DUVVURU RAMANAMMACOLLEGE:GUDURE

I.B.SC PHYSICS PAPER- FIRST SEMISTER

PAPER-I Circuit Analysis and Electronic Devices.

UNIT-I

1 ***AC Fundamentals*:** The Sine wave –Average and RMS values–The J operator – Polar and rectangular forms of complex numbers – Phasor diagram – Complex impedance and admittance.

2 ***Passive networks***: Concept of voltage and current sources – KVL and KCL- Application to simple circuits (AC and DC) consisting of resistors and sources (one or two) - Node voltage analysis and method of mesh currents.

3 ***Network theorems (DC and AC)***: Superposition Theorem–Thevenin's Theorem–Norton's Theorem–Maximum power transfer Theorem–Millman Theorem- Reciprocity Theorem – Application to simple networks.

UNIT- II

4 ***RC and RL Circuits*:** Transient response of RL and RC circuits with step input– time constants. Frequency response of RC and RL circuits – Types of Filters: Low pass filter – High pass filter – frequency response - Passive differentiating and integrating circuits.

5 ***Resonance*:** Series resonance and parallel resonance RLC circuits – Resonant frequency – Q factor – Band width – Selectivity.

6 **CRO:** CRT block diagram, working, and measurement of voltage, phase & frequency Intrion to feed back about Laser with their applications.

DUVVURU RAMANAMMA COLLEGE:GUDU R
I.BSC ELECTRONICS PAPER: II
SECOND SEMISTER

UNIT-I

1.PN Junction: Depletion region – Junction capacitance – Diode equation (no derivation) – Effect of temperature on reverse saturation current – construction, working, V-I characteristics and simple applications of

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

2.Bipolar Junction Transistor (BJT): PNP and NPN transistors–current components in BJT – BJT static characteristics (Input and Output) – Early effect- CB, CC,CE configurations (cut off, active, and saturation regions) CE configuration as two port network – h-parameters – h-parameter equivalent circuit. Experimental arrangement to study input and output characteristics of BJT in CE configuration. Determination of h-parameters from the characteristics. Biasing and load line analysis – Fixed bias and self bias arrangement.

UNIT-II

3.Field Effect Transistor (FET): Structure and working of JFET and MOSFET – output and transfer characteristics – Experimental arrangement for studying the characteristics and to determine FET parameters. Application of FET as voltage variable resistor and MOSFET as a switch – Advantages of FET over transistor.

4.Uni Junction Transistor (UJT): Structure and working of UJT- Characteristics. Application of UJT as a relaxation oscillator.

5.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.

6.Photo Electric Devices: Structure and operation of LDR, Photo voltaic cell, Photo diode, Photo transistors and LED.

(**NOTE:** ***Solving related problems in all the Units***)

B.Sc II Year- Electronics

PAPER–III Analog Circuits and Communication

THIRD SEMESTER

UNIT- I

Power Supplies: Rectifiers– Halfwave, fullwave and bridge rectifiers- Efficiency- Ripple factor- Regulation – Harmonic components in rectified output – Types of filters- Choke input (inductor) filter- Shunt capacitor filter- L section and π section filters – Block diagram of regulated power supply - Series and shunt regulated power supplies – Three terminal regulators (78XX and 79XX) – Principle and working of switch mode power supply (SMPS).

UNIT-II

RC Coupled Amplifier: Analysis and frequency response of single stage RC coupled CE amplifier.

Feedback: Positive and negative feedback- Effect of feedback on gain, band width, noise, input and output impedances.

Operational Amplifiers: Differential amplifier- Block diagram of Op-Amp- Ideal characteristics of Op-Amp- Op-Amp parameters- Input resistance- Output resistance- Common mode rejection ratio (CMMR)- Slew rate- Offset voltages – Input bias current- Basic Op-Amp circuits- Inverting Op-Amp- Virtual ground- Non-inverting Op-Amp- Frequency response of Op-Amp. Interpretation of Op-Amp data sheets.

DUVVURU RAMANAMMA COLLEGE:GUDUR
II.BSC ELECTRONICS PAPER:IV
FOURTH SEMISTER

UNIT-I

1.Applications of Op-Amps: Summing amplifier- subtractor- Voltage follower- Integrator- Differentiator - Comparator- Logarithmic amplifier.

2.**Waveform generaters and simple differential equation**: Sine wave [Wein Bridge] and square wave [Astable] generators- Triangular wave generator- Monostable multivibrator- Solving simple second order differential equation. Basic Op-Amp series regulator and shunt regulator.

UNIT-II

3.Communications: Need for modulation-Types of modulation- Amplitude, Frequency and Phase modulation.

4.**Amplitude modulation**-side bands, modulation index,square law diode modulator, Demodulation-,diode detector.

5.**Frequency modulation:** working of simple frequency modulator- Ratio detection of FM waves- Advantages of frequency modulation.AM and FM radio receivers [block diagram approach].

