Andhra Pradesh State Council of Higher Education

B.Sc. Electronics Syllabus under CBCS

w.e.f. 2015-16 (revised in April 2016)

SEMESTER-1 **PAPER – I**

BASIC CIRCUIT THEORY

UNIT- 1: (12Hrs)

SINUSOIDAL ALTERNATING WAVEFORMS:

Definition of current and voltage. The sine wave, general format of sine wave for voltage or current, phase relations, average value, effective (R.M.S) values. Differences between A.C and D.C. **Basic elements and phasors:** Basic Response of R, L & C elements, frequency response of basic elements**. (problems)**

UNIT-II: (12hrs)

PASSIVE NETWORKS: (D.C)

Kirchhoff's current and Voltage Law's ,Resistor, Capacitor, and Inductor, series and parallel networks.R-L and R-L-C Circuits with DC inputs. Branch current method, Mesh Analysis, Nodal Analysis, star to delta & delta to star conversions.

UNIT-III: (14hrs)

NETWORKS THEOREMS: (D.C)

Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power, Milliman and Reciprocity theorems **(problems).**

UNIT-IV: (12hrs)

RC AND RL CIRCUITS:

Transient response of RL and RL circuits with step input, Time constants, Frequency response of RC and RL circuits, their action as low pass, high pass and Band pass filters. Passive differentiating and integrating circuits. (problems)

UNIT-V: (10hrs)

SERIES AND PARALLEL RESONANCE CIRCUITS:

Series resonance and parallel resonance circuits, Q - Factor, Selectivity and band width, Comparison of series and parallel resonance, Tank circuit-LC oscillations.

TEXT BOOKS:

1. Introductory circuit Analysis (UBS Publications) ---- **Robert L. Boylestad.**
2. Electronic Devices and Circuit Theory --- **Robert L. Boylestad & Louis Nashelsky.**
3. Circuit Analysis by **P.Gnanasivam- Pearson Education**

REFERENCE BOOKS:

1. Engineering Circuit Analysis **By: Hayt & Kemmerly - MG.**
2. Networks and Systems – **D.Roy Chowdary.**
3. Unified Electronics (Circuit Analysis and Electronic Devices) **by Agarwal-Arora**
4. Electric Circuit Analysis- **S.R. Paranjothi**- New Age International.

ELECTRONICS LAB-1

(CIRCUIT LAB)

Demonstration of C.R.O: Demonstration using CRO Kit - Block diagram concepts etc., in lab session (Using slides.)
(Assignments are to be given-Marks shall be allotted to this work as internal part.)

LAB LIST:

1. Measurements of D.C & A.C voltage, frequency using CRO
2. Verification of Kirchhoff's laws
3. Thevenin's Theorem-verification
4. Norton's Theorem-verification
5. Maximum Power Transfer Theorem-verification
6. RC circuit-Frequency response (low and High pass)
7. RL circuit-Frequency response (low and High pass)
8. LCR series resonance circuits-Frequency response-Determination of Q and Band Width.
9. LCR parallel resonance circuits-Frequency response-Determination of Q and Band width

Lab experiments are to be done on breadboard and simulation software (using multisim) and output values are to be compared and justified for variation.

B.Sc. Electronics Syllabus under CBCS
w.e.f. 2015-16 (revised in April 2016)

Semester-2 **PAPER – 2**

Electronic Devices and Circuits

UNIT 1: (12Hrs)
PN JUNCTION DIODES:

P-N junction Diode, Depletion region, Barrier Potential, Working in Forward and Reverse bias condition – Junction capacitance ,Diode current equation– Effect of temperature on reverse saturation current – construction, working, V-I characteristics and simple applications of varactor diode, Zener diode and Tunnel diode.

UNIT –II:(12hrs)
BIPOLAR JUNCTION TRANSISTOR AND ITS BIASING: (D.C)

Introduction, Transistor Construction, Operation, and characteristics of CB, CE, and CC – Configurations. Complete hybrid equivalent model, Transistor as a switch
BJT Biasing: Fixed-Bias Circuit, Emitter-Stabilized Bias Circuit, Voltage-Divider Bias, Bias Stabilization.

UNIT-III:(16hrs)
FIELD EFFECT TRANSISTORS , UJT & SCR:

Introduction, Construction, Operation and Characteristics of FET/JFET, Drain and Transfer characteristics, Depletion-type, and Enhancement-Type MOSFETs.

FET Biasing: Fixed-Bias Configuration, Self-Bias Configuration, Voltage-Divider Biasing, UJT construction-working, V-I characteristics, UJT as a Relaxation oscillator.

