B.Sci. Electronics – revised 2017-18 onwards colleges

Annexure No: 28A

SCAA Dated: 03.07.2017

BHARATHIAR UNIVERSITY, COIMBATORE

B.Sci. Electronics Degree Course

Scheme of Examination (CBCS PATTERN)(REVISED)

For candidates admitted during the Academic Year 2017-2018 and onwards

<p>| SEM | Part | Sub Code | Subject and Paper | Instruction Hrs./Week | Examinations | | | | |
|-----|------|----------|------------------|-----------------------|--------------|---|---|---|
| I   | I    | I        | Language -I      | 6                     | 3            | 25 | 75 | 100 | 4  |
|     |      | II       | English – I      | 6                     | 3            | 25 | 75 | 100 | 4  |
|     |      | III      | Core :           |                       |              |     |     |     |    |
|     |      |          | Paper I : Basic Electronics | 5 | 3 | 25 | 75 | 100 | 4 |
|     |      |          | Pract. I Basic Electronics Lab | 3 | - | - | - | - | - |
|     |      |          | Pract. II Semiconductor devices Lab | 3 | - | - | - | - | - |
|     |      | IV       | Allied : I Mathematics –I | 5 | 3 | 25 | 75 | 100 | 4 |
|     |      |          | Environmental Studies # | 2 | 3 | - | 50 | 50 | 2 |
| II  | I    |          | Language - II    | 6                     | 3            | 25 | 75 | 100 | 4  |
|     |      | II       | English - II     | 6                     | 3            | 25 | 75 | 100 | 4  |
|     |      | III      | Core             |                       |              |     |     |     |    |
|     |      |          | Paper II : Materials Science and Semiconductor Devices | 5 | 3 | 25 | 75 | 100 | 4 |
|     |      |          | Pract. I Basic Electronics Lab | 3 | 3 | 40 | 60 | 100 | 4 |
|     |      |          | Pract. II Semiconductor devices Lab | 3 | 3 | 40 | 60 | 100 | 4 |
|     |      | IV       | Allied : II Mathematics – II | 5 | 3 | 25 | 75 | 100 | 4 |
|     |      |          | Value Education – Human Rights # | 2 | 3 | - | 50 | 50 | 2 |
| III | III  |          | Core             |                       |              |     |     |     |    |
|     |      |          | Paper III : Principles of Communication Systems | 4 | 3 | 25 | 75 | 100 | 4 |
|     |      |          | Paper IV : Digital Principles and Applications | 4 | 3 | 25 | 75 | 100 | 4 |
|     |      |          | Paper V : Electronic Circuits | 4 | 3 | 25 | 75 | 100 | 4 |
|     |      |          | Pract. III. Electronics circuits &amp; Communication lab | 3 | - | - | - | - | - |
|     |      |          | Pract. IV Digital Electronics &amp; Microprocessor Lab | 3 | - | - | - | - | - |
|     |      | IV       | Allied : III Programming in C | 4 | 3 | 20 | 55 | 75 | 3 |
|     |      |          | Pract. V Computer Programming Lab | 3 | - | - | - | - | - |
|     |      |          | Skill based Subject I: Computer oriented office automation | 3 | 3 | 20 | 55 | 75 | 3 |
|     |      |          | Tamil @ / Advanced Tamil# (OR) | 2 | 3 | - | 50 | 50 | 2 |</p>
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@ No University Examinations. Only Continuous Internal Assessment (CIA)
# No Continuous Internal Assessment (CIA). Only University Examinations.
* for Project report 120 marks and viva-voce 30 marks.

List of Elective papers (Colleges can choose any one of the paper as electives)

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BASIC ELECTRONICS

Subject Description: This subject is the introductory for electronics; it presents the basic components theorems, devices and circuit.

Goals: Enable the students to learn the basics of Electronics

Objectives: Upon completion of the subject, the student should understand the Basic components and its operations Gain knowledge about Electric and Electronic circuits and Network theorems.

