# VELTECH MULTI TECH

**Dr RANGARAJAN Dr. SAKUNTHALA ENGINEERING COLLEGE**

(Owned by Vel Trust 1997)

***(An ISO 9001: 2008 Certified Institution)***

**Accredited By NAAC with 'A' Grade and NBA Accredited Institution**

**(Approved by AICTE New Delhi and Govt. of Tamil Nadu, Affiliated to Anna University Chennai)**

## SYLLABUS

## WEEKLY SCHEDULE

## III SEMESTER 2017-18

# DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

## IV YEAR DEGREE COURSE

#42, Avadi – Vel Tech Road,
Avadi
Chennai – 600062
Telefax – 044-26841061
E-mail: emailto@veltechmultitech.org
Website : www.veltechmultitech.org

## Vision of the Institute

Elevating Well Being of Humanity by Augmenting Human Resource Potential Through Quality Technical Education and Training

## Mission of the Institute

To effectuate supremacy in technical education through articulation of research and industry practices for social relevance. To inculcate the habit of lifelong learning To exhibit professional ethics, commitment and leadership qualities

## Vision of the Department

To emerge as a centre of academic eminence in electronics and communication and related spheres through knowledge acquisition and propagation meeting global needs and standards

## Mission of the Department

- To impart quality education by inculcating fundamental knowledge in electronics and communication engineering with due focus on research and industry practices.
- To propagate lifelong learning.
- To impart the right proportion of knowledge, attitudes and ethics in students to enable them take up positions of responsibility in the society and make significant contributions.

## PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- PEO1: To prepare students with strong foundation in basic science and mathematics and ability to use these tools in professional career and/or higher education by acquiring knowledge in area of Electronics and Communication Engineering.
- PEO2: Analyze real life problems, design appropriate system to provide solutions that are technically sound, economically feasible and socially acceptable.
- PEO3: To train students with electrical and computer engineering breadth so as to Work on multi-disciplinary projects.
- PEO4: Exhibit professionalism, ethical attitude, communication skills, team work in their profession and adapt to current trends by engaging in lifelong learning.

## PROGRAM OUTCOME (POs)

- PO1: Apply knowledge of computing, mathematics, science and engineering fundamentals appropriate to the discipline.
- PO2: Identify, formulate, research literature and solve complex Electronics and Communication Engineering problems for reaching substantial conclusions.
- PO3: Design, implement and evaluate an electronics-based system, process, component or program to the standards for the benefits of the society.
- PO4: Perform investigations of complex problems including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.
- PO5: Use current techniques, skills and modern engineering tools necessary for computing practice.
- PO6: Demonstrate understanding of the societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to engineering practice.
- PO7: Understand that the solutions have to be provided taking the environmental issues and sustainability into consideration.
- PO8: Understand and commit to professional ethics, responsibilities and norms of engineering practice.
- PO9: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings
- PO10: Communicate effectively on complex Electronics and Communication engineering activities with the engineering community and with society at large, such as being able to comprehend, write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- PO11: An understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects.
- PO12: Realize the need for lifelong learning and engage them to adopt technological changes.

# WEEK DETAILS

| SL.NO. | WEEK | FROM | TO |
|---|---|---|---|
| 1 | **WEEK1** | **24.06.2017** | **24.06.2017** |
| 2 | **WEEK2** | **27.06.2017** | **01.07.2017** |
| 3 | **WEEK3** | **03.07.2017** | **08.07.2017** |
| 4 | **WEEK4** | **10.07.2017** | **15.07.2017** |
| 5 | **WEEK5** | **17.07.2017** | **22.07.2017** |
| 6 | **WEEK6** | **24.07.2017** | **29.07.2017** |
| 7 | **WEEK7** | **31.07.2017** | **05.08.2017** |
| 8 | **WEEK8** | **07.08.2017** | **12.08.2017** |
| 9 | **WEEK9** | **16.08.2017** | **19.08.2017** |
| 10 | **WEEK10** | **21.08.2017** | **26.08.2017** |
| 11 | **WEEK11** | **28.08.2017** | **01.09.2017** |
| 12 | **WEEK12** | **04.09.2017** | **09.09.2017** |
| 13 | **WEEK13** | **11.09.2017** | **16.09.2017** |
| 14 | **WEEK14** | **18.09.2017** | **23.09.2017** |
| 15 | **WEEK15** | **25.09.2017** | **28.09.2017** |
| 16 | **WEEK16** | **03.10.2017** | **07.10.2017** |
| 17 | **WEEK17** | **09.10.2017** | **14.10.2017** |