Silicon Controlled Rectifier (SCR):

Structure and working of SCR. Two transistor representation, Characteristics of SCR. Experimental set up to study the SCR characteristics, Application of SCR for power control.

UNIT IV: (08hrs)
PHOTO ELECTRIC DEVICES:

Light-Emitting Diodes (LEDs), IR Emitters, Photo diode, Photo transistors, Structure and operation of LDR, and Opto-Isolators.

UNIT-V:(12hrs)
POWER SUPPLIES:

Rectifiers::Half wave ,full wave and bridge rectifiers-Efficiency-ripple factor-Regulation, Types of filter-choke input(inductor) filter,shunt,L-section&π-section filters.Three terminal fixed voltage I.C.regulators(78XX and &79XX)-Principle and working of SMPS(switch mode power supplies)

TEXT BOOKS:

1. Electronic Devices and Circuit Theory --- **Robert L. Boylestad & Louis Nashelsky.**
2. Electronic Devices and Circuits I **– T.L.Floyd- PHI Fifth Edition**

REFERENCE BOOKS:

1. Integrated Electronics – **Millmam & Halkias.**
2. Electronic Devices & Circuits – **Bogart.**
3. Sedha R.S., A Text Book Of Applied Electronics, S.Chand & Company Ltd

ELECTRONICS LAB-2

(ELECTRONIC DEVICES AND CIRCUITS LAB)

LAB LIST:

1. V-I Characteristics of junction diode
2. V-I Characteristics of zener diode
3. Regulated power supply using zener diode
4. BJT input and output characteristics
5. FET input and output characteristics
6. UJT characteristics
7. LDR characteristics
8. IC regulated power supply(IC-7805)
9. V-I characteristics of SCR**.**

Lab experiments are to be done on breadboard and simulation software (using

multisim) and output values are to be compared and justified for variation.

B.Sc. Electronics Syllabus under CBCS

w.e.f. 2015-16 (revised in April 2016)

SEMESTER – III **PAPER – 3**

Digital Electronics

Unit – I (9hrs)

NUMBER SYSTEM AND CODES: Decimal, Binary, Hexadecimal, Octal, BCD, Conversions, Complements (1's, 2's,9's and 10's), Addition, Subtraction, Gray, Excess-3 Code conversion from one to another.

Unit- II (12hrs)

BOOLEAN ALGEBRA AND THEOREMS: Boolean Theorems, De-Morgan's laws. Digital logic gates, Multi level NAND & NOR gates. Standard representation of logic functions (SOP and POS), Minimization Techniques (Karnaugh Map Method: 4,5 variables),don't care condition.

Unit-III (15hrs)

COMBINATIONAL DIGITAL CIRCUITS:

Adders-Half & full adder, Subtractor-Half and full subtractors, Parallel binary adder, Magnitude Comparator, Multiplexers (2:1,4:1)) and Demultiplexers (1:2,4:1), Encoder (8-line-to-3-line) and Decoder (3-line-to-8-line). IC-LOGIC FAMILIES**:** TTL logic, DTL logic, RTL Logic, CMOS Logic families (NAND&NOR Gates),Bi-CMOS inverter

UNIT-IV (14hrs)

SEQUENTIAL DIGITAL CIRCUITS:
Flip Flops: S-R FF , J-K FF, T and D type FFs, Master-Slave FFs, Excitation tables, Registers:-shift left register, shift right register, Counters - Asynchronous-Mod16,Mod-10,Mod-8,Down counter,,Synchronous-4-bit &Ring counter.

UNIT-V (10hrs)
MEMORY DEVICES:
General Memory Operations, ROM, RAM (Static and Dynamic), PROM, EPROM, EEPROM, EAROM, PLA(Programmable logic Array),PAL(Programmable Array Logic)

TEXT BOOKS:

1. M.Morris Mano, " Digital Design " 3rd Edition, PHI, New Delhi.
2. Ronald J. Tocci. "Digital Systems-Principles and Applications" 6/e. PHI. New Delhi. 1999.(UNITS I to IV)
3. G.K.Kharate-Digital electronics-oxford university press
4. S.Salivahana&S.Arivazhagan-Digital circuits and design
5. Fundamentals of Digital Circuits by Anand Kumar

Reference Books :

1. Herbert Taub and Donald Schilling. "Digital Integrated Electronics" . McGraw Hill. 1985.
2. S.K. Bose. "Digital Systems". 2/e. New Age International. 1992.
3. D.K. Anvekar and B.S. Sonade. "Electronic Data Converters : Fundamentals & Applications". TMH. 1994.

