Th-3 Digital Electronics & Microprocessor

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. Construct the truth table of NAND and XOR gate.
    b. Convert the following hexadecimal numbers to binary.
        (i)   F297   (ii)   E79A.6A4
    c. Simplify the expression $F = BD + BC\bar{D} + A\bar{B}\bar{C}\bar{D}$
    d. Why is a multiplexer called a data selector?
    e. What do you mean by toggling?
    f. Write down the transition table for D-flipflop.
    g. Write down the function of following signal jf 8085.
        (i)   HOLD   (ii) S_0& S_1
    h. How many machine cycles are required by the following instructions of 8085?
        (i)   IN 08H;
        (ii)   LXI H, 2450H;
        (iii)   MVI B,15H;
        (iv)   MOV C,M;
    i. Give 2 example of instructions for data transfer group and logical group.
    j. What are different operating modes of 8255?

2. Answer **Any Six** Questions   6 x 5
    a. Obtain the real minimal expression for f = $\sum m(0,2,4,6,7,8,10,12,13,15)$ and implement it using universal gates.
    b. Given $\bar{A}B + \bar{A}B = C, find \ \bar{A}C + \bar{A}C$.
    c. Discuss half adder circuit, truth table and implement by using NOR gate.
    d. Design 4-bit asynchronous counter with logic diagram, timing diagram and truth table.
    e. What are various status flags provided in 8085 microprocessor and discuss their role.
    f. Draw the timing diagram for the instruction MVI C,12H.
    g. Write an assembly language program to add two 8-bit numbers, the sum may be of 16 bits.

3   With a neat block diagram explain the architecture of 8085 microprocessor   10
    and explain function of each block.
4   Explain different addressing modes of 8085 microprocessor with examples.   10
5   Draw the block diagram of PPI 8255 and describe each block.   10
6   With neat diagram explain the working of serial-in serial-out and parallel-in   10
    serial-out shift registers with truth table.
7   Draw the circuit diagram of edge triggered JK flip-flop and explain its   10
    operation with the help of a truth table. How is the race around condition eliminated?