Reference Books:

1. *Electronic Devices and Circuits-Millman and Halkias- Tata Mc Graw Hill (TMH)*
1. Microelectronics- J. Millman and A. Grabel - TMH

1Operational Amplifiers and Linear Integrated Circuits- Ramakant A. Gayakwad- Prentice Hall of India (PHI).

2. Operational Amplifiers and Linear Integrated Circuits- K. Lalkishore - Pearson Education
3. Analog Electronics- L.K. Maheswari and M.M.S. Anand- PHI
4. Applied Electronics- R.S.Sedha- S Chand &Co
5. Principles of Electronics- V.K. Mehta and Rohit Mehta - S Chand &Co
6. A first Course in Electronics – A.A.Khan & K.K. Dey - PHI
7. Electronic Communication Systems - George Kennedy & Bernard Davis - TMH.
8. Electronic Communication -D. Roddy & J. Coolen- PHI
9. Principles of Electronic Communication Systems –Louis E. Frenzel –TM

B.Sc ELECTRONICS MODIFIED SYLLABUS (2012-2013)

FIFTH SEMESTER

Paper V: Digital Electronics

UNIT – I :

Introduction to number systems,Logic gates OR,AND,NOT,X-OR,NAND,NOR gates – Truth tables – Positive and negative logic –Logic families and their characteristics – RTL,DTL,ECL,TTL and CMOS – Universal building blocks NAND and NOR gates,Laws of Boolean algebra De Morgan's Theorems – Boolean identities – simplification of Boolean expressions – Karnaugh Maps – Sum of Products(SOP) and Product of Sums(POS).

UNIT – II:

Combinational and Sequential circuits:Multiplexer and De-Multiplexer – Decoder, Half adder,Full adder and parallel adder circuits.Flip flops – RS,D,JK and JK Master – Slave(working and truth tables) – semi conductor memories – Organization and working – synchronous and asynchronous binary counters ,Up/Down counters – Decade counter(7490) – working, truth tables and timing diagrams.

Reference Books:

1.Digital Principles and Applications –Malvino & Leach – TMH

2. Digital Fundamentals – F.Loyd & Jain – Pearson Education
3. Modern Digital Electronics – R.P Jain –TMH
4. Fundamentals of Digital Circuits – Anand Kumar – PHI
5. Digital Systems – Rajkamal – Pearson Education
6.Digital Electronics – J.W.Bignel & Robert Donova – Thomson Publishers(Indian 5th Ed)

FIFTH SEMESTER

Paper VI :Embedded Systems

UNIT – I:

The 8051 Microcontroller

Introduction to Microcontollers and Embedded Systems: Overview and block diagram of 8051.Architecture of 8051. Program counter and memory organization. Data types and directives,Flag bits and PSW Register , Register banks and stack;Pin diagram,port organization,I/O Programming,Bit manipulation.Interrupts and timer.

UNIT – II:

Addressing modes,instruction set and assembly language programming of 8051 Adderssing modes and accessing memory using various addressing modes. Instruction set:Arithmetic,Logical,single bit,Jump,Loop and call Instructions and their usage.

Time Delay Generation and calculation;timer/counter programming.Programming examples:Addition,multiplication,subtraction,division,arranging a given set of numbers in ascending/ descending order, picking the smallest/largest number among a given set of numbers,Accessing a specified port terminal and generating a rectangular wave form.

Reference Books:

1. Microcontrollers – Theory and applications by Ajay V.Deshmukh – Tata McGraw – Hill
2. The 8051 Microcontroller – architecture,programming & applications By Kenneth J.Ayala – Penram International Publishing,1995.

SIXTH SEMESTER
Paper VII :Microprocessor

UNIT – I:

Introduction to Microcomputer and Microprocessor: Intel 8085 Microprocessor – central processing unit CPU – arithmetic and logic unit ALU – timing and control unit – register organization – address,data and control buses – pin configuration of 8085 and its description. Timing diagrams – Instruction cycle , machine cycle, fetch and execute cycles.

Intruction set of 8085,instruction and data formats – classification of instructions – addressing modes.Assembly language programming examples of 8 and 16 bit addition, subtraction,multiplication and divition.Finding the largest and smallest in a data array. Programming examples using stacks and subroutines.

UNIT – II:

Interfacing peripherals and applications : Programmable peripheral interface(8255)- D/A and A/D converters and their interfacing to the Microprocessor. Stepper motor control – seven segment LED.

Reference Books:

1. Microprocessor Architecture and Programming – Ramesh S.Goanker – Penram
2. Introduction to Microprocessor – Aditya P.Mathur – TMH
3. Microprocessors and Microcontrollers Hardware ans Interfacting – Mathivannan - PHI

SIXTH SEMESTER

Paper VIII :Embedded Systems Applications

UNIT – I:

Interfacing of peripherals to Microcontroller
Interfacing of – PPI 8255,DAC,ADC.Serial communication – modes and protocols.

UNIT- II:

Applications of Embedded Systems
Temperature measurement,displaying information on a LCD,control of a stepper Motor,Interfacing a keyboard and generation different types of wave forms.