4. Malvino and Leach. " Digital Principles and Applications". TMG Hill Edition.

ELECTRONICS LAB-3

(DIGITAL ELECTRONICS LAB)

LAB LIST:

1. Verification of IC-logic gates
2. Realization of basic gates using discrete components (resistor, diodes & transistor)
3 .Realization of basic gates using Universal gates (NAND & NOR gates)
4. Verify Half adder and full adder using gates
5. Verify Half subtractor and full subtractor using gates.
6. Verify the truth table of RS , JK, T-F/F using NAND gates
7. 4-bit binary parallel adder and subtractor using IC 7483
8. BCD to Seven Segment Decoder using IC -7447/7448

Lab experiments are to be done on breadboard and simulation software (using multisim) and output values are to be compared and justified for variation.

B.Sc. Electronics Syllabus under CBCS

w.e.f. 2015-16 (revised in April 2016)

SEMESTER – IV **PAPER – 4**

Analog and Digital ic-pplictions

Unit – I (10hrs)

OPERATIONAL AMPLIFIERS: Definition, Basic op-amp Ideal op-amp, Block diagram of op-amp, inverting, noninverting, virtualground, Adders, subtractors, summing amplifier, voltage follower, op-amp parameters, voltage to current convertor ,integrator, differentiator, differential amplifier, Logarithmic amplifier.

Unit- II (15 hrs)

OP-AMP CIRCUITS: voltage regulator, comparator ,zerocross detecting circuit, instrumentational amplifier, multivibrators-astable, monostable, Bi-stable, Schmitt trigger. sine wave generator, square wave generator, triangular wave generator, Active filters(Basics)-low pass, high pass, band pass filters

IC-555 –functional block diagram and mention it's applications

Unit-III (15hrs):

COMBINATIONAL & SEQUENTIAL LOGIC CIRCUITS (IC-Applications):

Design of Code convertor: BCD to Seven Segment ,BCD to Grey, Grey to Binary.

Design of Counters using State Machine: Mod N counter, Preset Table,Binary Up/Down Counter. Design of Universal Shift Register

UNIT-IV (10hrs)

DATA CONVERTERS:

A/D converter:- Successive Approximation ADC,-Single slope and dual slope converter, Sigma-delta ADC, D/A converter: R-2R Ladder network, Binary Weighted .

UNIT-V (10hrs)

DIGITAL SYSTEM INTERFACING AND APPLICATIONS: interfacing of LED's

Applications of Counters: Digital Clock

Applications of Shift Registers: Parallel to Serial ,Serial to Parallel, UART

TEXT BOOKS:

6. G.K.Kharate-Digital electronics-oxford university press
7. M.Morris Mano, " Digital Design " 3rd Edition, PHI, New Delhi.
8. Op Amp and Linear Integrated Circuits By Ramakant Gaykwad
9. Linear Integrated Circuits By Roy Choudary

Reference Books :

5. Jacob Millan ,Micro Electronics,McGraw Hill.
6. Mithal G K, Electronic Devices and Circuits Thana Publishers.
7. Allan Motter shead ,Electronic Devices and Circuits – An Introduction- Prentice Hall

Electronics Lab - 4

(Analog and digital ic-pplictions)

LAB LIST:

1. Op-Amp as inverting and non-inverting
2. Op-Amp as integrator and differentiator
3. Op-Amp as adder & subtractor
4. Op-Amp as voltage to current converter
5. Op-Amp as sine wave generator (Wien bridge oscillator)
6. Op-Amp as sine wave generator
7. Astable multivibrator determination of frequency (using IC-555)
8. Schmitt trigger using IC-555 timer

Lab experiments are to be done on breadboard and simulation software (using multisim) and output values are to be compared and justified for variation.

ELECTRONICS SYLLABUS (CBCS) SEMESTER WISE

B.Sc ELECTRONICS COURSE STRUCTURE

Semester	Part	Subject	Hrs.	Credits	IA	ES	TOTAL
FIRST YEAR							
SEMISTER I	PART-II	BASIC CIRCUIT THEORY- 1	4	4	25	75	100
		Electronics lab-1	2	2	0	50	50
SEMISTER II	PART II	ELECTRONICS DEVICES AND CIRCUITS - 2	4	4	25	75	100
		Electronics Lab – 2	2	2	0	50	50
SECOND YEAR							
SEMISTER III	PART-II	DIGITAL ELECTRONICS – 3	4	4	25	75	100
		Electronics lab – 3	2	2	0	50	50
SEMISTER IV	PART-II	Analog & Digital I C Applications – 4	4	4	25	75	100
		Electronics lab – 4	2	2	0	50	50
THIRD YEAR							
SEMISTER V	PART-II	Micro Processor-8085& Applications-5	4	4	25	75	100
		Electronics lab – 5	2	2	0	50	50
		Electronic Communications – 6A	4	4	25	75	100
		Electronics lab - 6A	2	2	0	50	50
		Consumer Electronics – 6B	4	4	25	75	100
		Electronics lab - 6B	2	2	0	50	50
SEMISTER VI	PART-II	Microcontroller -8051& Applications – 7	4	4	25	75	100
		Electronics lab-7	2	2	0	50	50
		VLSI Design – 8A	4	4	25	75	100
		Electronics lab - 8A	2	2	0	50	50
		Mathematical methods and analysis using mat lab -8B	4	4	25	75	100
		Electronics lab - 8B	2	2	0	50	50

