | <b>04-08-2014</b> | <b>08-04-2014</b> |
| 8             | <b>WEEK8</b>  | <b>11-08-2014</b> | <b>14-08-2014</b> |
| 9             | <b>WEEK9</b>  | <b>18-08-2014</b> | <b>22-08-2014</b> |
| 10            | <b>WEEK10</b> | <b>25-08-2014</b> | <b>28-08-2014</b> |
| 11            | <b>WEEK11</b> | <b>01-09-2014</b> | <b>05-09-2014</b> |
| 12            | <b>WEEK12</b> | <b>08-09-2014</b> | <b>12-09-2014</b> |
| 13            | <b>WEEK13</b> | <b>15-09-2014</b> | <b>19-09-2014</b> |
| 14            | <b>WEEK14</b> | <b>22-09-2014</b> | <b>26-09-2014</b> |
| 15            | <b>WEEK15</b> | <b>29-09-2014</b> | <b>01-10-2014</b> |
| 16            | <b>WEEK16</b> | <b>06-10-2014</b> | <b>10-10-2014</b> |
| 17            | <b>WEEK17</b> | <b>13-10-2014</b> | <b>17-10-2014</b> |
| 18            | <b>WEEK18</b> | <b>20-10-2014</b> | <b>24-10-2014</b> |
| 19            | <b>WEEK19</b> | <b>27-10-2014</b> | <b>31-10-2014</b> |

## SUBJECT CONTENTS

| <b>SL.NO</b>     | <b>SUBJECT CODE</b> | <b>SUBJECT NAME</b>                                  |
|------------------|---------------------|--|
| <b>THEORY</b>    |                     |  |
| <b>1</b>         | <b>MA6351</b>       | <b>Transforms and Partial Differential Equations</b> |
| <b>2</b>         | <b>BM6301</b>       | <b>Bio Chemistry</b>                                 |
| <b>3</b>         | <b>EC6303</b>       | <b>Signals and Systems</b>                           |
| <b>4</b>         | <b>BM6302</b>       | <b>Sensors and Measurements</b>                      |
| <b>5</b>         | <b>EC6301</b>       | <b>Object Oriented Programming and Data</b>          |
| <b>6</b>         | <b>BM6303</b>       | <b>Anatomy and Human Physiology</b>                  |
| <b>PRACTICAL</b> |                     |  |
| <b>7</b>         | <b>BM6311</b>       | <b>Bio Chemistry and Human Physiology Laboratory</b> |
| <b>8</b>         | <b>BM6312</b>       | <b>OOPS and Data Structures Laboratory</b>           |

## TEST / EXAM SCHEDULE

| SL.NO | SUBJECT CODE | SUBJECT NAME                                    | UNIT TEST I    | UNIT TEST II   | UNIT TEST III  | UNIT TEST IV   | UNIT TEST V    |
|-------|--------------|---|----------------|----------------|----------------|----------------|----------------|
| 1     | MA6351       | Transforms and Partial Differential Equations   | 08/07/14<br>FN | 30/07/14<br>FN | 20/08/14<br>FN | 09/09/14<br>FN | 29/09/14<br>FN |
| 2     | BM6301       | Bio Chemistry                                   | 08/07/14<br>AN | 30/07/14<br>AN | 20/08/14<br>AN | 09/09/14<br>AN | 29/09/14<br>AN |
| 3     | EC6303       | Signals and Systems                             | 09/07/14<br>FN | 31/07/14<br>FN | 21/08/14<br>FN | 10/09/14<br>FN | 30/09/14<br>FN |
| 4     | BM6302       | Sensors and Measurements                        | 09/07/14<br>AN | 31/07/14<br>AN | 21/08/14<br>AN | 10/09/14<br>AN | 30/09/14<br>AN |
| 5     | EC6301       | Object Oriented Programming and Data Structures | 10/07/14<br>FN | 01/08/14<br>FN | 22/08/14<br>FN | 11/09/14<br>FN | 01/10/14<br>FN |
| 6     | BM6303       | Anatomy and Human Physiology                    | 10/07/14<br>AN | 01/08/14<br>AN | 22/08/14<br>AN | 11/09/14<br>AN | 01/10/14<br>AN |

| SL.NO | SUBJECT CODE | SUBJECT NAME                                    | MODEL EXAM |
|-------|--------------|---|------------|
| 1     | MA6351       | Transforms and Partial Differential Equations   | 13-10-2014 |
| 2     | BM6301       | Bio Chemistry                                   | 14-10-2014 |
| 3     | EC6303       | Signals and Systems                             | 15-10-2014 |
| 4     | BM6302       | Sensors and Measurements                        | 16-10-2014 |
| 5     | EC6301       | Object Oriented Programming and Data Structures | 17-10-2014 |
| 6     | BM6303       | Anatomy and Human Physiology                    | 20-10-2014 |

