DEPARTMENT OF PHYSICS AND ELECTRONICS

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COURSE OUTCOMES of ELECTRONICS

BASIC CIRCUIT THEORY

Course Outcomes

On successful completion of this course, students will be able to

CO1: Understand sinusoidal voltage, rms value, average value calculations and AC applied to LR and CR circuits.

CO2: Gain knowledge on Kirchoff's laws and solving circuits using loop current and Node voltage methods.

CO3: Apply Thevenin's, Norton's, Maximum power, Superposition theorems on networks.

Co4: Gain knowledge on transient response in LR and CR circuits and using LR and CR circuits as low pass and High pass filters.

CO5: Study the resonance curves of LCR series and Parallel circuits and resonance phenomena in LCR series and parallel circuits.

PRACTICAL Course Outcomes:

On successful completion of this Practical Course, students will be able to

CO1: Measure A.C, D.C voltages and frequency of AC signal using CRO.

CO2: Verify Thevenin's theorem.

CO3: Verify Norton's theorem.

CO4: Determine the Cutoff frequency of CR circuit as High pass and Low pass filter.

CO5: Determine the Cutoff frequency of LR circuit as High pass and Low pass filter.

CO6: Determine the resonance frequency and Q- factor of series LCR circuit.

ELECTRONIC DEVICES AND CIRCUITS

Course Outcomes

On successful completion of this course, students will be able to

CO1: Understand the operation of p-n junction diode in forward and reverse biases, characteristics of p-n junction diode, operation of Zener diode and its characteristics, voltage regulator using Zener diode, working of Tunnel diode and varactor diode.

CO2: Gain knowledge on working of NPN and PNP transistors and their characterstics in CE, CB and CC configurations.

CO3:Understand the construction, working of JFET and MOSFETs and their characteristics.

Co4: Gain knowledge on structure, working, characteristics of Photovoltaic cells, photo diode, LED and LCD.

CO5: Design half wave, full-wave rectifiers, Design voltage regulators for powe supplies.

PRACTICAL Course Outcomes:

On successful completion of this Practical Course, students will be able to

CO1: Draw the V-I characteristics of p-n junction diode.

CO2: Determine the breakdown voltage of the given Zener diode.

CO3: Design voltage regulator with Zener diode.

CO4: Determine the h- parameters of the given transistor.

CO5: Determine the Pinch-off voltage and I_{DSS} of FET.

CO6: Draw the LDR characteristics.

DIGITAL ELECTRONICS

Course Outcomes

On successful completion of this course, students will be able to

CO1: Understand the number systems, their inter conversion, addition and subtraction of numbers in various number systems and code conversions.

CO2: Gain knowledge on the working of logic gates, obtain the fundamental gates using NAND and NOR gates, design circuits with SOP and POS methods and drawing Karnaugh map.

CO3: Understand the construction and working of Half and Full adders, Multiplexeers, Decoders, Encoders and IC logic families.

Co4: Understanding the working of various Flip-Flops.

CO5: Gain knowledge on RAM, ROM, ROM, PROM, EPROM and PLA and PAL.

PRACTICAL Course Outcomes:

On successful completion of this Practical Course, students will be able to

CO1: Verify the truth tables of the logic gates.

CO2: Realize the fundamental gates with Universal logic gates.

CO3: Design Half and Full adders

CO4: Verify the operations of RS and JK Flip-flops.

CO5: Design 4 bit parallel adder.

CO6: Design BCD to 7-segment decoder.

ANALOG AND DIGITAL ELECTRONICS

Course Outcomes

On successful completion of this course, students will be able to

CO1: Understand the internal blocks, characteristics, applications and parameters of Op-amp.

CO2: Gain knowledge on Op- amp circuits Voltage regulator, multivibrators, comparators, triangular wave generators, sine wave generators, high pass and low pass filters.

CO3: Gain knowledge on the internal block diagram of 555 and its applications as multivibrators.

Co4: Design the code converters, counters using state machine and universal shift register.

CO5: Gain knowledge on different methods of A/D and D/A conversion procedures and their circuits.

CO6: Understand the design of Digital clock

PRACTICAL Course Outcomes:

On successful completion of this Practical Course, students will be able to

CO1: Desin Inverting and Non- inverting amplifiers using Op-amps..

CO2: Design Integrator and Differentiator using Op-amps..

CO3: Design Voltage to current converter using Op-amp.

CO4: Design a sine wave generator.

CO5: Design adder/Subtractor using Op-amp.

CO6: Design Astable multi vibrator using 555.

MICROPROCESSORS

Course Outcomes

On successful completion of this course, students will be able to

CO1: Understand the internal blocks, pins, addressing modes, interrupt signals of 8085 microprocessor.

CO2: Gain knowledge on Timing diagrams of Memory Read, Memory Write, I/O Read, I/O Write and Opcode fetch cycle.

CO3: write programs for 8 bit addition,/subtraction, 16 bit addition, picking a largest/smallest number from an array using 8085 instruction set.

Co4: Interface 2K RAM and ROM to 8085 microprocessor.

CO5: Gain knowledge on the internal blocks of 8255, 8279 and interfacing of stepper motor with 8085 microprocessor.