M. Basavaraj 22/6/17

Lecturer in Electronics
Balayesu Degree College
HINDUPUR - 515 201

B.Sc - ELECTRONICS-SYLLABUS

SEMESTER: V

Paper 5 : Microprocessor - 8085 & Applications (60 hours)

(w. e. f. 2017-18)

Work load: 60 hrs per semester **4 hrs/week**

UNIT- I (12 hrs)

Block diagram of Intel 8085 - Pin Diagram - ALU - Registers - address / data bus - Control Signal and status signals - Interrupts.

UNIT - II (12 hrs)

Memory - Instruction cycle - machine cycle - Timing diagrams for Opcode Fetch Cycle Memory Read , Memory Write , I/O Read , I/O Write .

UNIT- III (12 hrs)

Instruction set of 8085 classification - addressing modes - programgs of 8085 Addition & subtraction (8 and 16-bit) , multiplication , division , largest , smallest , Ascending & Descending orders . (all 8-bit data) .

UNIT- IV (12 hrs)

Pin functions , Different Modes & Block Diagram of Programmable peripheral interface devices 8255 and 8155 – Programmable interrupt controller 8259 – DMA Controller 8257 , 8279 Key board / Display interface .

UNIT - V (12 hrs)

interfacing : ADC - Square wave generation using DAC - stepper motor control – 7 - Segment Display - L C D

TEXTBOOKS

1.Ramesh S. Gaonakar, Microprocessor Architecture, Programming and Application with the 8085- Penram international Publishing, Mumbai.

2. Ram, Fundamentals of microprocessors and microcomputers - Dhanpat Rai Publications, New Delhi

3.Microprocessors & Microcontrollers by N.Senthilkumar, M. Saravanan& S. Jeevananthan, 1st edition, Oxford press(Helpful for interfacing applications)

4. Microprocessors & Microcontrollers by B.P.Singh, Galgotia publications Pvt.Ltd.

M. Basavaraj
22/6/17

Lecturer in Electronics
Balavesu Degree College

REFERENCE BOOKS

1.Mathur A.P., Introduction to Microprocessors. (3rd edn., Tata McGraw, New Delhi,
2.Leventhal L.A., Microprocessor Organisation and Architecture, Prentice Hall India.
3.Microprocessor lab premier by K.A.Krishnamurthy

ELECTRONICS LAB -5
(MICROPROCESSOR 8085 LAB)

Work load: 30 hrs per semester **2 hrs/week**

(Any six experiments should be done)

Programs using Intel 8085

1. Addition & Subtraction (8 & 16-bits)
2. Multiplication & Division (8 - bit)
3. Largest & Smallest number in the given array.
4. Ascending & Descending order.
5. Square wave generation using DAC interface.
6. 7 Segment Display interface
7. Stepper motor interface.

LAB MANUAL

1. Zbar, Malvino and Miller, Basic Electronics, A Text Lab Manual, Tata McGraw Hill.
2. Sugaraj Samuel R., Horsley Solomon, B.E.S. Practicals.
3. Vijayendran V. Fundamentals of microprocessor - 8085, S.Viswanathan publishers Chennai.

M. Basavaraj 22/6/17

Lecturer in Electronics
Balayesu Degree College
HINDUPUR - 515 201

B.Sc- ELECTRONICS-SYLLABUS

SEMESTER: V

ELECTIVE - PAPER 6 (A) - Electronic Communications (60 HOURS)

(w. e .f. 2017-18)

Work load: 60 hrs per semester **4 hrs/week**

UNIT- I (12 hrs)

Block diagram of communication system - Types of Communication : one - way (Simplex) , two - way (full Duplex) - Noise in communication : Atmospheric noise , shot noise .

UNIT - II (12 hrs)

Amplitude modulation - Need for modulation - Modulation index - frequency spectrum of AM (diode detector) other forms of AM : Single side band suppressed carrier .

UNIT- III (12 hrs)

Frequency and Phase modulation , modulation index and frequency spectrum, Generation of FM , FM detector (Slope detector) - Comparison between AM , FM and PM.