Reference Books:

1. Design with Microcontrollers By – J B Peatman –TMH.
2. Programming and customizing the 8051 Microcontroller – By Myke Predko – TMH,2003.

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

SEMESTER-1 [w.e.f. 2015-2016] **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. 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 RC 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.

D.R.W.COLLEGE (AUTONOMOUS),GUDURE

B.Sc- ELECTRONICS-SYLLABUS

SEMESTER: II

PAPER 2 -ELECTRONIC DEVICES&CIRCUITS (60 HOURS)(w. e .f. 2015-16)

Work load:60 hrs per semester 4 hrs/week

UNIT- I (12 hrs)

JUNCTION DIODES:
PN junction diode - P-N junction theory-depletion region, barrier potential, working in forward& reverse bias condition, Junction capacitance, Diode current equation (no derivation), Effect of temperature on reverse saturation current, V-I Characteristics, Zener and Avalanche Break down, Zener diode - V-I characteristics, regulated power supply using Zener diode, Varactor Diode, Tunnel Diode - Principle, Working& Applications.

UNIT- II (16 hrs)

BIPOLAR JUNCTION TRANSISTORS (BJT):
PNP and NPN transistors, current components in BJT, BJT static characteristics (Input and Output), Early effect, CB,CE,CC Configurations (Cut-off, Active and saturation regions) Determination of h-parameters from the characteristics, Concept of amplification-voltage and current amplifier.The C.E amplifier-analysis and parameters, Transistor as a switch.

UNIT - III (12 hrs)

FIELD EFFECT TRANSISTORS& UJT:
FET - Construction - Working – Drain &Transfer characteristics -Parameters of FET - FET as an amplifier -MOSFET-Enhancement MOSFET-Depletion MOSFET-Construction& Working- Drain characteristics of MOSFET -Comparison of FET&BJT and JFET &MOSFET.
UJT Construction-working, V-I Characteristics.

UNIT - IV (8 hrs)

PHOTO ELECTRIC DEVICES:
Structure and operation, characteristics, spectral response and applications of LDR, Photo Voltaic cell, Photo diode, Photo transistor .

UNIT - V (12 hrs)
POWER SUPPLIES
Rectifiers - Half wave, full wave and bridge rectifiers - Efficiency - Ripple factor – Regulation. Three terminal fixed voltage I.C regulators (78XX and 79XX) - Principle and working of switch mode power supplies (SMPS).

TEXTBOOKS
I. Electronic Devices and Circuits David A.Bell, Fifth edition. Oxford university press

2. A.P Malvino, "Principles of Electronics", TMH, 7th edition

3. T.F. Bogart, Beasley, "Electronic Devices and circuits", Pearson Education, 6th Edition

4. N.N. Bhargava, D.C Kulshreshta, and S.C Gupta ,"Basic Electronics and Linear Circuits" TMH

5. T.L.Floyd, "Electronic Devices and circuits", PHI, fifth edition

6. V.K. Metha, "Principle of Electronics", S CHAND Co. New edition

7. Godse A.P., Bakshi U.A (1st edition), Electronics Devices, Technical Publications rune.

REFERENCE BOOKS
I. Sedha R.S., A TextBook of Applied Electronics, S. Chand & Company Ltd.

2. Jacob Millman and Christos C. Halkias (2008) Integrated Electronics, Tara Mcgraw-Hill

3. Robert L. Boylestad, Louis Nashelsky (10th edition). Electron Devices and Circuit Theory, Dorling Kindersley (India Pvt. Ltd.)

4. Unified Electronics (Circuit analysis and electronic devices) by Agarwal-Arora.

ELECTRONICS LAB - 2
(ELECTRONIC DEVICES&CIRCUITS LAB)
Work load: 30 hrs per semester 2 hrs/week
(Any six experiments should be done)

1. V-I Characteristics of Junction Diode.
2. V-I Characteristics of Zener Diode.
3. Regulated Power Supply using Zener Diode
4. IC Regulated Power Supply
5. BJT input and output Characteristics (CE Configuration) and determination of h-parameters.
6. Characteristics of UJT.
7. Characteristics of JFET
8. LDR characteristics
9. Characteristics of L and π section filters using full wave rectifier.

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

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

SEMESTER – III [w.e.f. 2016-2017] **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)

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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

D.R.W COLLEGE(AUTONOMOUS),GUDUR

B.Sc- ELECTRONICS – SYLLABUS -SEMESTER: V

PAPER 5: MICROPROCESSORS (INTEL 8085) (60 HOURS)

(w.e.f-2017-18)

UNIT I(12 hrs)

ARCHITECTURE OF 8085 MICROPROCESSOR

Functional block diagrams of Intel 8085-Rigister structure-multiplexing & Demultiplexing of address / data bus – Control Signal Generation and status signals – 8085 pin-out diagram & functions – Interrupts – Priority Concept.

INSTRUCTION SET OF 8085 – Instruction set classification – addressing modes.