UNIT I ELECTRICITY


UNIT II CAPACITORS and INDUCTORS


UNIT III CIRCUIT CONCEPTS


UNIT IV NETWORK THEOREMS


UNIT V AC CIRCUITS


TEXT BOOK:

Reference books:
MATERIAL SCIENCE AND SEMICONDUCTOR DEVICES

Subject Description: This subject is the introductory for electronic devices, it presents the basic components devices and circuits

Goals: Enable the students to learn the basics of Electronic devices

Objectives: Upon completion of the subject, the student should understand the Basic components and its operations Gain knowledge about Electric and Electronic circuits and devices

UNIT I SEMICONDUCTOR MATERIALS AND DIODE

UNIT II SPECIAL DIODES
Zener diode - VI Characteristics – Breakdown - Backward diode - Varactor diode - Steppedrecovery diode - Point contact diode - Scott key diode - Tunnel diode - Gunn diode - IMPATT diode – TRAPATT diode - PIN diode - PNPN diode.

UNIT III BJT

UNIT IV FET AND UJT
Introduction to FET - Construction and operation of N-channel JFET - Drain characteristics - Comparison of JFET & BJT - Introduction to MOSFET - Enhancement MOSFET – Depletion MOSFET - FET as a voltage variable Resistor(VVR) - Introduction to UJT – Characteristics – UJT as relaxation oscillator - Introduction to PUT – SCR – TRIAC – DIAC

UNIT V OPTOELECTROIC DEVICES

TEXT BOOK:
2. S. L. Kakani, K. C. Bhan Dai “A TEXT BOOK OF ELECTRONICS”.
BASIC ELECTRONICS LAB (Any 16 Experiments)

1. Study of Multimeter – Checking of components.
2. Measurement of Amplitude, Frequency & Phase difference using CRO.
3. Verification of Ohm’s Law.
5. Resistance in series, parallel and series – Parallel.
6. Voltage and Current dividers
7. Verification of Kirchoff’s Law.
8. Verification of Norton’s theorem.
9. Verification of Thevenin’s Theorem.
10. Verification of Millman’s Theorem.
12. Verification of Superposition Theorem.
13. Measurement of resistance and capacitance in series and parallel
15. Parallel resonance circuit.
17. Verification of Maximum power transfer Theorem
SEM – I & II

SEMICONDUCTOR DEVICES LAB
(Any 16 Experiments)

2. V-I Characteristics of Zener Diode.
3. Transistor Characteristics of CE Configuration.
4. Transistor Characteristics of CB Configuration.
5. Transistor Characteristics of CC Configuration.
6. Clipping Circuits.
7. Clamping Circuits.
10. V-I Characteristics of JFET.
11. V-I Characteristics of UJT.
12. UJT as Oscillator.
13. FET as Voltage Variable Resistor (VVR).
14. Characteristics of LDR.
15. Characteristics of Solar Cell.
16. Study of IR (Tx & Rx).
17. Study of 7 Segment display.
18. Temperature Co-efficient of Junction Diode.
PRINCIPLES OF COMMUNICATION SYSTEMS

Subject Description: An important consideration in the design of the subject is to provide knowledge about communication medium, transmitter, receiver and modulation techniques.

Goals: Enable the students to learn the basic principles used in communication systems.

Objectives: After successful completion of the course the students should understand the concepts and techniques in communication systems.

UNIT I MODULATION TECHNIQUES


UNIT II TRANSMITTERS


UNIT III RECEIVERS


UNIT IV ANTENNA


UNIT V PROPAGATION OF RADIO WAVE

Reflection and refraction of radio waves: Reflection of radio waves at the surface of the earth – Ground or surface wave propagation – Space wave propagation – Sky wave propagation – Structure of Ionospheric Layer – Skip distance – Maximum Usable Frequency (MUF).

TEXT BOOKS

DIGITAL PRINCIPLES AND APPLICATIONS

Subject Description: The design of the subject is to impart the knowledge about code conversion, Boolean algebra, logic gates, combinational and sequential logic, and converters.

