

Course 14: Memory Device and Microprocessor

Course code: MSCPH-522

Credit: 3

BLOCK – I Logic families and memories

Unit –1: **Logic families:** Introduction, Saturated and unsaturated logic circuits, Performance characteristics, Resistance - Transistor logic circuit, Transistor – transistor logic circuit, Integrated injection logic, Logic families and their performance characteristics, Emitter Coupled Logic, PMOs, CMOs Logic and Tri state Logic.

Unit –2: **Memory organization and expansion:** Basic terms and ideas, Classification and Characteristics of Memories, Memory Organization and expansion, Magnetic memory, optical memory, Memory Addressing, ROMs, PROMs and EPROMs, RAMs, Sequential Programmable logic devices, Content Addressable memory.

BLOCK – II Microprocessor hardware and Interface

Unit –3: **Microprocessor architecture and Microcomputer system:** Introduction, Microprocessor, evolution of Microprocessors, Microprocessor Organization, Microprocessor Architecture, Microprocessor instruction and computer languages, Machine language, assembly language, High level language, operating systems.

Unit –4: **8085 Microprocessor and memory interfaces:** 8085 Microprocessor Architecture, pin configuration of 8085, Bus timing, generating control signal, timing and control unit, memory interface, interrupts of 8085, timing diagrams.

Unit –5: **Interfacing I/O device:** basic interfacing concept, Interfacing output display, interfacing input device, memory mapped I/O, isolated I/O, Interfacing & Data Transfer Schemes, direct memory access (DMA) Intel 8253 Programmable interval Timers.

BLOCK – III 8085 Microprocessor programming

Unit –6: **8085 Microprocessors Programming:** 8085 programming model, instruction classification, instruction and data format, addressing modes and instruction set of Intel 8085, data transfer operation, arithmetic operation, logic operation, branch operations.

Unit 7: **Assembly language Programming:** Assembly language programming, flowchart and programme, debugging, copy operation, looping, programming techniques, 16-bit arithmetic instruction, arithmetic operation, logic operations, programming examples (finding smallest, largest in data array, sum of series, decimal sum, addition etc.)

Unit 8- **Counters time delay, Stack and code conversion:** counter and time delay, hexadecimal counter, stack, subroutine, BCD to binary code conversion, BCD to LED code conversion, binary to ASCII code conversion, BCD addition and subtraction.

Unit –9: **Advanced microprocessor:** Basic idea of Intel 8255, 8259, 8086, Architecture of advanced Microprocessor 80286, 80386, 80486, The Pentium Microprocessor.

Reference Books:

1. Ramesh S Gaonkar, **Microprocessors Architecture programming and application with the 8085**, Penram International Publication.
2. AP Mathur, Introduction to Microprocessors.
3. B. Ram, *Fundamentals of Microprocessors and Microcomputers*, Dhanpat Rai publications, New Delhi.

4. R. Theagarajan, S. Dhanasekaran and S. Dhanapal, *Microprocessor and its applications*, New Age International, New Delhi.
5. P K Ghosh and P R Shridhar, *Introduction to Microprocessors for Engineers and Scientists*