# **MA6351 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS**

## **WEEK 1**

### **UNIT I PARTIAL DIFFERENTIAL EQUATIONS**

Formation of partial differential equations – Singular integrals - Solutions of standard types of first order partial differential equations

## **WEEK 2**

Lagrange's linear equation -- Linear partial differential equations of second and higher order with constant coefficients of both homogeneous

## **WEEK 3**

Non-homogeneous types

## **WEEK 4 UNIT TEST-I**

### **UNIT II FOURIER SERIES**

Dirichlet's conditions – General Fourier series – Odd and even functions – Half range sine series

## **WEEK 5**

Half range cosine series – Complex form of Fourier series

## **WEEK 6**

Parseval's identity – Harmonic analysis

## **WEEK 7 UNIT TEST II**

## **WEEK 8**

### **UNIT III APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS**

Classification of PDE – Method of separation of variables - Solutions of one dimensional wave Equation

## **WEEK 9**

One dimensional equation of heat conduction – Steady state solution of two dimensional

Equation of heat conduction (excluding insulated edges)

## **WEEK 10 UNIT TEST III**

### **UNIT IV FOURIER TRANSFORMS**

Statement of Fourier integral theorem – Fourier transforms pair – Fourier sine

## **WEEK 11**

Cosine transforms – Properties

## **WEEK 12**

Transforms of simple functions – Convolution theorem – Parseval's identity

## **WEEK 13 UNIT TEST IV**

## **WEEK 14**

## **UNIT V Z - TRANSFORMS AND DIFFERENCE EQUATIONS**

Z- Transforms - Elementary properties – Inverse Z - transform (using partial fraction and residues)

## **WEEK 15**

Convolution theorem - Formation of difference equations

## **WEEK-16**

Solution of difference equations using Z – transform

## **WEEK-17- UNIT TEST V**

## **WEEK-18- MODEL EXAM**

### **TEXT BOOKS:**

1. Veerarajan. T., "Transforms and Partial Differential Equations", Tata McGraw Hill Education Pvt.Ltd., New Delhi, Second reprint, 2012.
2. Grewal. B.S., "Higher Engineering Mathematics", 42nd Edition, Khanna Publishers, Delhi, 2012.
3. Narayanan.S, Manicavachagom Pillay.T.K and Ramanaiyah.G "Advanced Mathematics for Engineering Students" Vol. II & III, S.Viswanathan Publishers Pvt Ltd.1998.

### **REFERENCES:**

1. Bali.N.P and Manish Goyal, "A Textbook of Engineering Mathematics", 7th Edition, Laxmi Publications Pvt Ltd , 2007.
2. Ramana.B.V., "Higher Engineering Mathematics", Tata McGrawHill Publishing Company Limited, New Delhi, 2008.
3. Glyn James, "Advanced Modern Engineering Mathematics", 3rd Edition, Pearson Education, 2007.
4. Erwin Kreyszig, "Advanced Engineering Mathematics", 8th Edition, Wiley India, 2007.
5. Ray Wylie. C and Barrett.L.C, "Advanced Engineering Mathematics" Tata Mc Graw Hill Education Pvt Ltd, Sixth Edition, New Delhi, 2012.
6. Datta.K.B., "Mathematical Methods of Science and Engineering", Cengage Learning India Pvt Ltd, Delhi, 2013

# **BM6301 BIO CHEMISTRY**

## **WEEK 1**

### **UNIT I INTRODUCTION TO BIOCHEMISTRY**

Introduction to Biochemistry, water as a biological solvent, weak acid and bases, pH, buffers, Handerson- Hasselbalch equation

## **WEEK 2**

Physiological buffers, fitness of the aqueous environment for living organism. Principle of viscosity

## **WEEK 3**

Surface tension, adsorption, diffusion, osmosis and their applications in biological systems

## **WEEK 4 UNIT TEST-I**

### **UNIT II CARBOHYDRATES**

Classification of carbohydrates - mono, di, oligo and polysaccharides. Isomerism, racemisation and mutarotation .Structure, physical and chemical properties of carbohydrates

## **WEEK 5**

Metabolic pathways and bioenergetics – Glycolysis, glycogenesis, glycogenolysis and its hormonal regulation.