Goals: Enable the students to design the logical circuits

Objectives: Upon Completion of the subject, the student should be able to Convert one Number system to another number system, Construct truth tables for logic gates, Simplify Boolean expression, Write VHDL coding for logic circuits

UNIT I NUMBER SYSTEM AND CODES

UNIT II BOOLEAN ALGEBRA AND LOGIC GATES

UNIT III COMBINATIONAL LOGIC CIRCUITS

UNIT IV SEQUENTIAL LOGIC CIRCUITS

UNIT V D/A AND A/D CONVERTERS
Digital to Analog converters: Resistive divider type and Ladder type – Accuracy and Resolution. Analog to Digital converters: Counter – Ramp type – simultaneous conversion – Dual slopetype – Successive approximation type – Accuracy and resolution.

TEXT BOOKS
ELECTRONIC CIRCUITS

Subject Description: This subject describes the classification and operation of amplifiers, oscillators, rectifiers, and filter circuits.

Goals: Enable the students to become an electronic technician and circuit designer.

Objectives: Upon completion of the subject, the student should be able to design and troubleshoot the amplifiers, oscillators, power supply, and filters.

UNIT I RECTIFIERS AND REGULATORS

UNIT II SMALL SIGNAL AMPLIFIERS

UNIT III POWER AMPLIFIERS
Operation and graphical representation of Class A, Class B, Class C and Class AB amplifiers – Maximum collector efficiency of class A power amplifier – Collector dissipation curve – Harmonic distortion – Class B push pull amplifier – Crossover distortion – Complementary symmetry push pull amplifier.

UNIT IV FEEDBACK AMPLIFIERS
Basic concepts of feedback – Positive feedback – Negative feedback – Effects of negative feedback on gain, bandwidth, and distortion – Noise – Voltage series feedback - Voltage shunt feedback – Current series feedback – Current shunt feedback.

UNIT V OSCILLATORS AND MULTIVIBRATORS

TEXT BOOK
COMPUTER ORIENTED OFFICE AUTOMATION

Subject Description: This paper deals with the basics of MS office.
Goal: To learn about the basic concepts of MS word, MS excel and Power point

Unit I (9 hrs) BASICS OF COMPUTER

Unit II (9 hrs) MS WORD

Unit III (9 hrs) MS EXCEL:
Creating worksheet - entering and editing text, numbers, formulas - saving – Excel functions modifying worksheet range selection copying and moving data - defining names - inserting of deleting rows of columns - moving around worksheet naming worksheet, copying inserting of deleting worksheet - formatting, gauging, heading displaying value- changing of selecting fonts, protesting data using style so templates - reprinting worksheet creating charts - managing date - what if tables pate tables wraps, macros, linking worksheets.

Unit IV (9 hrs) MS POWER POINT
Creating a presentation : Setting presentation style - Adding Text to the presentation. Formatting a presentation: Adding style - Color, gradient fills - Arranging objects – Adding Header & Footer - Slide Background - Slide layout. Adding Graphics to the presentation: Inserting pictures, movies, tables, etc into the presentation - Drawing Pictures using Draw. Adding effects to the presentation: Setting Animation & transition effect - Adding audio and video

Unit V (9 hrs) MS Access

Text Books:
1. Step by Step 2007 Microsoft Office System (W/CD) by Curtis Frye, Joyce Cox, Steve Lambert
2. Microsoft Office Word 2007 Plain & Simple by Jerry Joyce & Marianne Moon
4. Microsoft Office Powerpoint 2007 Plain & Simple Nancy Muir
8085 MICROPROCESSOR INTERFACING & ITS APPLICATIONS

Subject Description: This subject presents the architecture, Programming in 8085ALP and real world applications of the 8085 microprocessor

Goals: To enable the students to learn the instruction set, programming, and interfacing concepts of 8085 microprocessor

Objectives: On successful completion of the course the students should have: Developed the programming skills in 8085ALP Understood the interfacing concept memory, & I/O devices. Understood the concept of microprocessor based system design

UNIT I MICROPROCESSOR ARCHITECTURE
Microprocessor architecture and its operation – Memory map of 1k memory chip – memory and instruction fetch – 8085 micro processing unit – Bus timing – Demultiplexing the bus AD7 – AD0 – Generating control singles – Functional Block diagram of 8085.