UNIT II (12 hrs)

MEMORY – Instruction cycle – machine cycle – T-state – Timing Diagrams for Opcode Fetch Cycle Memory Read, Memory Write, I/O Read, I/O Write – Functional explanation for RAM, ROM.

UNIT III (12 hrs)

PROGRAMMING 8085 – Addition & subtraction (16-bit), multiplication, division, largest, smallest, block data transfer (all 8-bit data), Binary to BCD, BCD to Binary, Binary to ASCII, ASCII to Binary, Stack & Subroutines Concept – time delay using single and double register & calculations – Debugging a Program.

UNIT IV (12 hrs)

INTERFACING MEMORY – 2K X 8, 4K X 8 ROM, RAM to 8085, Interfacing an I/O port in Memory Mapped I/O and I/O mapped I/O – Difference between I/O mapped and Memory Mapped I/O.

UNIT V (12 hrs)

MICROPROCESSOR APPLICATIONS – Programmable peripheral devices (8255, 8253) – Pin functions, Different Modes & Block Diagram – Keyboard and Display Interface 8279 (Architecture) – Simple temperature controller – Simple traffic light controller- stepper motor control interface.

D.R.W.COLLEGE(AUTONOMOUS),GUDUR

B.Sc- ELECTRONICS – SYLLABUS--SEMESTER: V

ELECTIVE-PAPER 6 - ELECTRONIC COMMUNICATIONS (60 HOURS)

(w.e.f-2017-18)

UNIT I(12 hrs)

BASICS OF COMMUNICATION SYSTEMS AND NOISE

Block diagram of Communication System. Types of Electronic Communication Systems: Simplex, Duplex, Analog/Digital Signals. Noise in Communication: External noise- Atmospheric, space noise, man-made noise, Internal noise- Thermal, Shot noise, Definitions and Relationship between Bit rate, Baud rate, Bandwidth and signal to noise Ratio.

UNIT II (12 hrs)

AMPLITUDE MODULATION

Need for modulation, Amplitude modulation, Modulation index, frequency spectrum, generation of AM(Balanced Modulator), Amplitude Demodulation (diode detector), other forms of AM: Double side band suppressed carrier, DSCBC generation (Balanced modulator), Single side band suppressed carrier, SSBSC generation (Filter method, phase cancellation method, third method), SSB detection.

UNIT III (12 hrs)

ANGLE MODULATION

Frequency and phase modulation, modulation index and frequency spectrum, equivalence between FM and PM, Generation of FM (Direct and Indirect methods), FM detector (Slope detector, balanced slope detector, PLL). Comparison between AM, FM and PM.

UNIT IV (12 hrs)

TRANSMITTERS & RECEIVERS

Transmitters: Communication channels for AM and FM broadcast, AM transmitter: Low level modulation, FM transmitter

Receivers: Receiver parameters, sensitivity, selectivity and fidelity, Super Heterodyne receiver, AM receivers, FM receivers. Frequency division multiplexing.

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3RD YEAR

VI SEMESTER
PAPER-VII MICRO CONTROLLER AND INTERFACING

Sub: ELECTRONICS		Year:2017 – 18	Group: B.Sc	Credits -3

TITLE: MICRO CONTROLLER AND INTERFACING

OBJECTIVES:

- To understand the concepts of microcontroller based system.
- To enable design and programming of microcontroller based system.
- To know about the interfacing Circuits.

UNIT-I: (10Hrs)
Introduction, comparison of Microprocessor and micro controller, Evolution of microcontrollers from 4-bit to 32 bit , Development tools for micro controllers, Assembler-Compiler-Simulator/Debugger.

UNIT -II: (10Hrs)
Microcontroller Architecture:
Overview and block diagram of 8051, Architecture of 8051, program counter and memory organization, Data types and directives, PSW register, Register banks and stack, pin diagram of 8051, Port organization, Interrupts and timers.

UNIT-III:(10Hrs)
Addressing modes, instruction set of 8051: Addressing modes and accessing memory using various addressing modes, instruction set: Arithmetic, Logical, Simple bit, jump, loop and call instructions and their usage. Time delay generation and calculation, Timer/Counter Programming,

Unit -IV: (15Hrs)
Assemble language programming Examples: Addition, Multiplication, Subtraction, division, arranging a given set of numbers in largest/smallest order.

UNIT-V : (15Hrs)
Interfacing and Application of Microcontroller:
Interfacing of – PPI 8255, DAC (0804), Temperature measurement (LM35), interfacing seven segment displays, displaying information on a LCD, control of a stepper Motor (Uni-Polar), Interfacing a 4*3 matrix keypad. Generation of different types of waveforms using DAC.

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3RD YEAR

Semester-V W.e.f- 2018-2019 **Paper- V**

TITLE: MICROPROCESSOR SYSTEMS

OBJECTIVES:

- To understand basic architecture of 16 bit and 32 bit microprocessors.
- To understand interfacing of 16 bit microprocessor with memory and peripheral chips involving system design.
- To understand techniques for faster execution of instructions and improve speed of operation and performance of microprocessors
- To understand RISC based microprocessors.
- To understand concept of multi core processors.