UNIT- IV (12 hrs)

Transmitters : Communication channels for AM and F M broadcast , AM transmitter : Low level and high level modulation , FM transmitter .

Receivers : Super Hetro dyne receiver .

UNIT - V (12 hrs)

Digital Communication :

Pulse Amplitude Modulation (PAM) , Time Division Multiplexing (TDM) , Pulse Width Modulation (PWM) and Pulse Position Modulation (PPM) .

TEXTBOOKS

1. H. Taub and D. Schilling, Principles of Communication Systems, Tata McGraw-Hill (1999)
2. W.Tomasi, Electronic Communication Systems: Fundamental through Advanced,
3. Pearson Education (2004)
4. L.E.Frenzel, Communication Electronics, Principle and Applications, Tata Mcgraw- Hill (2002)
5. L. W. Couch II, Digital and Analog Communication Systems, Pearson Education (2005)

M. Basaveraja 22/6/17

Lecturer in Electronics
Balayesu Degree College
HINDUPUR - 515 201

6. H.P.Hsu , Analog and Digital Communication, Tata McGraw- Hill (2006)

REFERENCE BOOKS

1. S.Haykin, Communication Systems, Wiley India (2006)
2. G. Kennedy and B. Davis, Electronic communication systems, Tata McGraw Hill (1999)
3. R. P. Singh and S. D. Sapre, Communication Systems: Analog and Digital, Tata McGraw Hill (2007)
4. L. E. Frenzel, Communication electronics: Principles and applications. Tata McGraw Hill (2002)
5. T.G. Thomas and S. Chandra Sekhar, Communication theory, Tata McGraw Hill (2006)

ELECTRONICS LAB -6(A)

ELECTRONIC COMMUNICATIONS LAB

Work load: 30 hrs per semester **2 hrs/week**

(Any six experiments should be done)

1. Study of Amplitude Modulation and Demodulation.
2. Study of Frequency Modulation and Demodulation
3. Study of Pulse Amplitude Modulation
4. Study of Pulse Width Modulation
5. Study of Pulse Position Modulation
6. Study of Pulse Code Modulation
7. Simulation of AM modulation and Demodulation using software.
8. Simulation of FM modulation and Demodulation using software.

M. Basavaraj 22/6/17

Lecturer in Electronics
Balayesu Degree College
HINDUPUR - 515 201

(5/16)

B.Sc- ELECTRONICS-SYLLABUS

SEMESTER: V

ELECTIVE-PAPER 6(B) - CONSUMER ELECTRONICS (60 HOURS)

(w. e .f-2017-18)

Work load: 60 hrs per semester **4 hrs/week**

UNIT-I (12 hrs)

MICROWAVE OVENS - Microwaves (Range used in Microwave Ovens) – Microwave oven block diagram - LCD timer with alarm – Single Chip Controllers - Types of Microwave oven - Wiring and Safety instructions - Care and Cleaning.

UNIT-II (12 hrs)

WASHING MACHINES - Electronic controller for washing machines - Washing machinehardware and software- Types of washing machines - Fuzzy logic washing machines Features of washing machines.

UNIT-III (12 hrs)

AIR CONDITIONERS AND REFRIGERATORS - Air Conditioning - Components of airconditioning systems -All water air conditioning systems - All air conditioning systems - Unitary and central air conditioning systems -Split air conditioners.

UNIT-IV (12 hrs)

HOME/OFFICE DIGITAL DEVICES - Facsimile machine - Xerographic copier - Calculators - Structure of a calculator - Internal Organization of a calculator - Servicing electronic calculators - Digital clocks - Block diagram of a digital clock.

UNIT-V (12 hrs)

DIGITAL ACCESS DEVICES - Digital computer -Internet access - Online ticketreservation - Functions and networks - Barcode Scanner and decoder - Electronic Fund Transfer - Automated Teller Machines (ATMs) - Set-Top boxes - Digital cable TV - Video on demand.

TEXT BOOKS

1. S.P. Bali, Consumer Electronics - Pearson Education, New Delhi, 2005.
2. R. G. Gupta Audio and Video systems Tata McGraw Hill (2004)

M. Basaveswara Rao 22/6/17

Lecturer in Electronics
Balayesu Degree College
HINDUPUR - 515 201

(6/13)

ELECTRONICS LAB -6(B)

CONSUMER ELECTRONICS LAB

Work load: 30 hrs per semester **2 hrs/week**

(At least two Activities should be done)

I. Study of PA systems for various situations - Public gathering, closed theatre /Auditorium, Conference room, Prepare Bill of Material (Costing)