UNIT II TIMINGS AND INSTRUCTION SET
Decoding and Execution of an instruction – 8085 based microcomputer – Timing of the memory write cycle and read cycle – Opcode fetch cycle timing – Instruction classification – Instruction format – addressing modes - Data transfer operations – arithmetic operations – Logical operations – Branch operations – Looping, counting and indexing – addition, subtraction of 8 and 16 bit numbers – Time delay program.

UNIT III INTERFACING CONCEPTS

UNIT IV PERIPHERALS
The 8255A Programmable peripherals interface: Block diagram of 8255A, Mode 0 Simple i/p or o/p BSR mode, Programming the 8255A in mode 1, mode 2 – Bidirectional data transfer – The 8259 Programmable Interrupt Controller – Block diagram of 8253 – Direct Memory access and the 8257 DMA Controller – 8279 Keyboard/Display Interfacing.

UNIT V APPLICATIONS

TEXT BOOKS
IC’S AND INSTRUMENTATION

Subject Description: The design of the subject is to impart the knowledge on IC fabrication, Timer, PLL, Op-amp., transducers and electronic instruments.

Goals: Enable the students to acquire the knowledge of IC fabrication, and its application in electronic circuits and know the measurements using electronic instruments.

Objectives: Upon Completion of the subject, the student should: Understand the IC fabrication, Design circuits with ICs and Gain knowledge about electronic instruments.

UNIT I IC FABRICATION TECHNOLOGY

UNIT II TIMER AND PLL

UNIT III OPERATIONAL AMPLIFIER

UNIT IV TRANSUDERS

UNIT V ELECTRONIC INSTRUMENTS

TEXT BOOKS
BIO-MEDICAL INSTRUMENTATION

**Subject Description:** The design of the subject is to impart the knowledge on Biomedical Equipments like Biopotential Recorders, Pacemakers, Diathermy equipments and biotelemetry

**Goals:** Enable the students to acquire the knowledge on diagnostic and therapeutic equipments in the field of Biomedical Instrumentation

**Objectives:** Upon Completion of the subject, the student should: Understand the knowledge about Biomedical Equipments

**UNIT I**

**UNIT II**

**UNIT III**

**UNIT IV**
Pacemakers – energy requirements to excite heart muscle – methods of stimulation – different modes of operation – pacemaker batteries – artificial heart valves – different natural heart valves – different types of artificial heart valves – defibrillators – different types of defibrillators – heart lung machine

**UNIT V**

**TEXT BOOKS**
ELECTRONIC CIRCUITS & ELECTRONIC COMMUNICATION LAB

(Any 16 Experiments)

ELECTRONIC CIRCUITS

1. DC regulated power supply using Zener diode
2. Voltage doubler
3. Feedback amplifier
4. Emitter follower
5. Transformer coupled amplifier
6. Hartley Oscillator
7. Colpitts oscillator
8. Phase shift Oscillator
9. Wein Bridge oscillator
10. RC coupled amplifier
11. Half wave and full wave rectifier
12. Filter circuits

ELECTRONIC COMMUNICATION

13. Performance of IF Amplifier
14. AM Modulation and Detection
15. FM Modulation and Detection
16. PAM modulation
17. PIN diode oscillator
18. Alignment of dish antenna
19. Alignment of satellite receiver
20. PWM modulation
21. PPM modulation
22. PCM modulation
23. GUNN diode oscillator
DIGITAL & MEDICAL ELECTRONICS LAB
(Any 16 Experiments)

