AMTC18 MICRO PROCESSOR

UNIT-1 MICROPROCESSOR ARCHITECTURE AND MICROCOMPUTER SYSTEM

1.1 Objectives, the microprocessor is a programmable logic device, designed with registers, flip-flops, and timing elements, memory, r/wm (read/write memory), rom (read-only memory),

1.2 Ee-prom (electrically erasable prom), recent advances in memory technology, input and output (i/o) devices,

1.3 Example of a microcomputer system, review logic devices for interfacing, examples of latches.

UNIT-2 8086 MICROPROCESSOR ARCHITECTURE AND MEMORY INTER-FACING

2.1 The 8085 mpu, address bus, multiplexed address/data bus, control and status signals, power supply and clock frequency, externally initiated signals, serial i/o ports, the alu,

2.2 Timing and control unit, instruction register and decoder, register array, example of an bobs-based microcomputer, memory interfacing, the sdk-85 memory system',

2.3 How does an 8085-based single-board microcomputer work?

UNIT-3 INTERFACING I/O DEVICES

3.1 Basic interfacing concepts, out instruction (8085), in instruction, interfacing output displays, circuit analysis, program, program description, problem statement,

3.2 Hardware description, seven-segment led, interfacing circuit and its analysis, interfacing input devices, memory-mapped i/o, execution of memory-related data transfer instructions,

3.3 Output port and its address, input port and its address, testing and troubleshooting i/o interfacing circuits, some questions and answers.

UNIT-4 INTERRUPTS

4.1 The 8085 interrupt, rst (restart) instructions, problem statement, main program, description of the interrupt process, testing interrupt on a single-board computer system,

4.2 Issues in implementing interrupts, 8085 vectored interrupts, trap, rst 7.5, 6.5, and 5.5, triggering levels, pending interrupts, problem statement, hardware description,

4.3 Monitor program, main program, program description, internet service routine, restart as software instructions, problem statement, problem analysis, breakpoint subroutine,

4.4 Program description, additional I/O concepts and processes, 8259a interrupt operation.

UNIT-5 INTERFACING DATA CONVERTERS

5.1 Digital-to-analog (d/a) converters, r/2r ladder network, problem statement, hardware description, program, operating the d/a converter in a bipolar range,

5.2 Hardware description, analog-to-digital (aid) converters, interfacing an 8-bit a/d converter using status check, hardware description, interfacing circuit,

5.3 Service routine, dual-slope a/d converters.

UNIT-6 SDK-85 PROGRAMMABLE INTERFACE DEVICES

6.1 Basic concepts in programmable devices, data input with handshake, data output with handshake, the 8155/8156 and 8355/8755 multipurpose programmable devices,

6.2 Control logic, the 8155 i/o ports, chip enable logic and port addresses, control word, hardware description, control word, program description, problem statement,

6.3 Control signals in handshake mode, input, output, status word, problem statement, problem analysis, port addresses, program description, interrupt i/o,

6.4 The 8279 programmable keyboard/display interface, keyboard section, scan section, display section, mpu interface section, circuit description,

6.5 Decoding logic and port addresses, initialization instructions.

UNIT-7 SERIAL I/O AND DATA COMMUNICATION

7.1 Basic concepts in serial i/o, Synchronous vs, Asynchronous transmission, Simplex and duplex transmission, Rate of transmission (baud), Parity check, Checksum,

7.2 Cyclic redundancy check (crc), Software-controlled asynchronous serial i/o, Serial output data (sod), Serial input data (sid), Hardware-controlled serial i/o using programmable chips,

7.3 Read/write control logic and registers, Transmitter section, Receiver section, initializing the 8251a, Program description.

UNIT-8 MICROPROCESSOR APPLICATION

8.1 Designing scanned displays, Sn 75491-segment driver, Sn 75492-digit driver, Interfacing a matrix keyboard, Keyboard subroutine, Mm74c923 keyboard encoder, Memory design,

8.2 Eprom memory, Wait state calculations, 8086 mpu design, Address bus, Data bus, Control signals, Frequency and power requirements, Externally triggered signals,

8.3 Designing a system: single-board microcomputer, Keyboard, Display, Execute, System buses and their driving capacity, Keyboard and displays, Software design,

8.4 Program coding, Development and troubleshooting tools, Emulation process, Features of in-circuit emulator, Debugging tools.

UNIT-10 INTRODUCTION TO 8085 ASSEMBLY LANGUAGE PROGRAMMING

9.1 The 8085 programming model, registers, accumulator, flags, program counter (pc), stack pointer (sp), instruction classification, data transfer (copy) operations,

9.2 Arithmetic operations, logical operations, branching operations, machine control operations, instruction format, one-byte instructions, two-byte instructions, three-byte instructions

Reference Books:

1. Krishna Kant, "Microprocessor and Microcontrollers", Eastern Company Edition, Prentice Hall of India, New Delhi, 2007.
2. B.RAM," Computer Fundamentals Architecture and Organization" New Age International Private Limited, Fifth edition, 2017.
3. Soumitra Kumar Mandal, Microprocessor & Microcontroller Architecture, Programming & Interfacing using 8085,8086,8051,McGraw Hill Edu,2013