## **WEEK 6**

TCA cycle and electron transport chain. Oxidative phosphorylation

## **WEEK 7 UNIT TEST-II**

## **WEEK 8**

### **UNIT III LIPIDS**

Classification of lipids- simple, compound and derived lipids. Nomenclature of fatty acid, physical and chemical properties of fat. Saponification number, Reichert- Meissl number and iodine number. Metabolic pathways:

## **WEEK 9**

Synthesis and degradation of fatty acid (beta oxidation), hormonal regulation of fatty acid metabolism, ketogenesis, structural architecture and significance of biological membrane

## **WEEK 10 UNIT TEST-III**

### **UNIT IV NUCLEIC ACID & PROTEIN**

Structure of purines and pyrimidines, nucleoside , nucleotide , DNA act as a genetic material chargoffs rule. Watson and crick model of DNA

## **WEEK 11**

Structure of RNA and its type. Classification, structure and properties of proteins, structural organization of proteins

#### **WEEK 12**

Classification and properties of aminoacids. Separation of protein: gel filtration, electrophoresis and ultracentrifugation

#### **WEEK 13 CYCLE TEST IV**

#### **WEEK 14**

#### **UNIT V ENZYME AND ITS KINETICS**

Classification of enzymes, apoenzyme, coenzyme, holoenzyme and cofactors. Kinetics of enzymes - Michaelis-Menten equation. Factors affecting enzymatic activity: temperature, pH, substrate concentration and enzyme concentration

#### **WEEK 15**

Inhibitors of enzyme action: Competitive, non- competitive, irreversible. Enzyme: Mode of action

#### **WEEK-16**

Allosteric and covalent regulation. Clinical significance of enzymes. Measurement of enzyme activity and interpretation of units

#### **WEEK-17- UNIT TEST V**

#### **WEEK-18- MODEL EXAM**

#### **TEXT BOOKS:**

1. David.W.Martin, Peter.A.Mayes , Victor. W.Rodwell, “Harper’s Review of Biochemistry”, LANGE Medical Publications, 1981
2. Keith Wilson & John Walker, “Practical Biochemistry - Principles & Techniques”, Oxford University Press, 2009.

#### **REFERENCES:**

1. Trevor palmer, “Understanding Enzymes”, Ellis Horwood Ltd. 1991.
2. Pamela.C.Champe & Richard.A.Harvey, “Lippincott Biochemistry Lippincott’s Illustrated Reviews”,Raven publishers,1994



# **EC6303 SIGNALS AND SYSTEMS**

## **WEEK 1**

### **UNIT I CLASSIFICATION OF SIGNALS AND SYSTEMS**

Continuous time signals (CT signals) - Discrete time signals (DT signals) - Step, Ramp, Pulse, Impulse, Sinusoidal, Exponential, Classification of CT and DT signals - Periodic & Aperiodic signals, Deterministic & Random signals

## **WEEK 2**

Energy & Power signals - CT systems and DT systems- Classification of systems – Static & Dynamic, Linear & Nonlinear

## **WEEK 3**

Time-variant & Time-invariant, Causal & Noncausal, Stable & Unstable

## **WEEK 4 UNIT TEST-I**

### **UNIT II ANALYSIS OF CONTINUOUS TIME SIGNALS**

Fourier series analysis-spectrum of Continuous Time (CT) signals

## **WEEK 5**

Fourier and Laplace Transforms in CT Signal Analysis

## **WEEK 6**

Fourier and Laplace Transforms Properties

## **WEEK 7 UNIT TEST-II**

## **WEEK 8**

### **UNIT III LINEAR TIME INVARIANT- CONTINUOUS TIME SYSTEMS**

Differential Equation-Block diagram representation-impulse response, convolution integrals

## **WEEK 9**

Fourier and Laplace transforms in Analysis of CT systems

## **WEEK 10 UNIT TEST-III**

### **UNIT IV ANALYSIS OF DISCRETE TIME SIGNALS**

Baseband Sampling - DTFT

## **WEEK 11**

Properties of DTFT.