DIGITAL ELECTRONICS
1. Verification of basic gates and universal gates
2. Verification of Demorgan’s Theorem
3. Half adder and full adder & Half subtractor and full subtractor
4. Decade counter & BCD counter
5. Study of Flip Flops
6. Multiplexer and De multiplexers
7. Encoder and Decoder
8. BCD to 7-segment Display
9. Design and Simulation of Logic Gate using VHDL Coding
10. Design and Simulation of Adder Circuits using VHDL Coding

8085 MICROPROCESSOR LAB
1. Addition / subtraction/ Multiplication / division of 8 bit data.
2. Block data transfer and Sum of N 8 bit numbers
3. To arrange in ascending / descending order.
4. UP/DOWN counter using 7 segment displays.
5. Traffic light control interface.
7. Solid State Relay Interface
8. Data transfer using 8255 (PPI).
10. Interfacing ADC / DAC with 8085
PC HARDWARE

SUBJECT DESCRIPTION : This Subject deals with the Architecture and Design of a Personal Computer and Related Peripherals.

GOAL : To enable the student to get a detailed knowledge of all the hardware components of a personal computer and different interfaces.

OBJECTIVES : To Introduce Issues Related to CPU and Memory. To Understand the Components on the Motherboard. To Understand Different Storage Media

UNIT-I HARDWARE & MOTHER BOARD ORGANIZATION OF IBM PC

UNIT-II DRIVER

UNIT-III PERIPHERALS

UNIT-IV I/O BUSES & PORTS

UNIT-V TROUBLESHOOTING

TEXT BOOKS :

REFERENCE BOOKS :
8051 MICROCONTROLLER AND ITS APPLICATIONS

Subject description: This subject deals with the introduction to microcontroller 8051, Internal peripherals, simple programs & Applications.

Goal: To introduce the microcontroller 8051

Objective: To study the architecture of 8051, instruction set and addressing modes of 8051, To develop skill in program writing & introduce commonly used peripherals for simple applications.

UNIT I  MICROCONTROLLER OVERVIEW

UNIT II ADDRESSING MODES, ARITHMETIC & LOGICAL INSTRUCTION

UNIT III DATA TRANSFER AND BRANCH OPERATIONS

UNIT IV PERIPHERALS

UNIT V INTERFACING

TEXT BOOKS:

REFERENCE BOOK:
VISUAL PROGRAMMING

Subject Description: The subject presents windows programming, visual basic programming, Visual C++ programming, ODBC and GUI.

Goals: Enable the students to learn the Visual programming.

Objectives: After successful completion of the course the students student acquire knowledge about visual programming and able to program the applications using VB and VC++.

UNIT I

UNIT II

UNIT III

UNIT IV
Database Connectivity – Min Database Applications – Embedding Controls in View creating user defined DLL’s – Dialog Based Applications – Dynamic Data Transfer Function – Data Base Management with ODBC – Communicating with other applications – Object Linking and Embedding.

UNIT V

TEXT BOOKS

REFERENCES
DESIGN WITH PIC MICROCONTROLLERS

**Subject description:** This subject deals with the introduction to microcontroller 8051, Internal peripherals, simple programs & Applications.

**Goal:** To introduce the microcontroller 8051

**Objective:** To study the architecture of 8051, instruction set and addressing modes of 8051, To develop skill in program writing & introduce commonly used peripherals for simple applications.

**UNIT I**  
**CPU Architecture and Instruction Set**


**UNIT II**  
**Loop Time Subroutine, Timer2 and Interrupts**


**UNIT III**  
**External Interrupts and Timers**

RB0/INT External Interrupt input – Timer0 – Compare mode – Capture mode – Timer1/CCP Programmable Period Scaler – Timer1 External event counter – Timer1 and Sleep mode – PulseWidthModulated Outputs – PortB change interrupts.

**UNIT IV**  
**I/O Port Expansion**


**UNIT V**  
**I^2C Bus for Peripheral Chip Access**

I^2C Bus operation - I^2C Bus subroutines – DAC output – Temperature sensor – Serial EEPROM.