## SUBJECT CONTENTS

| SL.NO | SUBJECT CODE | SUBJECT NAME |
|---|---|---|
| **THEORY** | | |
| 1 | MA6351 | Transforms and Partial Differential Equations |
| 2 | EE6352 | Electrical Engineering and Instrumentation |
| 3 | EC6301 | Object Oriented Programming and Data Structures |
| 4 | EC6302 | Digital Electronics |
| 5 | EC6303 | Signals and Systems |
| 6 | EC6304 | Electronic Circuits- I |
| **PRACTICAL** | | |
| 7 | EC6311 | Analog and Digital Circuits Laboratory |
| 8 | EC6312 | OOPS and Data Structures Laboratory |

## TEST / EXAM SCHEDULE

| SL. NO | SUBJECT CODE | SUBJECT NAME | UNIT TEST I | UNIT TEST II | Pre Model Exam | UNIT TEST IV |
|---|---|---|---|---|---|---|
| 1 | MA6351 | Transforms and Partial Differential Equations | 10.07.2017 FN | 27.07.2017 FN | 16.08.2017 | 07.09.2017 FN |
| 2 | EE6352 | Electrical Engineering and Instrumentation | 10.07.2017 AN | 27.07.2017 AN | 17.08.2017 | 07.09.2017 AN |
| 3 | EC6301 | Object Oriented Programming and Data Structures | 11.07.2017 FN | 28.07.2017 FN | 18.08.2017 | 08.09.2017 FN |
| 4 | EC6302 | Digital Electronics | 11.07.2017 AN | 28.07.2017 AN | 19.08.2017 | 08.09.2017 AN |
| 5 | EC6303 | Signals and Systems | 12.07.2017 FN | 29.07.2017 FN | 21.08.2017 | 09.09.2017 FN |
| 6 | EC6304 | Electronic Circuits- I | 12.07.2017 AN | 29.07.2017 AN | 22.08.2017 | 09.09.2017 AN |

| SL.NO | SUBJECT CODE | SUBJECT NAME | MODEL EXAM |
|---|---|---|---|
| 1 | MA6351 | Transforms and Partial Differential Equations | 28.09.2017 |
| 2 | EE6352 | Electrical Engineering and Instrumentation | 04.10.2017 |
| 3 | EC6301 | Object Oriented Programming and Data Structures | 06.10.2017 |
| 4 | EC6302 | Digital Electronics | 09.10.2017 |
| 5 | EC6303 | Signals and Systems | 11.10.2017 |
| 6 | EC6304 | Electronic Circuits- I | 13.10.2017 |

# 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

**UNIT TEST-II**

**WEEK 7**

**UNIT III APPLICATIONS OF PARTIAL DIFFERENTIAL EQUATIONS**

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

**WEEK 8**

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

Equation of heat conduction (excluding insulated edges)

**WEEK 9 &10 PRE MODEL EXAM**

**UNIT IV FOURIER TRANSFORMS**

Statement of Fourier integral theorem – Fourier transforms pair

**WEEK 11**

Fourier sine, Cosine transforms – Properties, Transforms of simple functions

**WEEK 12**

Convolution theorem – Parseval's identity

**UNIT TEST-IV**

**WEEK 13**

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

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

**WEEK 14**

Convolution theorem - Formation of difference equations

Solution of difference equations using Z – transform

**WEEK-15,16 & 17- 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 Ramanaiah.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

# EE6352 ELECTRICAL ENGINEERING AND INSTRUMENTATION

**WEEK 1**

**UNIT I DC MACHINES**

Three phase circuits, a review. Construction of DC machines – Theory of operation of DC generators

**WEEK 2**

Characteristics of DC generators- Operating principle of DC motors

**WEEK 3**

Types of DC motors and their characteristics – Speed control of DC motors- Applications

**WEEK 4 UNIT TEST-I**

**UNIT II TRANSFORMER**

Introduction – Single phase transformer construction and principle of operation – EMF equation of transformer-Transformer no–load phasor diagram

**WEEK 5**

Transformer on–load phasor diagram — Equivalent circuit of transformer – Regulation of transformer