## **WEEK 12**

Z Transform – Properties of Z Transform

## **WEEK 13 UNIT TEST-IV**

## **WEEK14**

## **UNIT V LINEAR TIME INVARIANT-DISCRETE TIME SYSTEMS**

Difference Equations-Block diagram representation-Impulse response

### **WEEK 15**

Convolution sum- Discrete Fourier

### **WEEK-16**

Z Transform Analysis of Recursive & Non-Recursive systems

### **WEEK-17- UNIT TEST V**

### **WEEK-18- MODEL EXAM**

#### **TEXT BOOK:**

1. Allan V.Oppenheim, S.Wilsky and S.H.Nawab, "Signals and Systems", Pearson, 2007

#### **REFERENCES:**

1. B. P. Lathi, "Principles of Linear Systems and Signals", Second Edition, Oxford, 2009.
2. R.E.Zeimer, W.H.Tranter and R.D.Fannin, "Signals & Systems - Continuous and Discrete", Pearson, 2007.
3. John Alan Stuller, "An Introduction to Signals and Systems", Thomson, 2007.
4. M.J.Roberts, "Signals & Systems Analysis using Transform Methods & MATLAB", Tata McGraw Hill, 2007.

## **BM6302 SENSORS AND MEASUREMENTS**

### **WEEK 1**

### **UNIT I SCIENCE OF MEASUREMENT**

Measurement System – Instrumentation

### **WEEK 2**

Classification and Characteristics of Transducers – Static and Dynamic

### **WEEK 3**

Errors in Measurements – Calibration – Primary and secondary standards

### **WEEK 4 UNIT TEST-I**

### **UNIT II DISPLACEMENT, PRESSURE, TEMPERATURE SENSORS**

Strain Gauge: Gauge factor, sensing elements, configuration, unbounded strain gage, biomedical applications; strain gauge as displacement & pressure transducers: Capacitive transducer, Inductive transducer

### **WEEK 5**

LVDT, Passive types: RTD materials & range, relative resistance vs. temperature characteristics, thermistor characteristics

#### **WEEK 6**

Biomedical applications of Temperature sensors. Active type: Thermocouple – characteristics

#### **WEEK 7 UNIT TEST-II**

#### **WEEK 8**

### **UNIT III PHOTOELECTRIC AND PIEZO ELECTRIC SENSORS**

Phototube, scintillation counter, Photo Multiplier Tube (PMT), photovoltaic, Photo conductive cells, photo diodes, phototransistor, comparison of photoelectric transducers

#### **WEEK 9**

Petro photometric applications of photo electric transducers. Piezoelectric active transducer and biomedical applications as pressure & Ultrasound transducer

#### **WEEK 10 UNIT TEST-III**

### **UNIT IV SIGNAL CONDITIONING & SIGNAL ANALYSER**

AC and DC Bridges –wheat stone bridge, Kelvin, Maxwell

#### **WEEK 11**

Hay, Schering – Concepts of filters, Preamplifier

#### **WEEK 12**

Impedance matching circuits – isolation amplifier. Spectrum analyzer

#### **WEEK 13 UNIT TEST-IV**

#### **WEEK14**

### **UNIT V DISPLAY AND RECORDING DEVICES**

Digital voltmeter – Multi meter – CRO – block diagram, CRT – vertical & horizontal deflection system, DSO

#### **WEEK 15**

LCD monitor, PMMC writing systems, servo recorders, photographic recorder

#### **WEEK-16**

Magnetic tape recorder, Inkjet recorder, thermal recorder

#### **WEEK-17- UNIT TEST V**

#### **WEEK-18- MODEL EXAM**

#### **TEXT BOOK:**

1. A.K.Sawhney, “Electrical & Electronics Measurement and Instrumentation”, 10th edition, Dhanpat Rai & Co, New Delhi, 2010.

