

DEPARTMENT OF PHYSICS & ELECTRONICS
UNIVERSITY COLLEGE FOR WOMEN, KOTI
Electronics Syllabus
Scheme of Instructions
Under CBCS (w.e.f. 2019-2020 Academic year onwards)

Year	Semester	Title of the Paper(Theory and Practical)	Instructions Hrs/ Week	Number of Credits	Marks
1 st Year	I Sem	Paper-I : Circuit Analysis	4	4	100
		Practical-I: Circuit Analysis Lab	3	1	50
	II Sem	Paper –II : Electronic Devices	4	4	100
		Practical: Electronic Devices Lab	3	1	50
2 nd Year	III Sem	Paper-III: Analog Circuits	4	4	100
		Practical-III : Analog Circuits Lab	3	1	50
	IV Sem	Paper –IV : Linear Integrated circuits and basics of Communication	4	4	100
		Practical- IV: Linear Integrated circuits and basics of Communication Lab	3	1	50
3 rd Year	V Sem	Paper-V: Discipline Specific Elective-I A. Digital Electronics OR B. Electronic Instrumentation	4	4	100
		Practical –V : Discipline Specific Elective-I A. Digital Electronics Lab OR B. Electronic Instrumentation Lab	3	1	50
	VI Sem	Paper-VI: Discipline Specific Elective-II A. Digital Communication OR B. Microcontroller & Applications	4	4	100
		Practical –VI: Discipline Specific Elective-II A. Digital Communication Lab OR B. Microcontroller Lab& Applications Lab	3	1	50

Total Credits: 30

Skill enhancement Courses (Sec): 2Credits & 50Marks

1. Electronics hardware and Networking ✓
2. Mat-lab and Applications → IV Sem
3. Basic Instrumentation
4. Digital Photography

Generic Elective (GE) :

1. Basic Electronics 4 Credits & 100Marks

Project work (OR) Optional Paper (Digital System Design using VHDL) 4 Credits & 100 Marks

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Handwritten signatures and notes:
 - *Baris for*
Manish
K. S. S. →
Am. S. S. S.
Aditya
K. Madhai

**UNIVERSITY COLLEGE FOR WOMEN
KOTI, HYDERABAD
B.Sc. ELECTRONICS SYLLABUS
B.Sc. I YEAR
Semester – I
DSC – Paper –I : Circuit Analysis**

Total number of hours : 60
No. of hours per week: 4
Credits-4

UNIT -I

AC Fundamentals: The sine wave- average and RMS values – The Operator – Polar and Rectangular forms of complex numbers – Phasor diagram – Complex impedance and admittance.

Kirchoff's Current and Voltage Laws: Concept of Voltage and current sources – KVL and KCL- Applications to simple circuits (AC ad DC) consisting of resistors and sources – Node voltage analysis and Mesh analysis.

UNIT –II

Network Theorems (Dc and AC) : Superposition Theorem, Thevinins Theorem, Norton's Theorem, Maximum power transfer Theorem, Reciprocity Theorem, Milliman's Theorem, Application to simple Networks.

UNIT – III

RC and RL Circuits : Transient Response of RL and RC Circuits with step input , Time constants, Frequency response, passive differentiating circuit and passive integrating circuit.


UNIT- IV

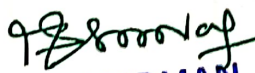
Resonance: RLC Series and Parallel resonance circuits – Resonant frequency – Q Factors – Bandwidth – Selectivity


Cathode Ray Oscilloscope: Cathode Ray Tube(CRT) and its working, Electron gun focusing, Reflection sensitivity, Florescent screen, Measurement of Time period , frequency , Phase and amplitude.

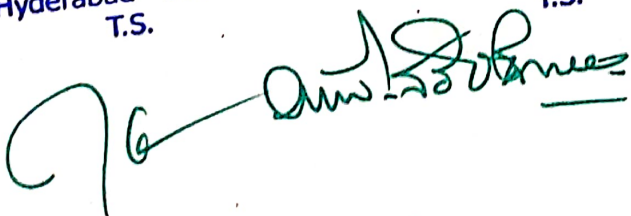
Text Books:

- 1) Basic Electronics – Grab 10th edition (TMH).
- 2) Circuit Analysis – P. Gnanaswampearson Education.
- 3) Circuits and Networks – A.Sudhakar & S.Pallari (TMH).
- 4) Pulse, digital & Switching waveforms – Milliman & Taub.
- 5) Networks , Lines and Fields – John Ryder (PHI)
- 6) Network Theory – Smarajit Ghosh (PHI)


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**UNIVERSITY COLLEGE FOR WOMEN
KOTI, HYDERABAD
B.Sc. ELECTRONICS PRACTICALS
B.Sc. I YEAR, SEMESTER -I
PAPER -I
CIRCUIT ANALYSIS LAB**

No. of hours per week: 3


List of Experiments

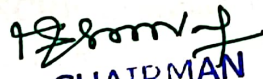
1. Measurement of peak voltages , frequency using CRO.
2. Measurement of phase using CRO.
3. Thevinin's theorem and Norton's theorem – Verification.
4. Maximum power transfer Theorem – Verification.
5. CR circuit – frequency Response – (Low pass and High pass).
6. CR and LR circuits – Differentiation and Integration – tracing of waveforms.
7. LCR – Series resonance circuit – frequency response – Determination of f_0 , Q and band width.
8. Simulation: i) Verification of KVL and KCL.
ii) Study of network theorems.
iii) Study of frequency response (LR)


Note : Student has to perform minimum of Six experiments.

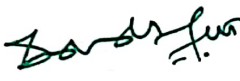

Reference Books:



- 1) Lab Manual for Electronic Device and Circuits – 4th Edition . by David A Bell – PHI.
- 2) Basic Electronics – A Test Lab Manual – Zbar , Malvino, Miller.