UNIT -I: (15Hrs)

CPU ARCHITECTURE

Introduction to Microprocessor, INTEL -8085(μ P) Architecture, CPU, ALU unit, Register organization, Address, data and control Buses. Pin configuration of 8085.

UNIT -II: (10 Hrs)

8086 Architecture, Evaluation of Microprocessor, Internal operation, Pin description. Instruction format, Machine language instructions, Instruction Execution timing, Addressing modes

UNIT -III: (15Hrs)

INSTRUCTION SET: Data transfer Instruction, Logical Instructions, Arithmetic Instructions, Branch Instructions, Flag Manipulation , Shift and rotate Instruction, Loop Instruction

UNIT -IV: (10Hrs)

Assembly Language Programming, Programmes for Addition, Subtraction, Multiplication , Find the largest and smallest number in an array

UNIT -V: (10Hrs)

Basic 8086 Configurations – Minimum mode and Maximum Mode, Interrupt Priority Management, I/O Interfaces: Serial Communication interfaces, Parallel Communication, Programmable timers, keyboard and display, DMA controller.

TEXT BOOKS:

1. Microcomputer Systems the 8086/8088 family – YU-Cheng Liu and Glenn SA Gibson
2. Microcontrollers Architecture Programming, Interfacing and System Design
   – **Raj Kamal** **Chapter: 15.1, 15.2, 15.3, 15.4.1**
3. 8086 and 8088 Microprocessor by Tribel and avatar singh

REFERENCES:

1. Microprocessors and Interfacing – Douglas V.Hall
2. Microprocessor and Digital Systems – Douglas V. Hall
3. Advanced Microprocessors & Microcontrollers - B.P.Singh & Renu Singh – New Age
4. The Intel Microprocessors – Architecture, Programming and Interfacing – Bary B. Brey.
5. Arm Architecture reference manual –Arm ltd.

OUTCOMES:

- The student can gain good knowledge on microprocessor and implement in practical applications
- Design system using memory chips and peripheral chips for 16 bit 8086 microprocessor.

- Understand and devise techniques for faster execution of instructions, improve speed of operations and enhance performance of microprocessors.

ELECTRONICS LAB-VI

MICROPROCESSOR LAB

LAB LIST:

1.PROGRAM TO ADD TO DECIMAL NUMBERS
2. SUBTRACTION OF TWO DECIMAL NUMBERS
3. ADD TWO WORDS IN MEMORY LOCATION AND STORE THE RESULT IN SUBSEQUENT MEMORY LOCATION
4. TO INTERCHANGE TWO WORDS FROM 4100 AND 4102 LOCATION
5. PROGRAM TO COMPUTE LOGICAL ONES IN A WORD AND STORE THE RESULT IN MEMORY
6. PROGRAM TO CONVERT TWO BCD NUMBERS IN TO HEX
7. PROGRAM TO CONVERT HEX NUMBER IN TO BCD NUMBER.
8. PROGRAM TO FIND THE SQUARE ROOT OF A GIVEN NUMBER.

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B.Sc. Electronics CBCS Syllabus w.e.f.2017-2018

3RD YEAR

Semester - V **Paper- VI**

TITLE: ANALOG AND DIGITAL COMMUNICATIONS

OBJECTIVES:

- This course provides a thorough introduction to the basic principles and techniques used in analog and digital communications.
- The course will introduce analog and digital modulation techniques.
- Communication receiver and transmitter design, baseband and band pass communication techniques, line coding techniques, noise analysis, and multiplexing techniques.
- The course also introduces analytical techniques to evaluate the performance of communication systems.

UNIT –I (10Hrs)

AMPLITUDE MODULATION:

Need for modulation, amplitude modulation-frequency spectrum of AM wave, representation of AM, power relations in the AM wave. Generation of AM - Transistor modulators. Suppression of carrier, balanced modulator, suppression of one side band- the filter method, diode detector.

UNIT –II (10Hrs)

FREQUENCY MODULATION:

Theory of FM, mathematical representation of FM, frequency spectrum of FM wave, Generation of FM signals – Reactance modulator. FM discriminators- slope, balanced slope.

UNIT –III (10Hrs)

BASIC RECEIVER CIRCUITS:

Noise-thermal, shot, noise figure, AM Transmitter, FM Transmitter, Super heterodyne Receiver block diagram, FM receiver.

UNIT –IV (12Hrs)

RADIO WAVE PROPAGATION:

PULSE MODULATION: Introduction, Sampling Theorem, TDM, FDM, PAM- Generation & Detection PWM- Generation & Detection, PPM- Generation & Detection

UNIT –V (18Hrs)

DIGITAL COMMUNICATIONS:

PCM –PCM encoder, quantization noise, S/N ratio of PCM System, relation between S/N ratio& BW, Companding, Advantages of digital over analog communications. Advantages of shift keying over digital communication, Types of shift keying, ASK – Generation & Detection, FSK – Generation & Detection, PSK – Generation & Detection.