## **REFERENCES:**

1. Ernest O Doebelin and Dhanesh N Manik, Measurement systems, Application and design, 5th edition, Mc Graw-Hill, 2007.
2. Khandpur R.S, “Handbook of Biomedical Instrumentation”, Tata McGraw-Hill, New Delhi, 2003.
3. Leslie Cromwell, “Biomedical Instrumentation and measurement”, Prentice hall of India, New Delhi, 2007.
4. John G. Webster, “Medical Instrumentation Application and Design”, John Wiley and sons, New York, 2004.
5. L.A Geddas and L.E.Baker, “Principles of Applied Biomedical Instrumentation”, John Wiley and Sons, Third Edition, Reprint 2008.
6. Albert D.Helfrick and William D. Cooper. Modern Electronic Instrumentation and Measurement Techniques”, Prentice Hall of India, 2007.

## **EC6301 OBJECT ORIENTED PROGRAMMING AND DATA STRUCTURES**

### **WEEK 1**

#### **UNIT I DATA ABSTRACTION & OVERLOADING**

Overview of C++ – Structures – Class Scope and Accessing Class Members – Reference Variables – Initialization – Constructors – Destructors

### **WEEK 2**

Member Functions and Classes – Friend Function – Dynamic Memory Allocation – Static Class Members

### **WEEK 3**

Container Classes and Integrators – Proxy Classes – Overloading: Function overloading and Operator Overloading

### **WEEK 4 UNIT TEST-I**

#### **UNIT II INHERITANCE & POLYMORPHISM**

### **WEEK 5**

Base Classes and Derived Classes – Protected Members – Casting Class pointers and Member Functions – Overriding – Public, Protected and

Private Inheritance – Constructors and Destructors in derived Classes – Implicit Derived

**WEEK 6**

Class Object To Base – Class Object Conversion – Composition Vs. Inheritance – Virtual functions – This Pointer – Abstract Base Classes and Concrete Classes – Virtual Destructors – Dynamic Binding

**WEEK 7 UNIT TEST-II**

**WEEK 8**

**UNIT III LINEAR DATA STRUCTURES**

Abstract Data Types (ADTs) – List ADT – array-based implementation – linked list implementation — singly linked lists

**WEEK 9**

Polynomial Manipulation - Stack ADT – Queue ADT - Evaluating arithmetic expressions

**WEEK 10 UNIT TEST-III**

**UNIT IV NON-LINEAR DATA STRUCTURES**

Trees – Binary Trees – Binary tree representation and traversals – Application of trees

**WEEK 11**

Set representation and Union-Find operations – Graph and its representations – Graph Traversals

**WEEK 12**

Representation of Graphs – Breadth-first search – Depth-first search - Connected components

**WEEK 13 UNIT TEST-IV**

**WEEK 14**

**UNIT V SORTING AND SEARCHING**

Sorting algorithms: Insertion sort

**WEEK 15**

Quick sort - Merge sort

**WEEK-16**

Searching: Linear search – Binary Search

**WEEK-17- UNIT TEST V**

**WEEK-18- MODEL EXAM**

**TEXT BOOKS:**

1. Deitel and Deitel, “ C++, How To Program”, Fifth Edition, Pearson Education, 2005.
2. Mark Allen Weiss, “Data Structures and Algorithm Analysis in C++”, Third Edition, Addison- Wesley, 2007.

### **REFERENCES:**

1. Bhushan Trivedi, “ Programming with ANSI C++, A Step-By-Step approach”, Oxford University Press, 2010.
2. Goodrich, Michael T., Roberto Tamassia, David Mount, “Data Structures and Algorithms in C++”, 7th Edition, Wiley. 2004.
3. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, "Introduction to Algorithms", Second Edition, Mc Graw Hill, 2002.
4. Bjarne Stroustrup, “The C++ Programming Language”, 3rd Edition, Pearson Education, 2007.
5. Ellis Horowitz, Sartaj Sahni and Dinesh Mehta, Fundamentals of Data Structures in C++, Galgotia Publications, 2007.

## **BM6303 ANATOMY AND HUMAN PHYSIOLOGY**

### **WEEK 1**

#### **UNIT I BASIC ELEMENTS OF HUMAN BODY**

**Cell:** Structure and organelles - Functions of each component in the cell.  
Cell membrane

### **WEEK 2**

Transport across membrane – origin of cell membrane potential – Action potential

### **WEEK 3**

**Tissue:** Types – Specialized tissues – functions.

### **WEEK 4 UNIT TEST-I**

#### **UNIT II SKELETAL AND RESPIRATORY SYSTEM**

Skeletal system: Bone types and functions – Joint - Types of Joint - Cartilage and functions. Respiratory System

