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   **[10]**
      disadvantages of it.

3 a   Draw Flowchart of Restoring division technique and divide 13 by 5 using   **[10]**
      Restoring division technique.
  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   **[10]**
      in given 8-bit numbers.
  b   Discuss various Pipeline Hazards with examples.   **[10]**

5 a   Draw flowchart of Booth's algorithm. Using Booth's algorithm demonstrate   **[10]**
      multiplication of (-11)*(-5).
  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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