**WEEK 6**

Transformer losses and efficiency-All day efficiency –auto transformers

**UNIT TEST-II**

**WEEK 7**

**UNIT III LIPIDS**

Principle of operation of three-phase induction motors – Construction – Types – Equivalent circuit –Construction of single-phase induction motors – Types of single phase induction motors – Double revolving field theory – starting methods

**WEEK 8**

Principles of alternator – Construction details – Types – Equation of induced EMF – Voltage regulation. Methods of starting of synchronous motors – Torque equation – V curves – Synchronous motors

**WEEK 9&10 PRE MODEL EXAM**

**WEEK 10:**

**UNIT IV BASICS OF MEASUREMENT AND INSTRUMENTATION**
Static and Dynamic Characteristics of Measurement – Errors in Measurement - Classification of Transducers – Variable resistive – Strainguage, thermistor RTD – transducer
**WEEK 11**
Variable Capacitive Transducer – Capacitor Microphone - Piezo Electric Transducer
**WEEK 12**
Variable Inductive transducer – LVDT, RVDT
**UNIT TEST-IV**
**WEEK 13**
**UNIT V ANALOG AND DIGITAL INSTRUMENTS**
DVM, DMM – Storage Oscilloscope. Comparison of Analog and Digital Modes of operation, Application of measurement system, Errors
Measurement of R, L and C, Wheatstone
**WEEK-14**
Kelvin, Maxwell, Anderson, Schering and Wien bridges, Measurement of Inductance, Capacitance, Effective resistance at high frequency, Q-Meter
**WEEK-15, 16&17- MODEL EXAM**

**TEXT BOOKS:**

1. I.J Nagarath and Kothari DP, "Electrical Machines", McGraw-Hill Education (India) Pvt Ltd 4th Edition ,2010
2. A.K.Sawhney, "A Course in Electrical & Electronic Measurements and Instrumentation", Dhanpat Rai and Co, 2004.

**REFERENCES:**

1. Del Toro, "Electrical Engineering Fundamentals" Pearson Education, New Delhi, 2007.
2. W.D.Cooper & A.D.Helfrick, "Modern Electronic Instrumentation and Measurement Techniques", 5th Edition, PHI, 2002.
3. John Bird, "Electrical Circuit Theory and Technology", Elsevier, First Indian Edition, 2006.
4. Thereja .B.L, "Fundamentals of Electrical Engineering and Electronics", S Chand & Co Ltd, 2008.

5. H.S.Kalsi, “Electronic Instrumentation”, Tata Mc Graw-Hill Education, 2004.
6. J.B.Gupta, “Measurements and Instrumentation”, S K Kataria & Sons, Delhi, 2003.

# 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**

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

**WEEK 5**

Public, Protected and Private Inheritance – Constructors and Destructors in derived Classes – Implicit Derived– Class Object To Base – Class Object Conversion – Composition Vs. Inheritance

**WEEK 6**

Virtual functions – This Pointer – Abstract Base Classes and Concrete Classes –Virtual Destructors – Dynamic Binding

**WEEK 6 UNIT TEST-II**

**WEEK 7**

**UNIT III LINEAR DATA STRUCTURES**

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

**WEEK 8**

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

**WEEK 9&10 PRE MODEL EXAM**

**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

**UNIT TEST-IV**

**WEEK 13**

**UNIT V SORTING AND SEARCHING**

Sorting algorithms: Insertion sort

**WEEK 14**

Quick sort - Merge sort, searching: Linear search –Binary Search

**WEEK-15, 16 &17- 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.

# EC6302 DIGITAL ELECTRONICS

**WEEK 1**

**UNIT I MINIMIZATION TECHNIQUES AND LOGIC GATES**

**Minimization Techniques**: Boolean postulates and laws – De-Morgan‟s Theorem - Principle of Duality - Boolean expression - Minimization of Boolean expressions — Minterm – Maxterm - Sum of Products (SOP) – Product of Sums (POS) – Karnaugh map Minimization – Don‟t care conditions – Quine - Mc Cluskey method of minimization

**WEEK 2**

**Logic Gates:** AND, OR, NOT, NAND, NOR, Exclusive–OR and Exclusive–NOR Implementations of Logic Functions using gates, NAND–NOR implementations – Multi 38 level gate implementations

**WEEK 3**

Multi output gate implementations. TTL and CMOS Logic and their characteristics – Tristate gates

