

U.G. 5th Semester Examination - 2020

COMPUTER SCIENCE

[HONOURS]

Discipline Specific Elective (DSE)

Course Code : COM.SC-H-DSE-L-501

(Microprocessor)

Full Marks : 60

Time : 2½ Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP-A

1. Answer any **ten** of the following questions :

2×10=20

- a) Compare CALL and JMP instruction of 8085.
- b) Define cycle stealing.
- c) How many address lines are necessary to address 2MB of memory?
- d) Define the functions of accumulator.
- e) What are the uses of flags in microprocessor?
- f) What are the functions performed by timing and control unit in a microprocessor?
- g) What is the purpose of the READY signal in 8085?

[Turn Over]

- h) After the execution of CMP A instruction what will be the content of flag PSW?
- i) What will be the value in the memory location 3101H after the execution of the following code?
The data at memory location 3100 is B9H.

LXI H,3100H

MOVA, M

CMA

INRA

STA 3101H

HLT

- j) List the sequence of operations needed for fetching an instruction.
- k) What will be the content of Stack pointer(SP) and Program Counter(PC) after executing the following block of instructions?
1200 LXI SP,12FFH
1203 CALL 1206
1206 POP H
- l) What is bidirectional buffer?
- m) Describe the significance of $\overline{\text{MEMW}}$ signal.
- n) In a memory-mapped I/O how does microprocessor differentiate between memory and I/O?
- o) How CPI instruction works?

GROUP-B

2. Answer any **four** questions: $5 \times 4 = 20$
- a) What do you mean by a macro? What are the differences between a macro and a subroutine?
 - b) Differentiate between following instructions:
 - i) STA 2000H and STAX B
 - ii) LXI H 2000H and LHLD 2000H
 - c) Explain Interrupt driven data transfer techniques in 8085.
 - d) Describe various addressing modes available in 8085 with suitable example.
 - e) Draw the timing diagram of OUT 81H instruction.
 - f) Define different modes of operation of DMA. What are the various control signals generated by DMA controller in master mode?

GROUP-C

3. Answer any **two** questions: $10 \times 2 = 20$
- a) Draw interface diagram of 16 key matrix keyboard. Draw the flowchart of:
 - i) To find out the depressed key.
 - ii) To generate the position code of the key. $5 + (2.5 + 2.5)$
 - b) Describe different modes of operations available in 8255 with detailed control word description. What is the significance of NMI? $8 + 2$

- c) i) Interface 32K $\times$ 8 RAM using four numbers of 8K $\times$ 8 memory chips and 16K $\times$ 8 ROM using two 8K $\times$ 8 EPROM chips. Address map is given as RAM starts at 00000H and ROM ends at FFFFFH. Clearly indicate the starting and ending address of each RAM and ROM chip.
- ii) Discuss the advantages of microcontroller based systems over microprocessor based systems. $7 + 3$
- d) i) Briefly describe RIM instruction format along with its importance.
- ii) Describe Instruction cycle, Machine cycle and T-State. $5 + 5$

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