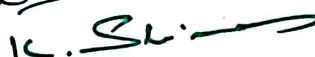

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UNIVERSITY COLLEGE FOR WOMEN
KOTI, HYDERABAD
B.Sc. ELECTRONICS SYLLABUS
B.Sc. I YEAR
Semester – II
DSC – Paper –II : Electronics Devices

Total number of hours : 60
No. of hours per week: 4
Credits : 4

UNIT-I

PN Junction: Formation of PN Junction ,Depletion Region, Junction Capacitance Diode equation (no derivation), Effect of temperature on reverse saturation current, V – I Characteristics and simple applications

of i) Junction diode ii) Zener diode iii) Tunnel diode and iv) Varactor diode

UNIT- II

Bipolar Junction Transistor (BJT) : PNP and NPN transistors, current components in BJT, BJT static characteristics (Input and Output) , Early effect , CB, CC, CE Configuration of transistor and bias condition (Cut off, active and saturation regions), CE configuration as two port network, h-parameter model and its equivalent circuit. Determination of h – parameters from the characteristics. Load line analysis (AC and DC). Transistor biasing – Fixed and self bias.

UNIT –III

Field Effect Transistor (FET): Construction and working of JFET, output and transfer characteristics of FET, Determination of FET parameters, Application of FET as voltage variable resistor. Advantages of FET over BJT. **MOSFET ::** construction and working of enhancement and depletion modes, output and transfer characteristics, Application of MOSFET as switch.

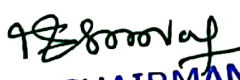
Uni Junction Transistor (UJT): Construction and working of SCR, Two transistor representation , Characteristics of UJT as a relaxation oscillator.

UNIT-IV

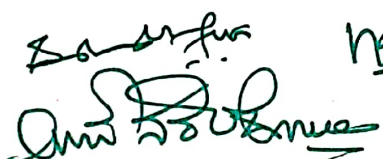


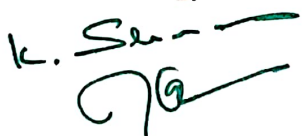

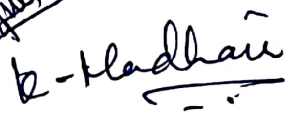
Silicon Controlled Rectifier (SCR): Construction and working of SCR, Two transistor representation, Characteristics of SCR, Application of SCR for power control.

Photo electronic Devices : Construction and Characteristics of Light Dependant Resistor (LDR), Photo voltaic Cell, Photo diode, Photo transistor and Light Emitting Diode. (LED)


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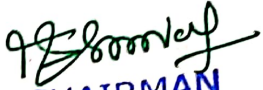

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Books Recommended:


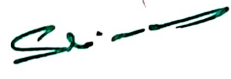
- 1) Electronic Devices and Circuits – Millman and Halkias, (TMH)
- 2) Principles of Electronics – V.K. Mehta & Rohit Mehta
- 3) Electronic Devices and Circuits – Allen Moltershed (PHI)
- 4) Basic Electronics and Linear Circuits – Bhargava U
- 5) Electronic Devices and Circuits – Y.N. Bapat
- 6) Electronics Devices and Circuits – Mithal
- 7) Experiments in Electronics – S.V. Subramanyam.


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UNIVERSITY COLLEGE FOR WOMEN
KOTI, HYDERABAD
B.Sc. ELECTRONICS PRACTICALS
B.Sc. I YEAR, SEMESTER -II
PAPER -II
ELECTRONIC DEVICES LAB

Number of hours per week : 3


List of Experiments:


1. To draw volt- ampere characteristics of Junction diode and determine the cut – in voltage, forward and reverse resistance.
2. Zener Diode : V- I Characteristics – Determination of Zener breakdown voltage.
3. Voltage regulator (Line and Load) using Zener diode.
4. BJT input and output characteristics (CE configuration) and determination of 'h' parameters.
5. FET – Characteristics and determination of FET parameters.
6. UJT Characteristics – determination of intrinsic standoff ratio.
7. UJT as relaxation Oscillator.
8. Characteristics of LDR / Photo diode / Photo transistor / Solar cell.


Note :L Student has to perform minimum of six experiments.

Reference Books:

- 1) Lab manual for Electronic Devices and Circuits- 4th Edition By David A Bell - PHI


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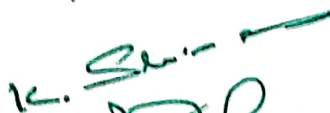

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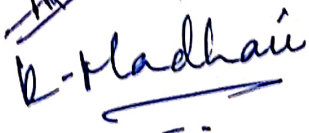











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UNIVERSITY COLLEGE FOR WOMEN
KOTI, HYDERABAD
B.Sc. ELECTRONICS SYLLABUS
B.Sc. II YEAR
Semester – III
DSC – Paper –III : Analog Circuits

Total number of hours : 60
No. of hours per week: 4
Credits : 4

UNIT-I

Rectifiers and filters: Rectifiers – half wave, full wave and bridge rectifiers , Efficiency , ripple factor, Regulator , Harmonic components in rectified output, **Filters** – Choke input (Inductor) filter, Shunt capacitor filter , L section and π section filters.

UNIT- II

Regulator Power Supplies : Block diagram of regulated power supply, Transistor voltage regulators – series and shunt type, three terminal IC regulators (78XX and 79XX), Principle and working of switch mode power supply (SMPS), UPS – Principle and working.

UNIT – III

Transistor Amplifiers : Classification amplifiers, Hybrid π model of a transistor, single stage RC coupled CE amplifier – frequency response, Analysis.

Feed back in amplifiers : Positive and negative feedback, Effect of negative feedback on gain, bandwidth, noise, input and output impedances, Emitter follower, Darlington Pair and its advantages.


UNIT – IV


Oscillators : Barkhausen criterion for sustained oscillations, RC oscillators – RC phase shift and Wein's bridge oscillator, LC Oscillator – Hartley and Colpitt's Oscillator.


Multivibrators: Astable, Monostable and BiStable mutivibrators – Qualitative treatment only.