TEXT BOOKS:

1. Electronic Communications - George Kennedy
2. Antennas and Wave Propagation – G.S.N.Raju – PHI
3. Principles of communication system –Herbert Taub & D.L.Schilling

REFERENCES:

1. Electronic Communications – Roody & Colen
2. Communication Systems – Hayken --- 4th Edition
3. Advance Electronic communication system ---Tomasi wayne
4. Modern digital and analog communication system –B.P.lathi

OUTCOMES:

On successful completion of the course students will be able to:

- The student can gain good knowledge on analog and digital communication
- Understand basic elements of a communication system
- Conduct analysis of baseband signals in time domain and in frequency domain
- Demonstrate understanding of various analog and digital modulation and demodulation techniques techniques.
- Analyse the performance of modulation and demodulation techniques in various transmission environments

ELECTRONICS LAB-VI

COMMUNICATION LAB

LAB LIST:

1. AMPLITUDE MODULATION
2. AMPLITUDE DE-MODULATION
3. FREQUENCY MODULATION
4. FREQUENCY DE-MODULATION
5. PRE-EMPHASIS CIRCUIT
6. DE-EMPHASIS CIRCUIT
7. PULSE AMPLITUDE MODULATION
8. PULSE WIDTH MODULATION.
9. PULSE POSITION MODULATION
10. PULSE CODE MODULATION

ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION
B.Sc. Electronics CBCS Syllabus

3RD YEAR

I SEMESTER
APER-VII MICRO CONTROLLER AND INTERFACING

ub: ELECTRONICS		Year:2017 – 18	Group: B.Sc	Credits -3

TITLE: MICRO CONTROLLER AND INTERFACING

OBJECTIVES:

- To understand the concepts of microcontroller based system.
- To enable design and programming of microcontroller based system.
- To know about the interfacing Circuits.

UNIT-I: (10Hrs)
Introduction, comparison of Microprocessor and micro controller, Evolution of microcontrollers from 4-bit to 32 bit , Development tools for micro controllers, Assembler-Compiler-Simulator/Debugger.

UNIT -II: (10Hrs)
Microcontroller Architecture:
Overview and block diagram of 8051, Architecture of 8051, program counter and memory organization, Data types and directives, PSW register, Register banks and stack, pin diagram of 8051, Port organization, Interrupts and timers.

UNIT-III:(10Hrs)
Addressing modes, instruction set of 8051: Addressing modes and accessing memory using various addressing modes, instruction set: Arithmetic, Logical, Simple bit, jump, loop and call instructions and their usage. Time delay generation and calculation, Timer/Counter Programming,

Unit -IV: (15Hrs)
Assemble language programming Examples: Addition, Multiplication, Subtraction, division, arranging a given set of numbers in largest/smallest order.

UNIT-V : (15Hrs)
Interfacing and Application of Microcontroller:
Interfacing of – PPI 8255, DAC (0804), Temperature measurement (LM35), interfacing seven segment displays, displaying information on a LCD, control of a stepper Motor (Uni-Polar), Interfacing a 4*3 matrix keypad. Generation of different types of waveforms using DAC.

D.R.W COLLEGE, GUDUR.

B.SC ELECTRONICS PAPER II

QUESTION PAPER MODEL

Time: 3Hours *Max.Marks:70*

Section – **A** (Essay Questions) 3×15=45 marks

Answer Any **Three** Questions with internal choice.

Section – **B** (Short Questions) 3×5=15 marks

Answer any **three** Questions out of **five** questions.

Section – **C** (Problems) 2×5=10 marks

Solved any **TWO** problems out of **four** problems.

DUVVURU RAMANAMMA WOMEN'S COLLEGE (AUTONOMOUS), GUDUR

B.Sc ELECTRONICS MODEL QUESTION PAPER

FIFTH SEMESTER

Paper V : Digital Electronics

Time: 3 hours *Max. Marks: 70*

Section-A

3×15=45Marks

Answer any Three questions:

1. Explain the logic families and their characteristics.

(Or)

Explain in detail universal building blocks of NAND gate and NOR gates.

2. Explain the Boolean laws of simplification of Boolean expressions

(or)

Explain the charecteristics of RTL and DTL.

3. Explain the following Flip flops
   (a).R-S flip flop
   (b). D flip flop
   (c).J-K flip flop.

(Or)

Explain the Half adder and full adder circuit and parallel order circuits.

SECTION –B

Answer any Three questions. $3 \times 5 = 15 Marks$

4. Explain the up down counter.

5. Explain truth table and working of Master Slave J-K flip flop.

6. Explain the Multiplexer and Demultiplexer.

7. Briefly explain the positive and negative logic cycle.

8. Explain the De-Morgan's theorem.

Section – c

$2 \times 5 = 10 marks$

Solve any Two problems.