**Text Books:**

IC, TV AND MEDICAL ELECTRONICS LAB
(ANY 16 EXPERIMENTS)

**IC LAB**
1. Astable multivibrator using 555
2. Monostable multivibrator using 555
3. Inverting and Non Inverting amplifier
4. Adder and Subtractor using IC 741
5. Instrumentation Amplifier
6. Voltage to Current Converter and Current to Voltage
7. Wein Bridge oscillator using IC 741
8. Square wave and Triangular generator
9. Schmitt Trigger using IC 741

**TV LAB**
10. Video IF section of TV Receiver
11. Sync Separator
12. Horizontal Section faults
13. Vertical Section faults
14. Tuner Section faults
15. Video Section faults

**MEDICAL ELECTRONICS**
16. Pulse Rate Monitor.
17. Temperature monitor using AD 590
18. ECG Measurement
19. Notch filter
20. Pacemaker
INDUSTRIAL AND POWER ELECTRONICS LAB
(ANY 16 EXPERIMENTS)

1. Characteristics of LDR
2. Characteristics of Photo Diode
3. Relay driver using Photo Diode
4. Firing angle control of SCR
5. Relay driver using LDR
6. Burglar alarm
7. Smoke detector
8. Forced commutation
9. Sequence Timer
10. Fan Regulator using Triac
11. Automatic Street light
12. Single Phase Inverter
13. DC Choppers (Step up and Step down)
14. R and RC Triggering
15. External Pulse Commutation
16. DC motor controller and Light Dimmer
17. Time delay circuit
18. ON / OFF control of relay using Opto – Couplers.
19. Characteristics of SCR
20. TRIAC Characteristics
SEM – V & VI

MICROCONTROLLER LAB
(ANY 16 EXPERIMENTS)

8051/ PIC PROGRAMMING

1. Addition / subtraction of 8 / 16 bit data.
2. Multiplication / division 8 bit data.
3. Block data transfer.
4. Smallest / largest of N numbers.
5. To arrange in ascending / descending order.
6. Sum of N 8 bit numbers.
7. 1’s and 2’s compliment of an array (8 / 16 bit).
8. UP/DOWN counter using 7 segment displays.
10. Wave form generation.
11. ADC interface.
12. DAC interface.
14. Solid State Relay Interface
15. DC motor interface
16. Temperature controller
17. Rolling and Blinking of a message
18. LCD interface
19. Frequency Counter
20. Water level Indicator
VISUAL AND JAVA PROGRAMMING LAB

VISUAL PROGRAMMING (ANY 8 EXPERIMENTS)

2. Working with Intrinsic Control and Active X controls.
3. Create an Application with multiple forms and dialogs.
4. Write a VB program to design an e-mail registration form.
5. Create an Application with Menu editor.
6. Create an Application with DAO controls.
7. Create an Application using Common dialogs.
8. Write a program for Drag and Drop Events.
9. Create a Database for library management using ADD controls.
10. Creating an application using Active X control.
11. Create a Scientific calculator in VB.
12. Develop a VB application to either link or embed MS Word document to an OLE control.
13. Display Student information using Grid control.
15. Develop an application to perform the following operation in the Employee table using DAO.
   i) Add a new Record.
   ii) Delete a Record.
   iii) Modify a Record.
PCB DESIGN AND FABRICATION

UNIT I  TYPES OF PCB


UNIT II  LAYOUT AND ARTWORK


Basic artwork approaches – Artwork taping guidelines – General artwork rules – Artwork check and Inspection.

UNIT III  LAMINATES AND PHOTO PRINTING


UNIT IV  ETCHING AND SOLDERING

Introduction – Etching machine – Etchant system.


UNIT V  DESIGN RULES AND AUTOMATION

Reflection – Crosstalk – Ground and Supply line noise – Electromagnetic interference from pulse type EM fields and automation – Automated artwork drafting – CAD.