Recommended Books:

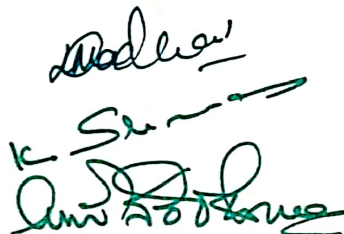
1. Electronic Devices and Circuits – Milliman and Halkias (TMH)
2. Basic Electronics and linear circuits – Bhargava , Kulshreshta & Gupta TMH
3. A first course in Electronics – AA Khan and KK Dey – PHI
4. Electronic Devices and Circuit Theory – Robert L Boylestad & Louis Nashelsky.
5. Pulse , Digital and Switching circuits by Milliman and Taub


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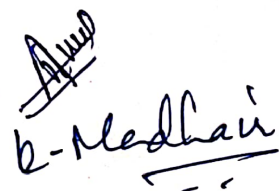

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**UNIVERSITY COLLEGE FOR WOMEN
KOTI, HYDERABAD
B.Sc. ELECTRONICS PRACTICALS
B.Sc. II YEAR, SEMESTER -III
PAPER -III
ANALOG CIRCUITS LAB**


Number of hours per week : 3


List of Experiments:


1. Study of HWR, FWR and bridge rectifiers , determination of ripple factor.
2. Series inductor, shunt capacitor, L – Section and π - Section filters, determination of ripple factor and using Full wave Rectifier.
3. Study of voltage regulator using IC's -78XX & 79XX.
4. Colpitt's Oscillator – determination of frequency.
5. RC Phase Shift Oscillator – determination of time period and duty cycle.
6. A stable multivibrator – determination of time period and duty cycle.
7. **Simulation Experiments :**
 - i) Rectifiers
 - ii) RC coupled amplifier
 - iii) Wein's bridge oscillator
 - iv) Colpitt's oscillator
 - v) RC phase shift oscillator
 - vi) Astable multivibrator

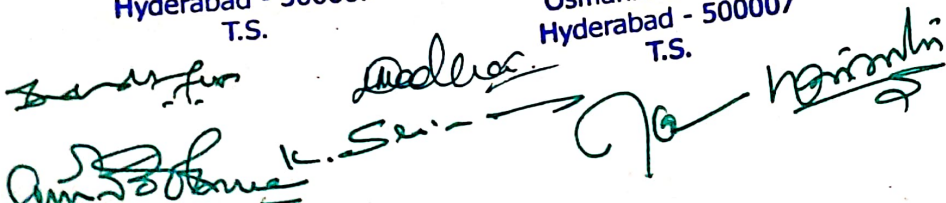
Note: Student has to perform minimum of Six experiments


- 1) Lab Manual for Electronics Devices and Circuits – 4th Edition By David A Bell – PHI
- 2) Basic Electronics – A Text Lab Manual – Zbar, Malvino , Miller


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**UNIVERSITY COLLEGE FOR WOMEN
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B.Sc. ELECTRONICS SYLLABUS
B.Sc. II YEAR
Semester – IV**

DSC – Paper –IV : Linear Integrated and Basics of Communication

Total number of hours : 60
No. of hours per week: 4
Credits : 4

UNIT-I

Operational Amplifier : Emitter Coupled Differential amplifier, Block diagram of Op-Amp Characteristics of Op Amp, Op- Amp parameters – Input resistance, Output resistance, Common mode rejection ratio (CMRR), Slew rate, Offset voltages, Input bias current, Basic Op-Amp circuits – Inverting Op- Amp, Non-inverting Op-Amp, Op – Amp as : Summing amplifier, Subtractor, Comparator, Voltage follower, Integrator and Logarithmic Amplifier.

UNIT – II

Applications of Op- Amps : Sine wave (Wein Bridge) generator and square wave (Astable) generator, Triangulator wave generator, Monostable multivibrator, IC 555 Timer (Block diagram and its working), IC 555 as monostable and astable mutivibrator.

UNIY- III

Modulation : Need for modulation – Types of modulation – Amplitude, Frequency and Phase modulation, Amplitude modulation, Analysis of Amplitude modulation, side bands modulation index , AM modulator, Demodulation – Diode detector.

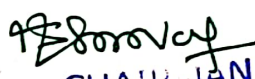
UNIT-IV


Frequency modulation : Analysis of FM, working of simple modulator – detection of FM waves – FM Discriminator, Advantages of frequency modulation, AM and FM Transmitters and radio receivers (Block diagram approach), Introduction to PAM , PPM, PWM and PCM , Delta modulation.

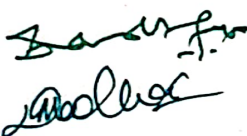
Reference Books:

1. Op amps and Linear Integrated Circuits – Ramakant Gayakwad , PHI
2. Linear Integrated Circuits – D Roy Choudary and Shail B jain
3. Electronic Communication Systems – George Kennedy & Bernard Davis
4. Principles of Electronic Communications Systems – Louis E Freznel , TMH


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B.Sc. ELECTRONICS PRACTICALS
B.Sc. II YEAR, SEMESTER -IV
PAPER -IV

Linear Integrated Circuits And Basics Of Communication Lab

Number of hours per week : 3

List of Experiments: Using IC 741 Op Amp and IC 555 Timer

1. Op amp as inverting Amplifier – determination of gain (With AC and DC)
2. Op Amp as non – inverting Amplifier – determination of gain (with AC and DC)
3. Op Amp as Summing amplifier and comparator (Zero Crossing detector)
4. Astable mutivibrator – Determination of time period and duty cycle
5. Monostable multivibrator – determination of gate width.
6. Integrator / Differentiator – Study of wave forms
7. Astable multivibrator using IC555
8. Monostable mutivibrator using IC 555
9. AM modulator and detector
10. FM modulator and detector


Simulation of all the above experiments


1. Inverting and Non- inverting amplifier and comparator
2. Integrator / Differentiator using op amp
3. Wein's bridge Oscillator
4. Astable mutivibrator using Op Amp
5. Astable mutivibrator using IC 555


Note: Student has to perform minimum of Six experiments

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- 2) Basic Electronics – A Text Lab Manual _ Zbar , malvino , Miller


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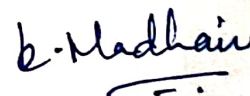

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b. Madhain

**UNIVERSITY COLLEGE FOR WOMEN
KOTI, HYDERABAD
B.Sc. ELECTRONICS SYLLABUS
B.Sc. III YEAR
Semester – V
Paper –V : Digital Electronics (DSE- I)**

**Total number of hours : 60
No. of hours per week: 4
Credits : 4**

UNIT –I

Number system and Logic Gates : Conversion of Binary, Octal Decimal & hexadecimal number systems, Binary addition and subtraction (1's and 2's compliment methods)

Logic Gates : OR, AND ,NOT, XOR,NAND ,NOR gates and their truth tables – Design of basic gates using the Universal gates – NAND and NOR gates, Half Adder , Full adder , Full adder and parallel adder logic circuits. Logic families and their characteristics – TTL , CMOS and ECL logic circuits.

