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B. TECH.
(SEM V) THEORY EXAMINATION 2021-22
MICROPROCESSORS AND MICROCONTROLLERS

Time: 3 Hours

Total Marks: 100

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief. 2 x 10 = 20
- Discuss the specifications of 8085 microprocessor.
 - List the disadvantages of memory mapped I/O.
 - State the number of T-states required for following instructions: MVI A,34H , LXI H 2000 H.
 - List all the maskable and non-maskable interrupts of 8085.
 - Explain the physical address, offset address and segment address in context to 8086.
 - Discuss the various memory segments in 8086.
 - Explain the organization of stack in 8051.
 - Describe the bit-addressable RAM space available in 8051.
 - Discuss the significance of following SFR's of 8051- PSW, TCON
 - Describe the following instructions of 8051- (i)MOV A, @R0 (ii) MOVX A, @DPTR

SECTION B

2. Attempt any three of the following: 10 x 3 = 30
- Discuss the significance of following signals of 8085 in detail: HOLD, READY, ALE, HLDA, and CLK OUT.
 - Explain the execution of instructions: LXI H 2000H, LDA 2000 H, RAL, JNC, MVI. State the memory occupied by these instructions.
 - Explain the CWR of 8255 Programmable Peripheral Interface and also discuss the BSR mode.
 - Analyze the PSW of 8051 and also explain the relevant flag bits.
 - Discuss the significance of I/O ports along-with their dual roles in 8051.

SECTION C

3. Attempt any one part of the following: 10 x 1 = 10
- Interface EPROM of 16 K using 8K X 8 chips and a RAM of 8K using 4K X 8 chips to the system lines of 8085 using a 3X8 decoder.
 - Demonstrate the interfacing of output and input devices with 8085 along-with a suitable diagram. Also explain the relevant instructions used.
4. Attempt any one part of the following: 10 x 1 = 10
- Write an assembly language program to find the largest number in a series of number stored from location 2000 H to 200A H. Store the result at location 3000 H. Explain the program with a relevant flowchart.
 - Discuss the priorities of the interrupts available in 8085. Give a detailed explanation of SIM and RIM.



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5. **Attempt any one part of the following:** 10 x 1 = 10
- (a) Discuss the various addressing modes available in 8086 along-with examples.
 - (b) Demonstrate the architecture of 8253/54 Programmable Timer and discuss the control word register.
6. **Attempt any one part of the following:** 10 x 1 = 10
- (a) Analyze the architecture of 8051 microcontroller along-with a suitable block diagram.
 - (b) Illustrate the addressing modes of 8051 microcontroller. Support your answer with suitable examples.
7. **Attempt any one part of the following:** 10 x 1 = 10
- (a) Discuss the interrupts of 8051. Also give a detailed description of IE and IP registers.
 - (b) Analyze the process of serial communication in 8051 and also discuss the relevant Special Function Registers (SFR's) used in serial communication.

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