2. Installation of Audio /Video systems - site preparation, electrical requirements, cables and connectors

3. Market Survey of Products (at least one from each module)

4. Identification of block and tracing the system. Assembly and Disassembly of system using Toolkit

5. Assembly and Disassembly of system& printer

NOTE: One activity as directed in practical course is equivalent to 4 experiments

M. Basavaraj 22/6/17

Lecturer in Electronics
Balayesu Degree College
HINDUPUR - 515 201

SRI KRISHNADEVARAYA UNIVERSITY

ANANTAPURAMU

THREE YEARS B.Sc - ELECTRONICS COURSE STRUCTURE - SEMESTER WISE UNDER CBCS

SEMESTER	PAPER	YEAR / TITTLE OF THE PAPERS	CREDITS	MARKS		TOTAL MARKS
				IA	ES	
		FIRST YEAR (w.e.f 2015 – 2016)				
I	1	BASIC CIRCUIT THEORY	4	25	75	100
		LAB-1 : ELECTRONICS	2		50	50
II	2	ELECTRONICS DEVICES AND CIRCUITS	4	25	75	100
		LAB-2 : ELECTRONICS	2		50	50
		SECOND YEAR (w.e.f 2016 - 2017)				
III	3	DIGITAL ELECTRONICS	4	25	75	100
		LAB-3 : DIGITAL ELECTRONICS	2		50	50
IV	4	ANALOG & DIGITAL I C APPLICATIONS	4	25	75	100
		LAB-4 : ANALOG & DIGITAL I C 'S	2		50	50
		THIRD YEAR (w.e.f 2017 - 2018)				
V	5	MICRO PROCESSOR – 8085 & APPLICATIONS	4	25	75	100
		LAB-5 : MICRO PROCESSOR – 8085	2		50	50
		OPTIONAL ELECTIVE PAPERS (CHOOSE ANY ONE)				
	6 (A)	ELECTRONIC COMMUNICATIONS	4	25	75	100
		LAB-6 (A) : ELECTRONIC COMMUNICATIONS	2		50	50
	6 (B)	CONSUMER ELECTRONICS	--------- do ----------			
		LAB-6 (B) : CONSUMER ELECTRONICS				
VI	7	CLUSTER ELECTIVES -I (CHOOSE ANY ONE CLUSTER)				
		CLUSTER – A :				
		MICRO CONTROLLER – 8051 & APPLICATIONS	4	25	75	100
		Lab - 7 : MICRO CONTROLLER – 8051	2		50	50
		CLUSTER – B :				
		OPTICAL FIBER COMMUNICATION	----- do -----			
		Lab - 7 : OPTICAL FIBER COMMUNICATION				
		CLUSTER – C :				
		MATHEMATICAL METHODS AND ANALYSIS USING MATLAB	------ do -----			
		Lab - 7 : MATLAB				
		CLUSTER ELECTIVES –II (SELECT ONLY CONCERNED CLUSTER)				
	8	CLUSTER – A				
		A-1 : VLSI DESIGN	4	25	75	100
		A-2 : DATA COMMUNICATION AND NETWORKING	4	25	75	100
		A-3 : PROJECT WORK	4	25	75	100
		Lab - 8 : VHDL / Verilog HDL	2		50	50
		Lab - 9 : DATA COMMUNICATION AND NETWORKING	2		50	50
		CLUSTER – B				
		B-1 : SATELLITE COMMUNICATIONS	----- do ---------			
		B-2 : WIRELESS COMMUNICATIONS				
		B-3 : PROJECT WORK				
		Lab - 8 : SATELLITE COMMUNICATIONS				
		Lab - 9 : WIRELESS COMMUNICATIONS				
		CLUSTER – C				
		C-1 : DIGITAL SIGNAL PROCESSING	------ do ------			
		C-2 : CONTROL SYSTEMS				
		C-3 : PROJECT WORK				
		Lab - 8 : DIGITAL SIGNAL PROCESSING				
		Lab - 9 : CONTROL SYSTEMS				
IMPORTANT NOTICE : **In case selecting CLUSTER-A in PAPER-7 (SEMESTER-VI) From CLUSTER ELECTIVES –I then Compulsory Should Take CLUSTER-A Only in PAPER-8 From CLUSTER ELECTIVES –II . The Same method is Proceed in The Subsequent CLUSTERS for Choosing Clusters .**						
		TOTAL	58	250	1200	1450

M. Basavaraj 9/11/17
Chairman
Board of Studies in U.G.Electronics
Balayesu Degree College
HINDUPUR

THIRD YEAR B.Sc - ELECTRONICS – SYLLABUS :: SEMESTER - VI

PAPER - 7 : CLUSTER-A

PAPER - 7 (A) : MICRO CONTROLLER - 8051 & APPLICATIONS

(w. e .f 2017-18)

Work load: 60 hrs **4 hrs/week**

UNIT- I (12 hrs) :

Architecture and Pin Discription of 8051 - Memory organization - Port Organizations - Interrupts - Timers and Counters.