UNIT –II

Boolean algebra and Combinational circuits : Boolean algebra – Laws and identities , De- Morgan's Theorems, Simplification of Boolean expressions using Boolean identities – Reduction of Boolean expressions using Karnaugh Maps – Sum of Products (SOP) representation (up to four variables). Multiplexer , De- Multiplexer , Decoder (3 to 8) and Encoder (8 to 3).

UNIT -III

Sequential Logic Circuits : Flip –flops – SR, D, JK, T and Master –Slave JK : Registers – Shift Registers-SISO, SIPO,PISO and PIPO Registers.

Counters: 4 bit Asynchronous (Ripple Counter), Modulo – N Counter, Synchronous counter, Up/down Counter- ripple counter IC 7493- Decade Counter IC7490 – Working ,Truth tables and diagrams.

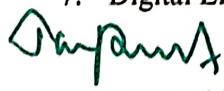
UNIT –IV


Introduction to 8085 Microprocessor & Its Architecture : Architecture of 8085 microprocessor – CPU – timing & Control unit – Instruction cycle, Fetch cycle, Execute cycle (Timing Diagram), Machine Cycle and clock states, Interrupts – Hard ware and software . Address space partitioning – Memory mapped I/O & I/O mapped I/O.


Instruction set of 8085 microprocessor: Classification –Data transfer operations,, Arithmetic operational, logical Operations, Branch control operations and stack, I/O and Machine Control operations. Stack and subroutines, Addressing modes.

Books Recommended :

1. Digital Principles and Applications – Malvino & Leach – TMH
2. Digital Principles and Applications – Ronald J. Tocci – Pearson Education
3. Text Books of Electronics B.Sc. III year (Vol III) – Telugu Academy
4. Digital Fundamentals – F. Loyd & Jain – Pearson Education
5. Fundamentals of Digital Circuits – Anand Kumar - PHI
6. Digital Electronics Principles and Integrated Circuits – Maini – Wiley India
7. Digital Electronics - Gothmann


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**UNIVERSITY COLLEGE FOR WOMEN
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B.Sc. ELECTRONICS PRACTICALS
B.Sc. III YEAR, SEMESTER -V
PAPER -V
Digital Electronics Lab**

Number of hours per week : 3

List of Experiments


1. Verification of truth tables of AND , OR, NOT, NAND, NOR, EXOR gates using IC 74XX series
2. Construction of basic gates using NAND and NOR gates.
3. Construction of Half Adder using Gates .Verification of truth table.
4. Construction of Full Adder using gates and verification of truth table.
5. Verification of truth tables of flip flops : RS, D, and JK using IC's.
6. Construction of binary Counters 7493


Simulation experiments

1. 4 bit parallel adder using Full adders.
2. Decade counter using JK Flip flops
3. Up/Down counter using JK Flip flops
4. Up/Down counter using 7493
5. Multiplexer / De Multiplexer.
6. Encoder





Note: student has to perform minimum of Six Experiments





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B.Sc. ELECTRONICS SYLLABUS
B.Sc. III YEAR DSCP-6
Semester – V

Paper –V : Electronic Instrumentation (Elective) DSE -02

Total number of hours : 60
No. of hours per week: 4
Credits : 4

UNIT –I

Characteristics of an Instrumentation : Functional Elements of a measurement system – Static characteristics – Accuracy , Precision, bias, linearity, threshold, resolution , hysteresis, dead space , scale readability, span, static stiffness, input impedance, repeatability and reproducibility – errors in overall system – Dynamic characteristics – Zero , first and second order instruments – Response for step , impulse , ramp and sinusoidal inputs, Classification of Standards, Elements of ISO 9001, Quality of Management Standards.

UNIT –II

Transducers and sensors: Transducers, Factors for selection of a transducer, Definition of transducer and sensor- classification of transducers – Pressure (Strain guage, piezoelectrical transducer), displacement (potentiometric, LVDT), Ultrasonic Transducers (ultrasonic sensor).

Microphones: Microphones nad their types, Temperature measurement , resistance wires thermometers, semiconductor thermometers and thermocouples , temperature (Thermistor) and photosensitive (vaccum and gas filled phototubes , photo conductive cell , photovoltaic cell, photo emissive transducers). Flow Transducer – flow meter, Force Transducer – Dynamometer, Acceleration transducer – accelerometer, Applications transducers.

UNIT-III

Bridge Measurements: Introduction – Wheatstone bridge - Kelvin bridge – Guarded Wheat stone Bridge- AC bridges and their applications – Maxwell bridge – Hay Bridge- schering bridge – Wein Bridge.


UNIT -IV


Testing and Measuring Instruments: Oscilloscopes – Block Diagram – CRT Circuits – Vertical and horizontal deflections systems – Delay line, Multiple Trace – Probes – Special Oscilloscopes.

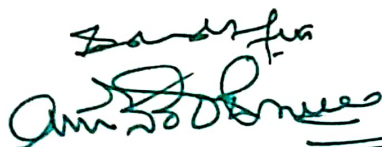
Measuring Instruments: DC Current meters, Ac Voltmeters and Current meters, Ohmmeters, Multimeters, Meter Protection , Extension of Range, True RMS Responding Voltmeters, Specifications of Instruments.

