1T01234 - S.E.(Information Technology Engineering)(SEM-IV)(Choice Based) (R-20-21) (C Scheme) /
41025 - Computer Organization & Architecture   QP CODE: 10029693   DATE: 19/05/2023

TIME: 3 HRS   **MAX MARKS: 80**

N.B.   1. Question No 1 is compulsory.
        2. Solve any **three** questions out of the remaining five questions.
        3. Assume suitable data if necessary.
        4. Figures to the right indicate marks.

Q. 1. Solve any **four** out of five.   **(4*5=20)**

   a. Discuss any five arithmetic instructions of 8086 with examples.

   b. Describe Key Characteristics of Computer memory.

   c. Discuss six stage instruction pipeline with diagram.

   d. Explain half adder with diagram.

   e. Represent $(-309.1875)_{10}$ in the IEEE 754 double precision format.

Q. 2. a) Explain Flynn's classification in detail with diagram.   **(10)**

   b) Discuss various cache memory mapping techniques with advantages and
        disadvantages of it.   **(10)**

Q. 3. a) Draw Flowchart of Non-Restoring division technique and divide 12 by 4 using
        Non-Restoring division technique.   **(10)**

   b) Explain JK flip with diagram and Compare SR and JK flip flop.   **(10)**

Q. 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 concept of DMA and its various data transfer techniques   **(10)**

Q. 5. a) Draw flowchart of Booth's algorithm. Perform multiplication of (-15) and (3) using
        same.   **(10)**

   b) List and discuss addressing modes of the 8086 microprocessors with example**. (10)**

Q. 6. a) Write short note on decoder and encoder.   **(10)**

   b) Draw structure of four variable K map and minimize the following Boolean function.
        $F (A, B, C, D) = \Sigma m (0, 2, 7, 10, 15) + \Sigma d (3, 14)$ **(10)**

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