UNIT- II (12 hrs) :

Classification of Instruction set of 8051 - Data transfer , Arithmatic , Logical , Single Bit , rotate , Compare , jump , Loop and Call instructions - Addressing Modes.

UNIT- III (12 hrs) :

Programs : Addition , Subtraction , Multiplication (repeated addition method) , Division (repeated subtraction method) , Smallest , Largest , Ascending and Descending orders (all 8-bits only).

UNIT- IV (12 hrs) :

Interfacing of 8255 with 8051 - Interfacing of 7 Segment LED Display with 8051 - Interfacing of Matrix (4 x 4) Key Board - Interfacing of L C D with 8051 - Interfacing of Temparature Measurement

UNIT- V (12 hrs) :

Interfacing of Binary Counter - Interfacing of Stepper Motor - Interfacing of A D C - Interfacing of DAC (Square wave generation only) - Serial Communications (RS-232) .

9/11/17

Chairman
Board of Studies in U.G.Electronics
Balayesu Degree College
HINDUPUR

TEXTBOOKS

1. Kenneth 1. Ayala, "The 8051 Microcontroller, Architecture, Program and Application" Pen ram International.
2. Muhammed Ali Mazidi, Janice GillispieMazidi "The 8051 Microcontroller and Embedded Systems" -Low Price Edition.
3. Microprocessors & Microcontrollers by N. Senthilkumar, M. Saravanan& S. Jeevananthan, 1st edition. Oxford press (Helpful for interfacing applications)
4. Micro corurollers: Theo & App by Ajay V. Deshmuk Tata McGraw-Hill Education

ELECTRONICS : LAB - 7 (A)

(MICRO - CONTROLLER 8051 - LAB)

Work load: 30 hrs per semester **2 hrs/week**

(Any Six Experiments should be done)

1. Multiplication & Division of Two 8-Bit Numbers by using kit only .
2. Largest & Smallest Number of two 8-bit numbers by using kit only.
3. Ascending & Descending order by using kit only
4. Interfacing - Stepper motor to rotate Clockwise or Anti Clock wise
5. Interfacing - LCD to Display Characters and Numbers .
6. Interfacing - DAC (Square Wave Generation)
7. Interfacing - Binary Counter (Count From : 00 H to FF H)

M. Basawaraj 9/11/17
Chairman
Board of Studies in U.G.Electronics
Balayesu Degree College
HINDUPUR

THIRD YEAR B.Sc - ELECTRONICS – SYLLABUS : SEMESTER : VI

PAPER-8 : **CLUSTER-A**

A1 : VLSI DESIGN

(w. e .f 2017-18)

Work load: 60 hrs **4 hrs/week**

UNIT - I (12 hrs) :

Defination , Classification's , Advantages of IC's - MOS : Enhancement Modes of NMOS , PMOS - CMOS Fabrications : n-Well , p-Well

UNIT- II (12 hrs)

NMOS Inverter - CMOS Inverter – VLSI Design Flow : Design Specification's , Design Entry – Examples of (Circuit Diagrams only) NMOS , PMOS and CMOS .

UNIT- III (12 hrs)

Basic logic gates in CMOS – Complex logic gate : Two , Three inputs of CMOS NAND gate - Combinational Logic : Two and Three inputs of CMOS NOR gate - Compound gates in CMOS .

UNIT- IV (10 hrs)

VHDL : Brief History , Logical , Relational , Arithmatic , Shift and Rotate Operators , Data Types .

Verilog HDL : Brief History , Logical , Relational , Arithmatic , Shift and Rotate Operators , Data Types . Comparison of VHDL and Verilog HDL .

UNIT- V (l4 hrs)

Data - Flow Description's and HDL Programs :-

Basic Logic Gates , Universal Gates , Half-Adder , Multiplexer , Magnitude Comparator , Binary Adder .