### **WEEK 5**

Components of respiratory system – Respiratory Mechanism

### **WEEK 6**

Types of respiration - Oxygen and carbon dioxide transport and acid base regulation

## **WEEK 7 UNIT TEST-II**

### **WEEK 8**

## **UNIT III CIRCULATORY SYSTEM**

Blood composition - functions of blood – functions of RBC. WBC types and their functions. Blood groups – importance of blood groups – identification of blood groups. Blood vessels- Structure of heart

### **WEEK 9**

Properties of Cardiac muscle – Conducting system of heart – Cardiac cycle – ECG – Heart sound - Volume and pressure changes and regulation of heart rate –Coronary Circulation. Factors regulating Blood flow

## **WEEK 10 UNIT TEST-III**

## **UNIT IV URINARY AND SPECIAL SENSORY SYSTEM**

Urinary system: Structure of Kidney and Nephron. Mechanism of Urine formation and acid base regulation

### **WEEK 11**

Urinary reflex – Homeostasis and blood pressure regulation by urinary system

### **WEEK 12**

Special senses: Eye and Ear

## **WEEK 13 UNIT TEST-IV**

### **WEEK 14**

## **UNIT V NERVOUS SYSTEM**

Structure of a Neuron – Types of Neuron. Synapses and types. Conduction of action potential in neuron. Brain

### **WEEK 15**

Divisions of brain lobes - Cortical localizations and functions - EEG. Spinal cord

### **WEEK-16**

Tracts of spinal cord - Reflex mechanism – Types of reflex. Autonomic nervous system and its functions

## **WEEK-17- UNIT TEST V**

## **WEEK-18- MODEL EXAM**

### **TEXT BOOK:**

1. Elaine.N. Marieb , “Essential of Human Anatomy and Physiology”, Eight Edition, Pearson Education, New Delhi ,2007

### **REFERENCES:**

1. Gillian Pocock, Christopher D. Richards, The human Body – An introduction for Biomedical and Health Sciences, Oxford University Press, USA, 2009
2. William F. Ganong, “Review of Medical Physiology”, 22nd Edition, Mc Graw Hill, New Delhi, 2005
3. Eldra Pearl Solomon, “Introduction to Human Anatomy and Physiology”, W.B. Saunders Company, Harcourt Brace Jovanovich, 2003.
4. Guyton & Hall, “Medical Physiology”, 12th Edition, Elsevier Saunders, 2010

## **BM6311 BIOCHEMISTRY AND HUMAN PHYSIOLOGY LABORATORY**

### **LIST OF EXPERIMENTS:**

1. General tests for carbohydrates, proteins and lipids.
2. Preparation of serum and plasma from blood.
3. Estimation of blood glucose.
4. Estimation of creatinine
5. Estimation of urea
6. Estimation of cholesterol
7. Assay of SGOT/SGPT
8. Separation of proteins by SDS electrophoresis
9. Separation of amino acids by thin layer chromatography
10. Separation of DNA by agarose gel electrophoresis
11. ESR , PCV, MCH , MCV ,MCHC , total count of RBCs and hemoglobin estimation

## **BM6312 OOPS AND DATA STRUCTURES LABORATORY**

### **LIST OF EXPERIMENTS:**

1. Basic Programs for C++ Concepts
2. Array implementation of List Abstract Data Type (ADT)
3. Linked list implementation of List ADT
4. Cursor implementation of List ADT
5. Stack ADT - Array and linked list implementations
6. The next two exercises are to be done by implementing the following source files



- i. Program source files for Stack Application 1
  - ii. Array implementation of Stack ADT
  - iii. Linked list implementation of Stack ADT
  - iv. Program source files for Stack Application 2
  - v. An appropriate header file for the Stack ADT should be included in (i) and (iv)
7. Implement any Stack Application using array implementation of Stack ADT (by implementing files (i) and (ii) given above) and then using linked list
  8. Implementation of Stack ADT (by using files (i) and implementing file (iii))
  9. Implement another Stack Application using array and linked list implementations of Stack ADT (by implementing files (iv) and using file (ii), and then by using files (iv) and (iii))
  10. Queue ADT – Array and linked list implementations
  11. Search Tree ADT - Binary Search Tree
  12. Implement an interesting application as separate source files and using any of the searchable ADT files developed earlier. Replace the ADT file alone with other appropriate ADT files. Compare the performance
  13. Quick Sort