**WEEK 4 UNIT TEST-I**

**UNIT II COMBINATIONAL CIRCUITS**

Design procedure – Half adder – Full Adder – Half subtractor – Full subtractor – Parallel binary adder, parallel binary Subtractor

**WEEK 5**

Fast Adder - Carry Look Ahead adder – Serial Adder/Subtractor - BCD adder – Binary Multiplier, Binary Divider - Multiplexer/ Demultiplexer – decoder - encoder – parity checker

**WEEK 6**

Parity generators – code converters - Magnitude Comparator

**UNIT TEST-II**

**WEEK 7**

**UNIT III SEQUENTIAL CIRCUITS**

Latches, Flip-flops - SR, JK, D, T, and Master-Slave – Characteristic table and equation –Application table – Edge triggering – Level Triggering – Realization of one flip flop using other flip flops – serial adder/subtractor- Asynchronous Ripple or serial counter – Asynchronous Up/Down counter - Synchronous counters – Synchronous Up/Down counters

**WEEK 8**

Programmable counters – Design of Synchronous counters: state diagram- State table –State minimization –State assignment - Excitation table and

maps-Circuit implementation - Modulo–n counter, Registers – shift registers - Universal shift registers – Shift register counters – Ring counter – Shift counters - Sequence generators

**WEEK 9 & 10 PRE MODEL EXAM**

**UNIT IV MEMORY DEVICES**

Classification of memories – ROM - ROM organization - PROM – EPROM – EEPROM –EAPROM, RAM – RAM organization –

**WEEK 11**

Write operation – Read operation – Memory cycle - Timing wave forms – Memory decoding – memory expansion – Static RAM Cell- Bipolar RAM cell, MOSFET RAM cell – Dynamic RAM cell –Programmable Logic Devices – Programmable Logic Array (PLA)

**WEEK 12**

Programmable Array Logic (PAL) – Field Programmable Gate Arrays (FPGA) - Implementation of combinational logic circuits using ROM, PLA, PAL

**UNIT TEST-IV**

**WEEK13**

**UNIT V SYNCHRONOUS AND ASYNCHRONOUS SEQUENTIAL CIRCUITS**

**Synchronous Sequential Circuits:** General Model – Classification – Design – Use of Algorithmic State Machine – Analysis of Synchronous Sequential Circuits, **Asynchronous Sequential Circuits:** Design of fundamental mode and pulse mode circuits

**WEEK-14**

Incompletely specified State Machines, Problems in Asynchronous Circuits – Design of Hazard Free Switching circuits. Design of Combinational and Sequential circuits using VERILOG.

**WEEK-15, 16 & 17- MODEL EXAM**

**TEXT BOOK:**

1. M. Morris Mano, “Digital Design”, 4th Edition, Prentice Hall of India Pvt. Ltd., 2008 / Pearson Education (Singapore) Pvt. Ltd., New Delhi, 2003

**REFERENCES:**

1. John F.Wakerly, “Digital Design”, Fourth Edition, Pearson/PHI, 2008

2. John.M Yarbrough, “Digital Logic Applications and Design”, Thomson Learning, 2006.
3. Charles H.Roth. “Fundamentals of Logic Design”, 6th Edition, Thomson Learning, 2013.
4. Donald P.Leach and Albert Paul Malvino, “Digital Principles and Applications”, 6th Edition, TMH, 2006.
5. Thomas L. Floyd, “Digital Fundamentals”, 10th Edition, Pearson Education Inc, 2011
6. Donald D.Givone, “Digital Principles and Design”, TMH, 2003

## 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

**UNIT TEST-II**

**WEEK 7**

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

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

**WEEK 8**

Fourier and Laplace transforms in Analysis of CT systems

**WEEK 9 & 10 PRE MODEL EXAM**
**UNIT IV ANALYSIS OF DISCRETE TIME SIGNALS**
Baseband Sampling - DTFT
**WEEK 11**
Properties of DTFT, Z Transform
**WEEK 12**
Properties of Z Transform
**UNIT TEST-IV**
**WEEK13**
**UNIT V LINEAR TIME INVARIANT-DISCRETE TIME SYSTEMS**

Difference Equations-Block diagram representation-Impulse response
**WEEK 14**
Convolution sum- Discrete Fourier, Z Transform Analysis of Recursive & Non-Recursive systems

**WEEK-15, 16 & 17- 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.

# EC6304 ELECTRONIC CIRCUITS – I

**WEEK 1**

**UNIT I BIASING OF DISCRETE BJT AND MOSFET**

DC Load line, operating point, Various biasing methods for BJT-Design-Stability

**WEEK 2**

Stability-Bias compensation, Thermal stability

**WEEK 3**

Design of biasing for JFET, Design of biasing for MOSFET.