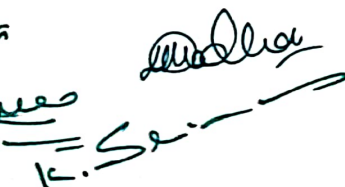


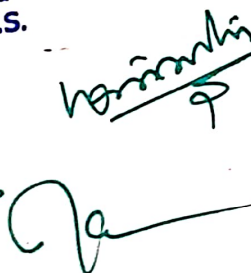
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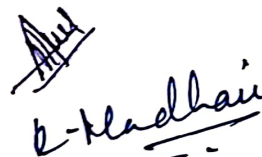

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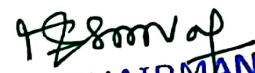
Books for Study:


1. C.S. ARngan, G.R. Sarma and V.S.V. Mani, 1999, Instrumentation devices and Systems, Tata McGraw Hill, New Delhi.
2. A.D. Helfrick and W.D.Copper, 1992 , Modern Electronic Instrumentation and Measurement techniques, Prentice – Hall of India, New Delhi.
3. A.K. Sawhney, A Course in Electrical and Electronic Measurement and Instrumentation , Dhanpat Rai & Sons.

Books for reference:

1. E.O. Doebelin, 1983, Measurement systems, Application and Design, International Edition, 3rd Ed. McGraw Hill, NY.
2. D.V.S. moorthy, 1995, Transducesr and Instrumentation, Prentice – Hall of India , New Delhi.
3. J.W. Dalley, W.F. Riley and K.G. Mc Connel, 1993, Instrumentation for Measurements, Wiley , NY.
4. B.C. Nakre and K.K. Chaudry, Instrumentation Measurements and Analysis, Tata McGraw- Hill, New Delhi.
5. D.A. Skkog, Principles of Instruments Nalysis, 3rd Ed., Saunders College Publishing.


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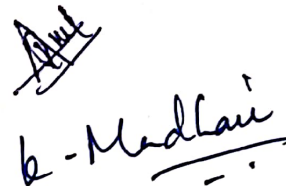














UNIVERSITY COLLEGE FOR WOMEN
KOTI, HYDERABAD
B.Sc. ELECTRONICS PRACTICALS
B.Sc. III YEAR, SEMESTER -V
PAPER V
Electronic Instrumentation Lab

Number of hours per week : 3

List of Experiments

1. Temperature Transducer- (Thermocouple/ Thermistor)
2. Pressure Transducer – strain Gauge
3. Displacement Transducer – LVDT (Linear Variable Differential Transformer)
4. Ultrasonic Transducers (Ultrasonic sensors)
5. Flow Transducer – Flow Meter
6. Force Transducer- Dynamometer
7. Acceleration Transducer – Accelerometer
8. Photovoltaic (Solar) Cell
9. Passive Transducer Photo Cell (LDR)
10. CRO Characteristics
11. DC Voltmeter / DC Current Meter
12. AC Voltmeter / AC Current Meter
13. Multimeter.



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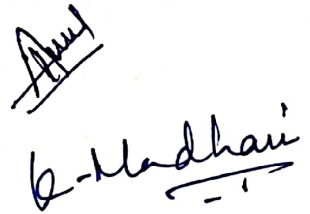


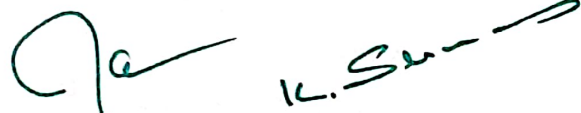





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**UNIVERSITY COLLEGE FOR WOMEN
KOTI, HYDERABAD
B.Sc. ELECTRONICS SYLLABUS
B.Sc. III YEAR
Semester – VI –A (Elective)
Paper –VI : Digital Communication**

**Total number of hours : 60
No. of hours per week: 4
Credits : 4**

UNIT –I

Introduction: Need and Necessity of Digitalization, Advantages of Digital Communication, Elements of Digital Communication.

Signal Analysis: Complex Fourier Spectrum, Fourier Transform, Properties of F.T – Random Signals and noise, Correlation and Power Spectrum.

Information Theory : Introduction , information entropy, Properties of Entropy, Information rate, types of information sources, Channels, types of Channels, Joint Entropy, Conditional Entropy, Redundancy, Mutual Information, Channel Capacity.

UNIT – II:

Digital Communication systems: Pulse modulation PAM, PWM, PPM, PCM, Delta Modulation, Adaptive delta modulation, Quantization and noise consideration, Digital Transmission and Reception : Timing, Base band systems, ASK, FSK, PSK, QAM.

UNIT-III

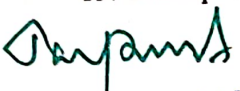
Error Detection and Coding: Parity Check, CRC, Hamming distance, Hamming Codes, Cyclic Codes, Line Synchronization codes, Manchester code, NRZ coding, Walsh Codes.

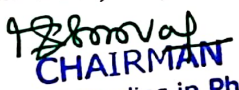
UNIT –IV

Case Studies: Cellular Concepts, Global Positioning System (GPS), Facsimile, Video text, Wi-fi, Bluetooth, IOT, Cognitive radio.

Books Recommended:

1. Analog and Digital Communication – Simon Haykin, John wiley, 2005
2. Electronic Communication Systems – Fundamentals through Advanced – Wayne Tomasi, 5th edition, PHI 2009
3. Principles of Communication Systems – Herbert Taub, Donald L Schiling, Gautam Saha, 3rd Edition, Mcgraw Hill, 2008
4. Electronic Communication - Dennis Roddy and John Coolean, 4th Edition, pEA , 2004
5. Electronics & Communication Systems – George Kennedy and Bernard Davis, TMH, 2004
6. Analog & Digital Communication – K. Sam Shanmugam, Willey 2005
7. John G, Proakis, “ Digital Communication”, 4th Editoin, Tata Mc Graw Hill , Publishing Company Private Limited.
8. R. Rama Krishna Rao. “ digital Communication “, Tata Mc Graw – Hill Education Private limited.
9. Analog & Digital Communication Systems – M.S. Roden, 3rd edition, Prentice hall of India.
10. Modern Digital and Analog Communication Systems –B.P. LAthi
11. Communication Techniques for Digital and Analog signals – M.Kanefy, John Wiley and Son
12. Telecommunication – T,H< Brewster, Mc. Graw Hill
13. Principles of Digital Communication, Das, chatterjee and Mallick , Wiley Eastern Ltd.


