

MICROPROCESSOR BASED SYSTEMS

Code : EI 502

Credits : 4

Module I

INTRODUCTION

Block Diagram of a typical microprocessor based system pointing out the role of microprocessor and other peripheral blocks.

MICROPROCESSOR

Intel 8086/8088 Microprocessor: Architecture, Clock Generator, Resetting the microprocessor, Wait State Inserting, Bus Buffering, Interrupts, and Assembly Language Programming.

Module II

Interfacing Memory Classification, Memory Timing, Interfacing requirements, Interfacing Slow Memory, Interfacing Static RAM (6116 – 2K, 6264 – 8K), Interfacing EPROM (2764 – 8K, 27256 – 32K), Address decoding (using logic gates and decoders, using PAL), Designing Memory Modules (higher capacity say 512K) using memory chips (say 8K), Interfacing Memory Modules to the microprocessor, Interfacing Dynamic RAM, Non Volatile Memories

Module III

Interfacing I/O Devices

I/O Controllers – 8279, 8259A, 8237A

Interfacing of Digital I/O Devices: Handshaking Logic, Programmed I/O, Interrupt driven I/O, Direct memory access, High Power Device Interfacing – Wave shaping, Driving and level shifting, Isolation Examples: Interfacing and assembly language monitor program for Key Board (one dimensional, two dimensional) and Display (7-segment, dot-matrix, alphanumeric) through 8255A and 8279, Data Transfer between two microprocessor based systems through 8255As, Mechanical and solid state Relays, Stepper Motor.

Analog Interfacing and Industrial Control:

Examples: Interfacing and assembly language monitor program for D/A Converter (MC1408 8-bit D/A, DAC 1208 12-bit D/A), A/D Converter (ADC0808 8-bit ADC, ICL7109 12-bit ADC)

Module IV

System Design

Designing microprocessor based systems with monitor programs for single/ multipoint Temperature Monitoring, Data Logger.

Serial Communication:

Asynchronous serial data communication, Serial Data transmission methods and standards, USART and Intel 8251, RS-232C Serial Data Standard.