4th Sem./ AE&I/ CSE/ ECE/ETC /IT / 2022(S)

Th3   MICROPROCESSOR AND MICROCONTROLLER

Full Marks: 80   Time- 3 Hrs

Answer any **five** Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1.   Answer **All** questions   2 x 10

   a.   Differentiate between microprocessor and microcontroller.

   b.   Determine the total memory accessed by 8085 microprocessor.

   c.   Name different machine cycles of 8085 microprocessor and mention the number of T – states present in each machine cycle.

   d.   Define Stack Pointer (SP) and Program Counter (PC) of 8085 µP?

   e.   Give 2 examples each of 2 – byte and 3 – byte instructions for 8085 µP.

   f.   Name the non-maskable and non – vectored hardware interrupts of 8085 µP.

   g.   Consider the following 8085 program.
        MVI A, 25H
        RRC
        RRC
        Find the content of accumulator, A after execution of this program.

   h.   What do @ and # signs indicate in 8051 µC and where are they used?

   i.   Draw the internal RAM structure of 8051 µC.

   j.   Show different bit positions of flag register in 8086 µP.

2.   Answer **Any Six** Questions.   6 x 5

   a.   Explain different addressing modes of 8085 µP with examples.

   b.   Give 2 examples each for the following groups of instruction of 8085 µP and explain their meaning.
        i)   Data Transfer ii) Arithmatic iii) Logic iv) Branching v) Machine Control

   c.   Draw the timing diagram for the instruction **MVI A, 67H**.

   d.   Explain the different bit positions of flag register in 8085 µP. Given **[A]=58 H**, what will be content of flag register after execution of the following instruction?
        ADI A, BCH

   e.   Explain the bit positions of control word of 8255 PPI for I/O and BSR Mode.

   f.   Differentiate between memory mapped I/O and I/O mapped I/O

   g   Write an 8051 – assembly level language program to find the multiplication of 8-bit data present in two consecutive memory locations and store the result in next memory location.

3	Draw the pin diagram of 8085 µP and explain each pin briefly.	10
4	Explain the architecture of 8255 PPI with the help of its block diagram.	10
5	Write an 8085 – assembly language program to find the largest number in a given array of 10 numbers.	10
6	Draw the internal architecture of 8086 µP and explain the function of each block briefly.	10
7	Write short notes (**Any TWO**).	10

     I.   Timer Mode (T_{MOD}) and Timer Control (T_{CON}) registers of 8051 µC.

    II.   Direct Memory Access (DMA).

    III.   Software and Hardware Interrupts of 8085 µP.