**WEEK 4 UNIT TEST-I**

**UNIT II BJT AMPLIFIERS**

Small signal Analysis of Common Emitter-AC Loadline, Voltage swing limitations

**WEEK 5**

Common collector and common base amplifiers – Differential amplifiers, CMRR- Darlington Amplifier- Bootstrap technique

**WEEK 6**

Cascaded stages - Cascode Amplifier

**WEEK 6 UNIT TEST-II**

**WEEK 7**

**UNIT III JFET AND MOSFET AMPLIFIERS**

Small signal analysis of JFT amplifiers- Small signal Analysis of MOSFET and JFET, Common source amplifier, Voltage swing limitations, Small signal analysis of MOSFET

**WEEK 8**

JFET Source follower and Common Gate amplifiers, - BiMOS Cascode amplifier

**WEEK 9& 10 UNIT TEST-III**

**UNIT IV FREQUENCY ANALYSIS OF BJT AND MOSFET AMPLIFIERS**

Low frequency and Miller effect, High frequency analysis of CE and

**WEEK 11**

MOSFET CS amplifier , Short circuit current gain, cut off frequency $f_\alpha$ And $f_\beta$ unity gain

**WEEK 12**

Determination of bandwidth of single stage and multistage amplifiers

**UNIT TEST-IV**

**WEEK 13**
**UNIT V IC MOSFET AMPLIFIERS**
IC Amplifiers- IC biasing Current steering circuit using MOSFET- MOSFET current sources, PMOS and NMOS current sources. Amplifier with active loads - enhancement load, Depletion load

**WEEK 14**
PMOS and NMOS current sources load- CMOS common source and source follower- CMOS differential amplifier- CMRR

**WEEK-15, 16 & 17 - MODEL EXAM**
**TEXT BOOK:**

1. Donald .A. Neamen, Electronic Circuit Analysis and Design –2nd Edition,Tata Mc Graw
Hill, 2009.

**REFERENCES:**

1. Adel .S. Sedra, Kenneth C. Smith, "Micro Electronic Circuits", 6th Edition, Oxford University Press, 2010. 41
2. David A., "Bell Electronic Devices and Circuits", Oxford Higher Education Press, 5th Editon, 2010
3. Behzad Razavi, "Design of Analog CMOS Integrated Circuits", Tata Mc Graw Hill, 2007.
4. Paul Gray, Hurst, Lewis, Meyer "Analysis and Design of Analog Integrated Circuits", 4thEdition ,John Willey & Sons 2005
5. Millman.J. and Halkias C.C, "Integrated Electronics", Mc Graw Hill, 2001.
6. D.Schilling and C.Belove, "Electronic Circuits", 3rd Edition, Mc Graw Hill, 1989.

# EC6311 ANALOG AND DIGITAL CIRCUITS LABORATORY

**LIST OF ANALOG EXPERIMENTS:**

1. Frequency Response of CE / CB / CC amplifier
2. Frequency response of CS Amplifiers
3. Darlington Amplifier
4. Differential Amplifiers- Transfer characteristic.
5. CMRR Measurement
6. Cascode / Cascade amplifier
7. Determination of bandwidth of single stage and multistage amplifiers
8. Spice Simulation of Common Emitter and Common Source amplifiers

**LIST OF DIGITAL EXPERIMENTS**

9. Design and implementation of code converters using logic gates
(i) BCD to excess-3 code and vice versa (ii) Binary to gray and vice-versa
10. Design and implementation of 4 bit binary Adder/ Subtractor and BCD adder using IC 7483
11. Design and implementation of Multiplexer and De-multiplexer using logic gates
12. Design and implementation of encoder and decoder using logic gates
13. Construction and verification of 4 bit ripple counter and Mod-10 / Mod-12 Ripple counters
14. Design and implementation of 3-bit synchronous up/down counter
15. Implementation of SISO, SIPO, PISO and PIPO shift registers using Flip- flops

# EC6312 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

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