Ex/PRN/PC/B/CSE/T/226/2025

B.E. PRINTING ENGINEERING SECOND YEAR SECOND SEMESTER – 2025

MICROPROCESSOR

Time Allotted: Three hours Full Marks: 100

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

(Long answer type questions)
Answer any five of the following

1.(a) Draw and explain the circuit diagram of the memory address range of the chip with 512 byte and explain how the range can be changed by modifying the hardware of (CS)' line. [5 + 5]
(b) Write the function of a) ANA b) CMA c) RRC. [5]
(c) Write a program to add two numbers in two consecutive memory location [1st location is 0007 corresponding value is $(128)_{10}$, 2nd location is 0008 corresponding value is $(118)_{10}$] [5]

2.(a) Show the timing diagram of IN (8 bit port address 05H) instruction [opcode-DB H]. Calculate the time required to execute the opcode fetch, memory read cycle, and the entire instruction cycle if the clock frequency is 2MHz. [5+5]
(b) Delay programming for Microprocessor 8085 is
MVI C, Count [7T]
Loop: DCR C [4T]
JNZ Loop [10T/7T]
Crystal frequency of microprocessor 2 MHz, count = (AF H), calculate the total time delay. [5]
(c) Explain several flag register of 8085. [5]

3.(a) What is Subroutine call explains with example. What is the significance of subroutine? What is nested subroutine? [5+2+3]
(b) Draw and explain the internal architecture of interrupt structure of 8085. [5]
(c) Write a program to find two's complement of A9H number. [5]

4.(a) Draw the interfacing circuit of 16KB RAM with 8085 microprocessor using the chip of 8KB of RAM having a starting address 4000H. Write the address range of memory chip and also show the address decoding logic. [5+5]
(b) Explain the functional description of 8259A interrupt controller with diagram. [5]
(c) Identify the port address, identify the mode 1 control word to configure port A and upper port C as output port and port B and lower port C as input port. [5]

5. (a) Explain the functional block diagram of programmable interval timer 8253. [5]
(b) Draw and explain the architecture of 8085 [10]
(c) Program to count number of zeros in the given data (C4 H) [5]

6. (a) Explain several addressing modes of 8085 with example. [5]
(b) Explain stack operation in 8085 microprocessor with example. [5]
(c) Explain the functional block diagram of DMA controller (8257). [5]
(d) Program to find whether a given number within a particular location is odd or even (let the location is 0009 and value of that location is 195) [5]

[Turn over

7. (a) What is the function of RIM and SIM? Explain all the accumulator contents of RIM and SIM instruction for interrupt. [4+5]
(b) Write the difference between General purpose computer, Microprocessor, Microcontroller. [5]
(c) What are the significance of HOLD, HLDA and ALE pins of microprocessor? [6]