TEXT BOOKS :

1. VLSI Design By Vilas S. Bagad
2. VHDL and Verilog Programming By Nazeih M.Botros
3. VLSI Design By A.Albert Raj and T.Latha

M. Basavaraj 9/11/17
Chairman
Board of Studies in U.G.Electronics
Balayesu Degree College
HINDUPUR

ELECTRONICS : LAB - 8

VHDL / Verilog HDL LAB

Work load: 30 hrs per semester **2 hrs/week**

ANY SIX EXPERIMENTS SHOULD BE ONE

1) BASIC GATES CIRCUIT
2) UNIVERSAL GATES
3) HALF –ADDER
4) FULL -ADDER
5) MULTIPLEXER
6) DECODER
7) S-R LATCH
8) D-LATCH
9) MAGNITUDE COMPARATOR
10) BINARY ADDER

Chairman
Board of Studies in U.G.Electronics
Balayesu Degree College
HINDUPUR

THIRD YEAR B.Sc- ELECTRONICS – SYLLABUS :: SEMESTER: VI

PAPER - 8 : CLUSTER-A

A2 : DATA COMMUNICATION AND NETWORKING

(w. e .f 2017-18)

Work load: 60 hrs 4 hrs/week

Unit- 1 (12 Hrs) :

Data Communication and its Components - Introduction of Network , Types of Networks : Personal Area Network , Local Area Network , Metropolitan Area Network , Wide Area Network .

Unit- 2 (14 Hrs) :

Network Topologies : Bus Topology , Star Topology , Ring Topology , Mesh Topology , Tree Topology , Hybrid Topology .

Unit- 3 (10 Hrs) :

Transmission Media's - Guided Media : Twisted Pair Cable , Coaxial Cable , Optical Fiber Cable . Un- Guide Media : Radio Waves , Micro Waves , Infrared .

Unit-4 (10 Hrs) :

Data Transmissions : Digital - To - Digital Conversion (Line Coding only) , Analog - To - Digital Conversion (PCM only) , Digital - To - Analog Conversion (ASK only) , Analog - To - Analog Transmission (AM only) - Transmission Modes (Parallel and Serial)

Unit- 5 (14 Hrs) :

Frequency Division Multiplexing , Time Division Multiplexing , Wave Division Multiplexing . Modems : Traditional Modems , Cable Modems .

Text Books:

1. Data Communication and Networking (2 Edition) By Behrouz A.Forouzan
2. Data and Computer Communication By Stallings William
3. Computer Networks By Kurose James F

Chairman
Board of Studies in U.G.Electronics
Balayesu Degree College
HINDUPUR

ELECTRONICS : LAB - 9

DATA COMMUNICATION AND NETWORKING

Work load : 30 hrs per semester **2 hrs/week**

ANY SIX EXPERIMENTS SHOULD BE DONE

1. TO STUDY DIFFERENT TYPES OF TRANSMISSION MEDIA
2. TO STUDY THE SERIAL INTERFACE USING RS-232
3. TO STUDY LAN USING STAR TOPOLOGY
4. TO STUDY LAN USING BUS TOPOLOGY
5. TO STUDY LAN USING TREE TOPOLOGY
6. TO STUDY CONFIGURE MODEM OF COMPUTER
7. TO STUDY CONFIGURE HUB / SWITCH

9/11/17
Chairman
Board of Studies in U.G.Electronics
Balayesu Degree College
HINDUPUR

THIRD YEAR B.Sc - ELECTRONICS : SEMESTER – VI

PAPER-8 : CLUSTER - A / B / C

A3 / B3 / C3 : PROJECT WORK

Work load : 60 hrs (4 Hours/week) **Max.Marks : 75**

The objective of the Project is to motivate them to work in emerging / latest technologies, help the students to develop ability , to apply theorical and Practical tools / techniques to solve real life problems related to industry , academic institutions and research laboratories. **the Project is of 4 hours / week for VI Semester : PAPER - 8 (A3 / B3 / C3)** duration and a students is expected to do Planning , Analysing , Coding, and Implementing the project . the initiation of project should be with the project proposal . the synopsis approval will be given by the project guides (Subject Lecturer only).

The Project Proposal should include the following :-

- Tittle , Objectives , Apparatus , Circuit Diagrams , Model Graphs , Tabular Colums
- Input , Observations , Process logic , Programming , Output , Flow chats , Algorithm
- Advantages and Dis-advantages , Application's .....etc

The Project work should be an only **ONE MEMBER** . the students shall submit a project report and defined their dissertation infront of Examiner . The Scheme of Evaluation of Project Work is given below.

MARKS DISTRIBUTION IN PROJECT WORK

Subject : ELECTRONICS : PAPER - 8 (A3 / B3 / C3)) **Max. Marks : 75**

S.No	PROJECT WORK DETAILS	ALLOTED MARKS			PASS MARKS (40 %)
1	DESSERTATION	10	RECORD MARKS	10	30
2	PRESENTATION	30	EXPERIMENT MARKS	65	
3	COMPREHENSIVE – VIVA VOCE	35			
	TOTAL	75			30

9/11/17
Chairman
Board of Studies in U.G.Electronics
Balayesu Degree College
HINDUPUR