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UNIVERSITY COLLEGE FOR WOMEN
KOTI, HYDERABAD
B.Sc. ELECTRONICS PRACTICALS
B.Sc. III YEAR, SEMESTER -VI
PAPER VI - A DSE
Digital Communication Lab

Number of hours per week : 3

List of Experiments

1. Pulse Amplitude Modulation
2. Pulse Code Modulation
3. Pulse width Modulation
4. Pulse Phase Modulation
5. Amplitude Shift keying
6. Frequency Shift Keying
7. Delta Modulation
8. Pulse Shift Keying

Experiments in Data Communication

1. Study of Serial Communication
2. Study of wireless communication
3. Study of Parallel Communication

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**UNIVERSITY COLLEGE FOR WOMEN
KOTI, HYDERABAD
B.Sc. ELECTRONICS SYLLABUS
B.Sc. III YEAR
Semester – VI –B(Elective)
Paper –V : 8051 Microcontroller and Applications**

Total number of hours : 60
No. of hours per week: 4
Credits : 4

UNIT –I

The Micro Controller 8051: Overview and Block Diagram of 8051, Architecture and Pin Diagram of 8051, Data types and Directives, Memory Organization, Register banks and Stack Pointer , PSW Register, Other Special Function Registers, I/O Port Organization, Interrupts and Timer / Counter Modules.

UNIT –II

Instruction set of 8051 Microcontroller : Classification – Data Transfer, Arithmetic , Logical, Single Bit, Jump , Loop and Call instructions and Their Usage, Addressing Modes – Immediate , Register, Direct, Indirect, absolute Addressing, Relative addressing, Indexed Addressing and Accessing Memory using Various Addressing Modes.

UNIT – III

Programming Examples of Microcontroller 8051: Addition, Subtraction, Division, picking the Smallest /Largest number among a given set of numbers, Arranging a given set of numbers in ascending / descending order, Subroutines, I/O Programming, Bit Manipulation, Accessing a Specified Port terminal and generating wave forms.

Timer /Counter Programming in 8051: Programming of 8051 timers – Basic registers of timers – Timer 0, Timer 1 registers, TMOD register, TCON Register , Timer Modes – Mode1, Mode 2 Programming , Counter mode Programming, Program to generate time delay.

UNIT- IV

Serial Communication : Serial Communication, Types, Modes and Protocols, Data Transfer rates, Serial Communication Program- SBUF and SCON registers, RS 232 Standards, Programming timer interrupts,

Application of Micro Controller : Display Information on LCD, Interfacing of a Keyboard , Interfacing a temperature sensor, R -2R Ladder Interfacing of DAC 0808 to microcontroller, successive approximation ADC, Dual Slope ADC interfacing of ADC 0804 to micro controller, Seven Segment LED.

Books Recommended:

1. The 8051 Microcontrollers and Embedded Systems – Muhammad Ali Mazid and Janice Gillipie Mazidi –Peason Education Asia, 4th RePrint ,2002
2. Text Book of electronics ,B.Sc. III year (Vol III)- Telugu Academy
3. Fundamentals of Microprocessor and Microcontrollers – B.Ram
4. The 8051 Microcontroller – Architecture Programming and Applications Kenneth J. Ayala- Penram International Publishing, 1995
5. Microcontrollers – Theory and Applications - Ajay V. Deshmukh.
6. Microcontroller 8051 D Karuna sagar Narosa Publications (2011)

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**UNIVERSITY COLLEGE FOR WOMEN
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B.Sc. ELECTRONICS PRACTICALS
B.Sc. III YEAR, SEMESTER –VI
PAPER VI – Elective
8051 Microcontroller and Application Lab**

Number of hours per week : 3

List of Experiments using 8051 Microcontroller

1. ADD , SUB , DAA , Multiplication of two numbers using MUL command (Later using counter method for repeated addition)
2. Division of two numbers using DIV Command ((Later using counter method for repeated Subtraction)
3. Pick out the largest/ smallest number among the given set of numbers
4. Generate a specific time delay using timer/ counter
5. Arrange the given number in ascending / descending order
6. Interface ADC and a temperature sensor to measure temperature.
7. Interface DAC and generate a stair case wave form with the step duration and number of steps as variables
8. Flash a LED connected at a specific out portal terminal
9. Interface stepper motor to rotate clock wise / anti clock wise through a given angle steps

Experiments with Keil software

1. Write a program to pick out largest / smallest number among the given set of numbers
2. Write a program to arrange a given set of numbers in ascending/ descending order
3. Write a program to generate rectangular/ square wave form at specified port
4. Write a program to generate a time delay using timer registers

Note : Student has to perform minimum of six Experiments

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**UNIVERSITY COLLEGE FOR WOMEN
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SKILL ENHANCED COURSE
(SEC) PAPER
ELECTRONIC HARDWARE & NETWORKING**

UNIT -I

Electronic hardware : Active and Passive Components, Transducers, Classification of Transducers based on electrical principle involved.

Power Supplies: DC Regulated Power Supplies (Block Diagram Approach) , SMPS, UPS

Integrated Circuits (IC's): Advantages and limitations of IC's , Scale of integration, Classification of IC's

Hardware Identification: Cables and Connectors, Motherboard, Motherboard components, CPU (Processor), Memory, RAM and ROM.

UNIT -II

Network: Introduction to network , Topologies and transmission media, Introduction to LAN, MAN and WAN (Architecture only), Ethernet, Token ring.

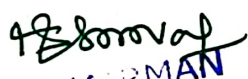
Protocol: Need for Protocol architecture, OSI reference model, TCP/IP model.


Internet Protocol: IP Address and classification, Architecture of IPV4 and IPV6



Network Devices: Switches, Bridges, Hubs, Router, Wi-fi, Bluetooth (Architecture)






Reference Books


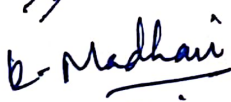
1. Basic Electronics by B.L. Theraja – S.Chand
2. Peter Nortons's Introduction to computers –TATa Mc Graw Hill 5th Edition
3. Data and Computer Communication by William Stallings – PH Publications 7th Edition
4. Data Communication and Networking by Behrouz A. Forouzan – TMH 3rd Edition.


