

**Duration: 3hrs**

**[Max Marks:80]**

- N.B. : (1) Question No 1 is Compulsory.  
(2) Attempt any three questions out of the remaining five.  
(3) All questions carry equal marks.  
(4) Assume suitable data, if required and state it clearly.

- 1 Attempt any FOUR **[20]**
- a Discuss any five arithmetic instructions of 8086 with examples.
  - b Explain Memory hierarchy with diagram.
  - c Minimize the following boolean function using K map  
 $F(A, B, C) = \Sigma m(0, 1, 6, 7) + \Sigma d(3, 5)$
  - d Explain full adder with diagram
  - e Convert  $(-1259.125)_{10}$  in the IEEE 754 single precision standard.
- 2 a Explain concept of DMA in detail with diagram **[10]**  
b Discuss various cache memory mapping techniques with advantages and disadvantages of it. **[10]**
- 3 a Draw Flowchart of Restoring division technique and divide 13 by 5 using Restoring division technique. **[10]**  
b List and explain Key Characteristics of Computer memory. **[10]**
- 4 a Write 8086 Assembly Language Program to count the number of 0's and 1's in given 8-bit numbers. **[10]**  
b Discuss various Pipeline Hazards with examples. **[10]**
- 5 a Draw flowchart of Booth's algorithm. Using Booth's algorithm demonstrate multiplication of  $(-11)*(-5)$ . **[10]**  
b Discuss various addressing modes of 8086 microprocessor with example. **[10]**
- 6 a Write short note on Flip Flops **[10]**  
b Minimize the following boolean function using K map **[10]**  
 $F(A, B, C, D) = \Sigma m(0, 2, 8, 10, 14) + \Sigma d(5, 15)$
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