Text Books:

ADVANCED COMMUNICATION SYSTEMS

UNIT I DATA COMMUNICATION


UNIT II PULSE COMMUNICATION


UNIT III SATELLITE COMMUNICATION


Inside Satellite: Transponder – Antenna System – Power Package and Station Keeping – Forms of Modulation – Free path space losses – Ground Station – Aligning the satellite dish

UNIT IV CELLULAR COMMUNICATION SYSTEM

Introduction Cellular Mobile System – Basic Cellular System – Operational Cellular System – Maximum number of Calls per cell – Maximum number of Frequency channels concept of frequency channel cell splitting – permanent splitting – real time splitting – Frequency Management – Channel Assignment

UNIT V OPTICAL COMMUNICATION

Introduction to Optical fibers – Optical fiber structure – Numerical aperture – Propagation of light rays through it – Application of Optical Fiber (Video link, Satellite link, Computer link, Communicating antenna Television link)

TEXT BOOKS:
5. Subir Kumar Sarkar “Optical Fiber Communication systems”, S.Chand and Company
COMPUTER HARDWARE AND MAINTENANCE

UNIT I COMPUTER HARDWARE OVERVIEW


UNIT II MOTHER BOARD FUNCTIONS


UNIT III FLOPPY DISK CONTROLLER


Display adapter introduction – CRT display – 6845 CRT controller – CGA & AGA – Device interface

UNIT IV HARD DISK CONTROLLER AND PRINTER

Introduction – Overview of HDC organization – Disc drives types and interface – Hard disk card – Hard disk format

Printer introduction: Centronics interface programming – Programming sequence – Hardware overview – Printer controller

UNIT V TROUBLE SHOOTING


TEXT BOOK

TELEVISION ENGINEERING

UNIT I  TELEVISION STANDARDS


UNIT II  TELEVISION RECEIVER SECTION


UNIT III  SYNC SEPARATOR


UNIT IV  COLOUR TELEVISION


UNIT V  ADVANCE TECHNIQUES

CCD camera – HDTV – Digital TV – Satellite TV – Cable TV – LED TV – LCD TV – OLED TV - Plasma TV.

TEXT BOOKS
MICROWAVE AND L FIBER OPTIC COMMUNICATION SYSTEMS

UNIT I  INTRODUCTION TO MICROWAVES


UNIT II  MICROWAVE AMPLIFIERS AND OSCILLATORS

Microwave tubes: - Two cavity Klystron – Multi cavity Klystron – Reflex Klystron – Traveling wave tube (TWT) – Backward wave Oscillator (BWO) – Magnetron – Applications

UNIT III  MICROWAVE DEVICES

Microwave transistors – Gallium Arsenide (GaAs) metal semi-conductor FET – Varactor Diode – PIN diode – Schottky diode – MASER principle – Applications

UNIT IV  RADAR


UNIT V  OPTICAL FIBER COMMUNICATION


TEXT BOOKS

REFERENCE
SEM – V  

**AUTOMOTIVE ELECTRONICS**

**UNIT I  Introduction:**

Automotive component operation Electrical wiring terminals and switching Multiplexed wiring systems Circuit diagrams and symbols. Charging Systems and Starting Systems : Charging systems principles alternations and charging circuits New developments requirements of the starting system Basic starting circuit.

**UNIT II  Ignition systems:**


**UNIT III  Instrumentation Systems:**

Introduction to instrumentation systems Various sensors used for different parameters sensing Driver instrumentation systems vehicle condition monitoring trip computer different types of visual display

**UNIT IV  Electronic control of braking and traction:**


**UNIT V  Engine Management Systems:**

Combined ignition and fuel management systems Exhaust emission control Digital control techniques Complete vehicle control systems Artificial intelligence and engine management Automotive Microprocessor uses. Lighting and Security Systems: Vehicles lighting Circuits Signaling Circuit Central locking and electric windows security systems Airbags and seat belt tensioners Miscellaneous safety and comfort systems

**TEXT BOOK**

1. TOM DENTON, Automobile Electrical and Electronic Systems, Edward Arnold pb., 1995

**REFERENCES**

2. WILLIAM, T.M., Automotive Mechanics, McGraw Hill Book Co.,  
Objective: Enable the students to acquire designing Knowledge in Industrial & Power Electronic circuits.