9. Convert the following decimal number to binary number.
   (a) 225.225 (b) 1998

10. Convert octal number $(1213)_8$ to decimal equivalent

11. Convert the following to decimal equivalent $(AB6)_{16}$.

12. What is the full scale out put voltage of the 5 bit ladder?Assume that 0=0 V and 1=+10V. .

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B.Sc ELECTRONICS MODEL QUESTION PAPER

FIFTH SEMESTER

Paper VI : Embedded Systems and Applications

Time: 3 hours *Max. Marks: 70*

Section-A

3×15=45Marks

Answer any Three questions:

1. Explain the Architecture of 8051 Microcontroller.

(Or)

Explain the different types of data types and directives .

2. Explain the pin diagram of 8051 Microcontroller.

(or)

Explain the port organization of the input and output programming.

3. Explain the Addressing modes in 8051 microcontroller.

(Or)

Explain the instruction set in 8051 microcontroller.

SECTION –B

Answer any Three questions. *3×5=15Marks*

4. Explain the fkag bits.
5. Explain interrupts and timer.
6. Explain the logical instructions.
7. Briefly explain jump, loop and Call instructions.
8. Explain about Time Delay Generation and calculation.

Section – c

2×5=10marks

Solve any Two problems.

9. Write a program for addition program of 8 bitsin 8051 microcontroller.
10. Write a program for rectangular wave form by using 8051 microcontroller.
11. Write a program to find largest number amoung the given numbers.
12. What a program for ascending order.

D.R.W COLLEGE, GUDUR.

SEMESTER END EXAMINATION

QUESTION PAPER MODEL

B.Sc Electronics

Time: 3Hours *Max.Marks:70*

Section – A (Essay Questions) 3×15=45 marks

Answer Any Three Questions with internal choice.

Section – B (Short Questions) 3×5=15 marks

Answer any three Questions out of five questions.

Section – C (Problems) 2×5=10 marks

Solved any TWO problems out of four problems.

Model paper

SEMESTER-I

ELECTRONICS

Paper-I: Basic Circuit Theory (2015-16)

Time: 3 Hrs

Max. Marks: 60

PART – A

5 X 4 = 20 Marks

Answer any FIVE questions

1. Explain the operator j.
2. Explain the concept of voltage source.
3. State and explain Kirchhoff's voltage law.
4. State and prove superposition theorem.
5. Discuss the frequency response of CR circuit as high pass filter.
6. Distinguish series and parallel resonant circuits.
7. Explain the polar and rectangular forms of complex numbers.
8. Derive an expression for Q-factor of parallel circuit.

PART – B

5 X 8 = 40 Marks

Answer **ALL** questions.

9. Derive expressions for average value and RMS values of sinusoidal currents.

or

Explain the phasor diagrams by applying AC to RC and RL circuits.

10. Explain the node voltage method to find the voltages at different nodes in a circuit.

or

Explain the mesh current method for finding the currents in a mesh.

11. State and prove Thevenin's theorem.

or

State and prove Maximum power transfer theorem.

12. Discuss the transient response of a RL circuit with step excitation.

or

Explain the transient response of a RC circuit.

13. Obtain the expression for resonant frequency and Q-factor of series LCR circuit.

or

Obtain the expression for resonant frequency of parallel LCR circuit and find its band width.

Model paper
SEMESTER-I
ELECTRONICS
Paper-I: Basic Circuit Theory

Time: 3 Hrs **Max. Marks: 75**

PART – A

Answer any **FIVE** questions. 5 X 5 = 25 Marks

1. Explain the operator j.
2. Explain the concept of voltage source.
3. State and explain Kirchhoff's voltage law.
4. State and prove superposition theorem.
5. Discuss the frequency response of CR circuit as high pass filter.
6. Distinguish series and parallel resonant circuits.
7. Explain the polar and rectangular forms of complex numbers.
8. Derive an expression for Q-factor of parallel circuit.

PART – B

Answer **ALL** questions. 5 X 10 = 50 Marks

9. Derive expressions for average value and RMS values of sinusoidal currents.

   or

   Explain the phasor diagrams by applying AC to RC and RL circuits.
10. Explain the node voltage method to find the voltages at different nodes in a circuit.

    or

    Explain the mesh current method for finding the currents in a mesh.
11. State and prove Thevenin's theorem.

    or

    State and prove Maximum power transfer theorem.
12. Discuss the transient response of a RL circuit with step excitation.

    or

    Explain the transient response of a RC circuit.
13. Obtain the expression for resonant frequency and Q-factor of series LCR circuit.

    or

    Obtain the expression for resonant frequency of parallel LCR circuit and find its band width.

MODEL QUESTION PAPER

ELECTRONICS-SEMESTER II-PAPER II

ELECTRONIC DEVICES AND CIRCUITS

TIME:3Hrs Max.marks:60

Section-A

Answer the following **5*8=40**

1.(A) Breifely explain about construction,working and applications of Tunnel diode.

(or)

(B) Write a short note on zenor diode.