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**UNIVERSITY COLLEGE FOR WOMEN
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SKILL ENHANCED COURSE
PAPER –Matlab And Its Applications**

UNIT-I

Introduction to MATLAB: Characteristics – Understanding MATLAB- How does MATLAB make work so easy – MATLAB used as calculator – need of MATLAB- features of MATLAB- 5 Major parts of MATLAB – Desktop tools and development environment – Current folder- command window – workspace – command history –MATLAB version – MATLAB Compiler – Advantages – Disadvantages of MATLAB –uses of MATLAB.


UNIT-II


Applications of MATLAB : Basic MATLAB commands – Introduction to vector – Matrix – Vector matrix operations- MATLAB code for – Inverse of Matrix – Determinant of Matrix – Transpose of Matrix.

Plotting: Basic Plotting commands – different Types of Plots – 2D Plotting- X label – y label, Line width- Application of MATLAB in various fields.

Reference Books:

1. Getting Started with MATLAB : A Quick Introduction for Scientists & Engineers by Rudra Pratap.
2. MATLAB Programming for Engineers by Stephen J. Champman
3. A concise introduction to MATLAB by Willim J.P Palm
4. MATLAB and its Applications in Engineering by Bansal/ Goel/ Sharma
5. A Textbook on MATLAB Programming for Engineering and Science by Ray Dipankar.


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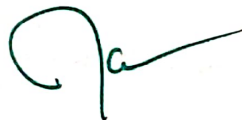


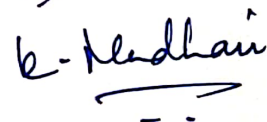






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**UNIVERSITY COLLEGE FOR WOMEN
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SKILL ENHANCED COURSE
PAPER – BASIC INSTRUMENTATION SKILLS**

Credits: 2

UNIT – I

(This Course is to get exposure with various aspects of instruments and their usage through hands – on- mode . Experiments listed below are to be done in continuation of the topics)

Basic of Instruments: Instruments accuracy, precision, Sensitivity, Resolution range etc. Errors in measurement and loading effects. Multimeter: Principles of measurement of dc voltage and dc current , ac voltage, ac voltage , ac current and resistance. Specifications of a multimeter and their significance.

Electronic Voltmeter: Advantages over conventional multimeter for voltage measurement with impedance and sensitivity . Principles of voltage , measurement (block diagram only). Specifications of an electronic Voltmeter/ Multimeter and their significance . AC Millivoltmeter : Type of AC millivoltmeter: Amplifier – rectifier – amplifier. Block diagram ac millivoltmeter, specifications and their significance.

Cathode Ray Oscilloscope: Block diagram of basic CRO, Construction of CRT, Electron gun, electrostatic focusing and acceleration (explanation only – no mathematical treatment), brief discussion on screen phosphor, visual persistence & chemical composition. Time base operation, Synchronization, Front Panel controls, Specifications of a CRO and their significance.

Use of CRO for the measurement of voltage (dc and ac frequency, timeperiod, Special features of dual trace, introduction to digital oscilloscope, probes , Digital Storage Oscilloscope: Block diagram and principles of working.

UNIT-II

Signal Generator and Analysis Instruments : Block diagram , Explanation and specifications of low frequency signal generators. Pulse generator and function generator, Brief idea for testing , Specifications . Distortion factor meter, wave analysis.

Impedance Bridges of Q – Meters : Block diagram of bridge, working principles of basic (balancing type) RLC bridge, Specifications of RLC bridge. Block diagram & working principles of Q – meter. Digital LCR Bridges.

Digital Instruments: Principles and working of digital meters. Comparison of analog & digital instruments. Characteristics of a digital meter . Working principles of digital voltmeter.

Digital Multimeter : Block diagram and working of a digital multimeter .Working principles of time interval, Frequency counter, time-base stability, accuracy and resolution.

The test of lab will be of the following test times:

1. Use of an Oscilloscope.
2. CRO as a versatile measuring device.
3. Circuit tracing of Laboratory electronic equipment .
4. Use of digital multimeter/ VTVM for measuring voltages.
5. Circuit tracing of laboratory electronic equipment.
6. Winding a coil / transformer
7. Study of the layout of receiver circuit.
8. Trouble shooting a circuit
9. Balancing of the bridges.

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**UNIVERSITY COLLEGE FOR WOMEN
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SKILL ENHANCED COURSE
PAPER – DIGITAL PHOTOGRAPHY**

UNIT- I

Introduction of digital photography: The past and future , types of digital cameras , jump start-taking photos with full auto mode, camera control, composing images, capturing images, continuous photography, play back mode.

Image Sensors: Introduction types image sizes and aspects ratios, Sensitivity and noise, Cleaning.

Introduction: Understanding the terminology used for digital camera CCD, ISO, DSLR Camera.

Using Different methods in accordance with various situations: Taking Photos of people, Taking photos of landscapes, Taking close-up photos, Taking Photos at night.

UNIT- II

Acquiring Basic Knowledge of taking a picture with the digital camera: Push the shutter, Good composition of photos, White balance setting, Exposure compensation, Flash control, Shutter speed priority mode, Selective focus.

Photo Shop Software : Introduction – features – Masking – Images framing – cloning – photo repairing.


Recommended:


1. The text book of digital Photography – Dennis P. Curtin
2. Shoot like a Pro Digital Photography techniques – Juile aadir king.
3. The digital Photograph book scoot kelby.
4. Freeman Patterson “ The Art of Seeing by Key Poster books. Tim Fitzharris “ Landscape Photography” Firefly Books.



Recommended Wed Sites:

Articles , Pictures , Videos, Online learning – www.canadiannaturephotographer.com Articlens on composition – Photoinf.com. The place to go and read before you buy a camera.

www.dpreview.com


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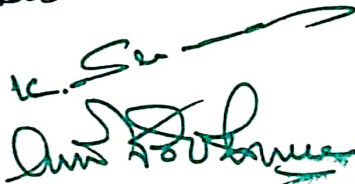


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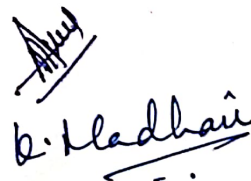












**UNIVERSITY COLLEGE FOR WOMEN
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GENERIC ELECTIVE
BASIC ELECTRONIC**

Course Objective:

- To analyze the behaviour semiconductor diodes in Forward and Reverse bias.
- To design of Half wave and Full wave rectifiers.
- To explore V-I Characteristics of Bipolar Junction Transistor in CB, CE & CC configuration.