UNIT I THYRISTORS

UNIT II TURN ON/OFF MECHANISMS

UNIT III CONTROLLED RECTIFIERS & INVERTERS

UNIT IV CYCLO CONVERTERS AND CHOPPERS

UNIT V APPLICATIONS

TEXT BOOKS:

REFERENCE BOOK:
ROBOTICS AND AUTOMATION

Subject Description: To provide fundamental knowledge about Robotics and its applications.

Goals: Enable the students to learn the Fundamentals and applications of robots.

Objectives: Upon completion of the subject, the student should understand the basic concepts and the applications of robots in automation.

UNIT I  Fundamentals of Robots

Introduction: Automations and robotics; Laws of robotics - Robotics Drive system; Robot anatomy; Work volume - Control system and precision of movement - Serial Robot - Robot subsystems, Motion sub systems - Recognition sub system: Robot classification by coordinate systems, Robot classification by actuation systems - Robot classification by control method - Robot classification by program method

UNIT II  Robot End Effectors

Introduction: Types of End effectors - Mechanical Grippers; Other types of Gripper - Vacuum Cups, Magnetic Gripper, Adhesive Gripper - Hook, Scoops other Miscellaneous Device - Tools as end effectors - Considerations in Gripper Selections and Design

UNIT III  Sensors in Robots

Sensor classification; internal sensors - External sensors; Vision system; sensor selections - Sensors in robotics: Tactile Sensors: proximity and range sensors - Miscellaneous sensors and sensor based systems - Uses of sensors in robotics - Actuators in Robotics - Pneumatic actuators, Hydraulic actuators - Electric actuators; DC motors, AC Motors

UNIT IV  Mobile Robotics locomotion

Introduction key uses for locomotion - Leg mobile robots; Leg configuration and assembly - Consideration for Dynamics; types of legged robot locomotion - One leg; two legs biped - Four legs (Quadruped); Six legs (Hexapod) - Concept of Wheeled mobile robots

UNIT V  Robotic Applications


Text Books:
PROGRAMMABLE LOGIC CONTROLLER

Subject Description: To provide the knowledge in PLC architecture, Programming skill in PLC and working knowledge in PLC applications

Goals: Enable the students to learn the Fundamentals and applications of robots

Objectives: Upon completion of the subject, the student should understand the Basic concepts and the applications of PLC

UNIT I  Programmable Logic
Introduction; Programmable Logic Arrays (PLA); Programmable Array Logic (PAL) - Complex Programmable Logic Devices (CPLD); Field Programmable Gate Arrays (FPGA) - Sequential circuit design: Design of sequential circuits using ROMs and PLAs - Sequential circuit design using FPGAs

UNIT II  Programmable Logic Controllers (PLCs)
Introduction; Parts of PLC; Principles of operation; PLC size and application - PLC Hardware Components - The I/O section; Discrete I/O section; Analog I/O section - The CPU; Programming devices

UNIT III  Basics of PLC Programming
PLC Programming Languages - Relay type instructions - Instruction addressing; Programming Examine IF closed and Examine IF open instructions - Electromagnetic control relay; Motor starters; Manually operated switches; Mechanically operated switches - Proximity sensor: Inductive and capacitive Proximity sensor - Output control devices - Converting relay schematics into PLC ladder programs

UNIT IV  PLC Instructions
Timer Instructions: ON-Delay timer instructions - OFF-Delay timer instructions - Counter Instructions: UP Counter - Down Counter - Allen-Bradley SLC-500 PLC Instructions: Program control instructions - Data manipulation instructions; Math instructions

UNIT V  Applications of PLC
Simple sequence control concepts; Automatic packing mechanism - Automatic control of warehouse door; Automatic lubricating oil supplier - Conveyor belt motor control Bottle label detection - Ball sorter mechanism

Text Books:

Reference Manuals:
1. Siemens “PLC Handbook”