2.(A)Explain the fixed bias circuit in BJT.

(or)

(B)Explain about complete hybride equivalent model of bipolar junction transistor.

3.(A)Write about the construction, operation and characteristics of JFET.

(or)

(B)Explain the structure and working of SCR.

4.(A)Explain about the light emitting diodes.

(or)

(B)Explain about the opto isolaters

5.(A)Write about the Half wave rectifier

(or)

(B)Explain the principle and working of switch mode power supply.

Section-A

Answer any five of the following **5*4=20**

6.Explain the depletion region in pn –junction diode.

7.How the transistor will act as a switch.

8.Write about the applications of SCR.

9.Explain the photo diode in photo electric devices.

10.Briefely describe the three terminal voltage regulaters.

11.Explain about the junction capacitance of a pn-junction diode.

12.Explain about the ujt as a relaxation oscillator.

13.Write the applications of LDR.

Model paper

Semester –III

PAPER-III:DIGITAL ELECTRONICS (2016-17)

TIME:3HRS MAX.MARKS:60

PART-A

ANSWER ALL QUESTIONS 5X8=40

1 .(a)Explain any two code conversions and give each one example.

(or)

(b)Write the conversion octal and hexademal and take each one example.

2.(a)write the Boolean laws and explain the de-morgans theorems.

(or)

(b)Write the 3,4 minimization techniques of karnaugh map.

3.(a)construct the TTL AND DTL.

(or)

(b) Briefely explain the multiplexer and de-multiplexer

4.(a)write JK ,R-S FLIP-FLOP'S and explain with their truth tables

(or)

(b) Explain the synchronous and asynchronous counters

5.(a)explain static and dynamic memories.

(or)

(b) Explain the working procedure of EEPROM AND EPROM

ANSWER ANY FIVE QUESTIONS. 5X4=20

1.convert the following numbers from decimal to binary

(a) 235.25 (b)167

2.write the standared representation of logic functions sop and pos

3explain construction and working of full adder.

4.explain the working of shift left register.

5.write and explain the PLA.

6.Subtract 11100 from 10011 by using 2's complement.

7.explain the universal nand and nor gates.

8.construct the parallel binary adder.

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B.Sc. Electronics MODEL PAPER

3RD YEAR (2018-19)

Semester-V Paper- V

TITLE: MICROPROCESSOR SYSTEMS

SECTION-A

TOTAL:60M

Answer the following: 5x8=40M

1.(a)Explain the functional block diagram of 8085 microprocessor.

(or)

(b) Draw and explain the pinout diagram of 8085 microprocessor.

2.(a) Draw the architecture of 8086 microprocessor and explain the function of each block.

(or)

(b). Explain the addressing modes of 8086 microprocessor.

3.(a) Explain about Arithmetic and Logical instructions.

(or)

(b). Explain about BIT MANIPULATION and branch instructions.

4.(a) Write an assembly language program to find the largest element from the given array of elements.

(or)

(b). Write an assembly language program for MULTIPLICATION of two numbers.

5.(a) What is an interrupt? Explain about interrupt priority management.

(or)

(b) What is DMA? Explain about DMA controller.

SECTION-B

Answer any FIVE of the following: 5x4=20M

6. Describe the flag register of 8085.
7. Explain about address, data and control buses.
8. Write about instruction format of 8086.
9. Explain the evaluation of 8086 microprocessor.
10. Write short notes on shift and rotate instructions.
11. Explain about Flag manipulation instructions.
12. Write an assembly language program for addition of two numbers.
13. Write an assembly language program for multiplication of two numbers.

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B.Sc. Electronics Model Paper

3RD YEAR

Semester - V **Paper- VI**

TITLE: ANALOG AND DIGITAL COMMUNICATIONS

SECTION-A **max.marks :60**

Answer the following: **5x8=40M**

1. (a)Define amplitude modulation and explain about frequency spectrum of AM wave.

(or)

(b)Explain about Suppression of one side band using phase shift method.

2.(a) What is Frequency Modulation? Explain the mathematical analysis of FM wave.

(or)

(b) Explain how FM signals are generated using reactance modulator.

3.(a)Draw and explain the block diagram of a superhetrodyne receiver-AM

(or)

(b)Discuss about the construction and working of Balanced slope detector.

4.(a)Explain the block diagram of PAM and briefly explain each block.

(or)

(b) Explain about Time Division Multiplexing (TDM).

5.(a)Explain the block diagram of PCM in detail.

(or)

(b)Discuss briefly about PHASE shift keying(PSK) .

SECTION-B

Answer any FIVE of the following: **5x4=20M**

6.Explain about need for modulation.

7. Obtain the power relations in AM wave.

8.Define the following terms in FM wave

9.Explain the frequency spectrum of FM wave.

10. Explain the parameters: Selectivity and Sensitivity of a radio receiver.

11. What is the principle involved in a superhetrodyne receiver.

12. Explain about the concept of noise.

13. Explain about the generation of Pulse Position Modulation (PPM)