PRACTICAL Course Outcomes:

On successful completion of this Practical Course, students will be able to

CO1: Write an ALP to add two 8 bit numbers with carry.

CO2: Write an ALP to add two 16 bit numbers with carry.

CO3: Write an ALP to subtract two 8 bit numbers with carry.

CO4: Write an ALP to pick up largest number from an array.

CO5: Write an ALP to pick up largest number from an array.

CO6: Write an ALP for Binary to BCD conversion.

CONSUMER ELECTRONICS

Course Outcomes

On successful completion of this course, students will be able to

CO1: Understand the internal blocks, Types and care & clean of Microwave ovens.

CO2: Gain knowledge types of washing machines, fuzzy logic and features of washing machines.

CO3: Understand the components of air conditioning systems, Unitary and central air conditioning systems and Split air conditioners.

Co4: Gain knowledge on facsimile machine, Xerox copier, structure of calculator and internal blocks of digital clock.

CO5: Gain knowledge on digital computer, internet access, online ticket system, barcode scanner, electronic fund transfer etc.

PRACTICAL Course Outcomes:

On successful completion of this Practical Course, students will be able to

CO1: Study of PA systems for various situations - Public gathering, closed theatre /Auditorium, Conference room, Prepare Bill of Material (Costing)

CO2: Installation of Audio /Video systems - site preparation, electrical requirements, cables and connectors

CO3: Market Survey of Products (at least one from each module)

CO4: Identification of block and tracing the system. Assembly and Disassembly of system using Toolkit

CO5: Assembly and Disassembly of system& printer

MICROCONTROLLER AND INTERFACING

Course Outcomes

On successful completion of this course, students will be able to

CO1: Gain knowledge on the evolution of microcontrollers, development tools, assemblers, compilers and debuggers.

CO2: Understand the architecture, pins of 8051 microcontroller and memory organization.

CO3: Gain knowledge on Addressing modes, instruction set and Timer/Counter programming.

Co4: write programs for 8 bit addition,/subtraction, 16 bit addition, picking a largest/smallest number from an array using 8051 instruction set.

CO5: Gain knowledge on the interfacing of 8255 , DAC, ADC, Stepper motor with 8051 microcontroller.

PRACTICAL Course Outcomes:

On successful completion of this Practical Course, students will be able to

CO1: Write an ALP to add two 8 bit numbers with carry.

CO2: Write an ALP to add two 16 bit numbers with carry.

CO3: Write an ALP to subtract two 8 bit numbers with carry.

CO4: Write an ALP to pick up largest number from an array.

CO5: Write an ALP to pick up largest number from an array.

CO6: Interface stepper motor with 8051.

EMBEDDED SYSTEMS DESIGN

Course Outcomes

On successful completion of this course, students will be able to

CO1: Gain knowledge on the design challenges, processor technology and design technology.

CO2: Understand the combinational and sequential logic of Custom single processor and design of custom single processor.

CO3: Understand the basic architecture of General purpose processor, ASIPs, Host and target machines, debugging techniques.

Co4: Gain knowledge on RTWA for embedded systems, pulsewidth modulators, LCD controllers, Keypad controllers, Stepper motor controllers, A/D converters and RTC.

CO5: Understand the advanced communication principles in serial communication, wireless, I2C, CAN and USB protocols, PCI BUS, ARM BUS, Bluetooth and IEEE wireless protocols.

ANALOG AND DIGITAL COMMUNICATION

Course Outcomes

On successful completion of this course, students will be able to

CO1: Understand the need for modulation, frequency spectrum of AM, transistor modulators, suppression of carrier, balanced modulator.

CO2: Understand the theory of FM, narrow band and wide band FM, power and side bands and generation of FM with Reactance modulator.

CO3: Gain knowledge on internal blocks Super heterodyne receiver , FM receiver and Ratio detector.

Co4: Gain knowledge on Pulse modulation, sampling theorem, PAM generation and detection.

CO5: Gain knowledge on PCM, ASK generation, detection, FSK generation and detection.

PRACTICAL Course Outcomes:

On successful completion of this Practical Course, students will be able to

CO1: Design Amplitude modulator.

CO2: Design Demodulator

CO3: Generate FM signal

CO4: Design FM detector

CO5: Generate PAM

CO6: Generate PWM

POWER ELECTRONICS

Course Outcomes

On successful completion of this course, students will be able to

CO1: Gain knowledge on Power diodes, SCR characteristics, designing SCR control circuits.

CO2: Understand Diac, Triac and IGBTs structure, characteristics and Power BJT.

CO3: Understand the basic chopper circuits, different types of choppers.

Co4: Gain knowledge on Power inverters, need for commutating circuits, DC link inverters, parallel capacitor commutated inverters, series inverters and bridge inverters.

CO5: Explain the principle and operation of DC motor, EMF equation, Thristor based speed control of DC motors

PRACTICAL Course Outcomes:

On successful completion of this Practical Course, students will be able to

CO1: Study of I-V characteristics of DIAC

CO2: Study of I-V characteristics of a TRIAC

CO3: Study of I-V characteristics of a SCR

CO4: . DC motor control using SCR.

CO5: . AC voltage controller using TRIAC with UJT triggering.

CO6: 10. VI Characteristic of MOSFET and IGBT (Both)

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