

## **Microprocessors and Microcontrollers**

### **Unit I. 8085 Microprocessor**

Evolution of microprocessor, Evolution of Digital Computer, Single chip microprocessor, Microprocessor based system, Intel 8085 microprocessor, 8085 architecture and organization, ALU, Timing and Control unit, Registers, Data and Address bus, Pin description, Addressing modes, 8085 Instruction set, Instruction cycle, Timing diagram, Programming of 8085 Microprocessor, 8085 interrupts, Stacks and Subroutines, System Software, Monitor, Operating system, Editor, System software, Application software, and utility program, Modular and structured programming, Top-Down Design, Bottom-up Design, MACRO, microprogramming.

### **Unit II. Peripheral Devices and Their Interfacing with 8085 Microprocessor**

Basics Interfacing concepts, Example of an 8085 Based Microcomputer, Address Space Partitioning, Memory Mapped I/O Scheme, I/O Mapped I/O Scheme, Memory and I/O Interfacing, Various Data Transfer Schemes, I/O Ports, Programmable I/O Ports, Intel 8255, Intel 8237, Intel 8257, Programmable Communication Interface, Intel 8251, IC Elements and Circuits for Interfaces, 8085 Microprocessor Based Data Acquisition System, Sample and Hold Circuit, LF398, Analog Multiplexer, Interfacing of A/D Converter ADC 0800 and Analog Multiplexer, Interfacing of 0808/0809, Measurements of various physical Quantities using 8085 Microprocessor.

### **Unit III. 8051 Microcontrollers and Programming**

Microcontrollers and Embedded Systems, Overview of 8051 family, 8051 Architecture and Register Organization, 8051 Addressing Modes and Instruction set, I/O Port Programming, 8051 Timer Programming, 8051 Serial Port Programming, 8051 Interrupts Programming, 8051 Programming in C, 8051 Simulation Software Keil  $\mu$  Vision2 , Raisonance IDE (RIDE)

### **Unit IV. 8051 Interfacing and VHDL**

Basic Interfacing Concepts, LCD and Keyboard Interfacing, ADC, DAC and Sensor Interfacing, 8051 Interfacing to External Memory, 8051 Interfacing with 8255, Motor Control Speed using 8051 including Stepper Motor, Introduction to VHDL, VHDL Simulation Tools, Design of Basic Combinational and Sequential Circuits, using FPGA Technology.