

CORE COURSE XI – MICROPROCESSOR

Unit I - Microprocessor Architecture

Intel 8085 – ALU-timing and control Unit – Registers – Data and Address Bus – Pin configuration – opcode and operation- Instruction cycle – Fetch operation, Execute operation – Machine cycle and state – Instruction and data Flow– Timing diagram – Timing diagram for opcode Fetch cycle Memory read – I/O Read – Memory write – I/O write.

Unit II – Instruction Set for Intel 8085

Instruction and data Formats – Addressing modes – Direct – Register indirect – Immediate and implicit addressing – Status Flags – Intel 8085 instructions – Data transfer group – Arithmetic group – Logical group – Branch group – Stack, I/O and machine control group.

Unit III – Assembly Language Programming

Machine Language – Assembly Language – One pass and two pass assembler – applications – Stacks – subroutines – MACRO – micro programming – Data transfer and data manipulation programs – Single byte and multibyte arithmetic – complement – shift – mask – lookup table – larger – smaller – sorting – Array manipulation – sum of series.

Unit IV – Peripheral Devices and Their Interfacing

Address space partitioning – Memory and I/O interfacing – data transfer schemes – I/O ports – programmable peripheral interface 8255 – DMA controller 8257 – Interrupts of Intel 8085 – Interrupt controller 8259 – Programmable interval Timer /Counter 8253 – Interfacing of A/D converter, DAC 0800.

Unit V – Microprocessor Applications

Delay subroutine–7 segment LED display – Measurement of Frequency – measurement of voltage and current – Temperature measurement and control – Water level indicator – Interfacing of stepper motor – Microprocessor based Traffic control – to generate a square wave or a pulse using I/O port.

Book for Study

1. Fundamentals of Microprocessors and Microcomputers. Ram, B. (4th edn., Dhanpat Rai & Sons, Delhi, 1995).
2. Introduction to Microprocessors. Mathur, A.P. (3rd edn., Tata McGraw, New Delhi, 1995)
3. Microprocessor Organisation and Architecture, L.A. Leventhal, Prentice Hall India.