

**B.Sc. Part- III Electronics**

**Semester- V Paper- IX**

**DSE-E17: Electronics Instrumentation-I and Mechatronics**

**Course Outcomes**

After successful completion of this course, the students will be able to :

- CO1 Understand the basics, advantages, disadvantages and applications of mechatronics.
- CO2 Understand construction, working and applications of different types of transducers.
- CO3 Understand different types of applications of Op-amp.
- CO4 Understand basics of first order active filters.

**Semester- V Paper- X**

**DSE-E18: Antenna and Wave Propagation**

**Course Outcomes**

After successful completion of this course, the students will be able to :

- CO1 Understand basic antenna parameters.
- CO2 Understand construction and working of HF, VHF, UHF and Microwave antennas.
- CO3 Understand construction and working of monopole, dipole and patch antennas.
- CO4 Understand different modes of propagation of radio waves, critical frequency, skip distance, virtual height etc.

**Semester- V Paper- XI**

**DSE- E19 : 8051 Microcontroller Interfacing and Applications**

**Course Outcomes**

After successful completion of this course, the students will be able to :

- CO1 Understand different types of interrupts in 8051 programming
- CO2 Understand real world interfacing of 8051 microcontrollers.
- CO3 Understand different applications of 8051 microcontrollers.
- CO4 Understand basics of modern microcontrollers and their applications.

**Semester- V Paper- XII**

**DSE –E20 : Power Electronics Devices and Applications**

**Course Outcomes**

After successful completion of this course, the students will be able to :

- CO1 Understand construction, working and applications of semiconductor power devices.
- CO2 Understand structure, characteristics operation of IGBT and thyristors.
- CO3 Understand basics of uncontrolled and controlled rectifiers.
- CO4 Understand applications of power devices.

### **Semester- VI Paper- XIII**

#### **DSE- F17: Electronics Instrumentation-II and Robotics**

##### **Course Outcomes**

After successful completion of this course, the students will be able to:

CO1 Understand construction and working of different types of modern lab instruments and meters.

CO2 Understand basics of mechanical and electrical actuation systems.

CO3 Understand basics of robotics.

CO4 Understand certain applications robots.

### **Semester- VI Paper- XIV**

#### **DSE- F18: Optoelectronics and IoT**

##### **Course Outcomes**

After successful completion of this course, the students will be able to :

CO1 Understand working of LASER diode, LED, Photodiodes, and Phototransistors.

CO2 Understand OFC communication and construction - working of different types of fibers.

CO3 Understand different types of losses in optical fibers.

CO4 Understand the concept, working and applications of IoT.

### **Semester- VI Paper- XV**

#### **DSE-F19: Advanced Microcontroller: PIC**

##### **Course Outcomes**

After successful completion of this course, the students will be able to :

CO1 Understand basics of PIC families.

CO2 Understand instruction set and programming of PIC18.

CO3 Understand facilities in PIC18.

CO4 Understand serial communication, interfacing and different type of interrupts in PIC18.

### **Semester- VI Paper- XVI**

#### **DSEF20:Industrial Automation and PLC Programming**

##### **Course Outcomes**

After successful completion of this course, the students will be able to :

CO1 Understand basics of control system.

CO2 Understand components of control system.

CO3 Understand programming logic controller (PLC) basics.

CO4 Understand ladder programming basics.

**B. Sc. Part – II Electronics**  
**Semester – III Paper – V (Communication Electronics)**

**Course Outcomes:**

After studying this course the students are able to –

- Understand functioning of basic communication systems.
- Understand analog modulation & demodulation techniques.
- Understand satellite communication & navigation systems.

**Semester – III Paper – VI**  
**(Introduction to microprocessor 8085 and Microcontroller 8051)**

**Course Outcomes:**

After studying this course the students are able to –

- Understand microcomputer organization and architecture of  $\mu P$  8085.
- Understand instruction set and programming of  $\mu P$  8085.
- Understand 8051 family and architecture of  $\mu C$  8051.

**Semester – IV Paper – VII**  
**(Digital modulation and mobile telephone systems)**

**Course Outcomes:**

After studying this course the students are able to –

- Understand analog pulse modulation techniques viz. PAM, PWM & PPM.
- Understand digital pulse modulation techniques viz. ASK, FSK PSK & BPSK.
- Understand mobile telephone system and networks Viz GSM, CDMA, TDMA & FDMA.

**Semester – IV Paper – VIII**  
**(Microcontroller and Embedded Systems)**

**Course Outcomes:**

After studying this course the students are able to –

- Understand addressing modes and instruction sets of  $\mu C$  8051.
- Understand facilities in  $\mu C$  8051 viz. timer, time delay calculations in different modes and serial communications.
- Understand programming of  $\mu C$  8051 and real world interfacing.
- Introduction to embedded system and programming in C.

## **B. Sc. – I Electronics**

### **Semester-I Paper- I (Network analysis and analog electronics)**

#### **Course Outcomes:**

1. Familiar with active and passive electronic components
2. Understand the concepts of Voltage and Current sources
3. Understanding and problem solving with Thevenin's, Norton's, superposition and maximum power transfer theorems.
4. Ability to express and solve any Electrical Circuit in terms of h, Z, Y Parameter models

### **Semester-I Paper- II (Digital integrated circuits)**

#### **Course Outcomes:**

1. Student will familiar with the types of digital devices and its applications in different domain, Conversion of different number systems as example conversion from binary to other number systems, implementation of different codes and conversions ,addition and subtraction of 1's and 2's complement numbers.
2. Get knowledge about standard Boolean algebra and logic gates. De-Morgan' Theorems
3. Knowledge about SOP and POS, develop K-map for 2/3/4 variables.
4. Understand the design of Arithmetic circuit- Adder, Subtractor

### **Semester- II Paper- III (Analog electronic circuits)**

#### **Course Outcomes:**

1. Students will be able to assess knowledge about bipolar junction transistor and Relation between  $\alpha$  and  $\beta$ , dc load line and Q point.
2. Understand the design of Amplifiers
3. Understand the operation of two stage RC coupled amplify. Coupling Methods (RC, DC &TC).
4. Understand the operation of various basic oscillators and feedback amplifiers.

### **Paper- IV (Linear and digital integrated circuits)**

#### **Course Outcomes:**

1. Understand the basic differences of combinational and sequential circuits, Develop flip flops as SR, JK, D flip flop, Develop register and counters and other advanced sequential circuits, Prepare different conversion techniques from digital domain to analog domain and vice versa. Understand the operation of Synchronous Up/Down counter, Asynchronous counters, Decade counter, Ring counter.
2. Understand the data Conversion of DAC & ADC
3. Design and test various basic linear application circuits using Op-amps
4. Describe operating principle of 555 timer IC base monostable multivibrator, 555 timer IC based astable multivibrator