Course Outcomes : Students will be

- Able to learn about forward biased and reversed biased circuits.
- Able to plot the V-I Characteristics of diode and transmissions.
- Able to design combinational logic and PLDs.

UNIT -I

Units and Definitions: SI units, Electrical charge, Electric field, Electric Potential, Potential difference, Voltage, EMF.

Resistors : Concepts of resistance, V-I relation in resistor, Ohm's law & its Limitations, Types of resistors & their properties & uses, Color Codes, Combination of resistors in series and parallel.

Capacitors: Concept of Capacitance, V-I Relation on Capacitor, Energy stored in capacitance, types of capacitors & their properties & Uses , Color Codes, Combination of capacitors in series and parallel.

Inductors: Concept of Inductance, V-I Relation in inductor, Energy stored in inductors, mutual inductance & Coefficient of Coupling, Types of inductors & Uses , Color Code, Combination of inductors in series and parallel.

UNIT- II


Simple Circuits : Concepts of impedance & admittance, network definition, Circuit elements, branch, Lumped & disturbed network, mesh & node, concepts of voltage & current both ideal & practical.


Passive networks : Kirchoff's Voltage Law (KVL), Kirchoff's Current Law.


UNIT-III




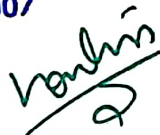

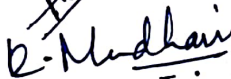
The Concept of Basic Semi conductor : P- Material , Formation of PN Junction, Formation of PN Junction, Depletion Region , Junction Capacitance, Forward bias, Reverse Bias, Diode equation 9 no derivation) and its interpretation, Effect of temperature on reverse saturation current, V-I characteristics and simple applications of
i) Junction Diode ii) Zener Diode iii) Tunnel Diode and iv) Varactor Diode ,Zener Diode as Voltage Regulator.

Rectifiers : Rectifiers – Half wave, Full wave and bridge rectifiers , Efficiency, Ripple Factor, Regulation , Harmonic Components in rectified output.


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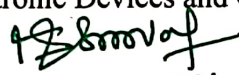
     


UNIT -IV


Bipolar Junction Transistor (BJT): PNP and NPN Transistor, Current components in BJT (I_E, I_B, I_C, I_{CO}), BJT characteristics (Input and Output), Early effect, CB, CC, CE configurations of transistor and bias conditions (cut off, active and saturation regions).




Text Books:

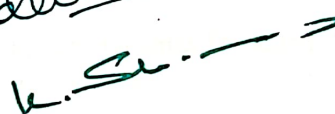
- 1) Basic Electronics – Bernard Grob 10th Edition (TMH)
- 2) Circuit Analysis – P.Gnanasivam Pearson Education
- 3) Circuit and Networks – A.Sudhakar & S.Pallari (TMH)
- 4) Electronic Devices and Circuits – Milliman and Halkias, (TMH)
- 5) Principles of Electronics and Circuits – V.K. Mehta & Rohit Mehta
- 6) Electronic Devices and Circuits – Allen Moltershed (PHI)
- 7) Basic Electronics and Linear Circuits – Bhargava U
- 8) Electronic Devices and Circuits – Y.N. Bapat
- 9) Electronic Devices and Circuits- Mithal




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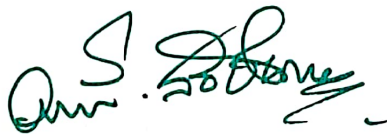

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**UNIVERSITY COLLEGE FOR WOMEN
KOTI, HYDERABAD
B.Sc. ELECTRONICS SYLLABUS
B.Sc. III YEAR
Semester – VI
Digital System Design using VHDL**

**Total number of hours : 60
No. of hours per week: 4
Credits : 4**

UNIT -I

Fundamental Concepts: Modeling Digital Systems, Domains and Levels of Modeling, Modeling Languages, VHDL Modeling Concepts, Learning a new language : Lexical Elements and Syntax.
Scalar Data Types and Operations : Constants and variables , Scalar Types, Type classification, Attributes of scalar Types, Expressions and Operations.
Sequential Statements: If Statements , Case Statements, Null Statements , Assertion and Report Statements.

UNIT-II

Composite Data Types and Operations : Arrays, Unconstrained Array Operations and Referencing , Records.
Basic Modeling Constructs: Entity declarations, Architecture Bodies, Behavioural Descriptions, structural Descriptions, Design Processing.
Subprograms: Procedure Parameters, Concurrent Procedure Call Statements, Functions, Overloading, Visibility of Declarations.

UNIT-III

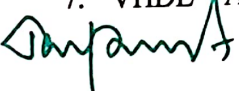
Packages and Use Clauses: Package Declarations, Package Bodies, Use Clauses, The Predefined Package Standard.
Resolved Signals : Basic resolved Signals, IEEE Std- Logic-1164 Resolved Subtypes, Resolved Signals and Ports, Resolved Signal Parameters.

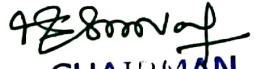
UNIT-IV


Generic Constants: Parameterizing Behaviour , Parameterizing Structure.
Case Study : A Pipelined Multiplexer Accumulator: Algorithm Online, A Behavioural Model, A Register – Transfer – level Model.

Recommended Books:

1. The Designer's Guide to VHDL – By Peter J. Ashenden, 2nd Ed. Ist Indian Reprint, Harcourt India Pvt. Ltd. 2001
2. VHDL Programming by Example – By Douglas L. Perry., 4th Edition TMH,2002
3. Introductory VHDL: From Simulation to Synthesis – By Sudhakar Yalamanchili., Pearson Education Asia., 2001
4. A VHDL Primer – By J. Bhasker., Pearson Education Asia., 11th Indian Reprint , 2004
5. Fundamentals of Digital Logic with VHDL Design – By Stephen Bron & Zvonko Vransenic., TMH., 2002
6. Digital Syatems Design using VHDL by Charles h. Roth Jr. PWS Pub., 1998
7. VHDL – Analysis & Modeling of Digital Systems – By a Zainalabedin Navabi., 2nd Ed. MH, 1998


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