21819

3 Hours / 70 Marks   Seat No. ☐☐☐☐☐☐☐☐

Instructions :   (1)   All Questions are *compulsory.*

(2)   Illustrate your answers with neat sketches wherever necessary.

(3)   Figures to the right indicate full marks.

(4)   Assume suitable data, if necessary.

Marks

1.   **Attempt any FIVE :**   **10**

(a)   State the function of $\overline{BHE}$ and A₀ pins of 8086.

(b)   How single stepping or tracing is implemented in 8086 ?

(c)   State the role of Debugger in assembly language programming.

(d)   Define Macro & Procedure.

(e)   Write ALP for addition of two 8 bit numbers. Assume suitable data.

(f)   List any four instructions from the Bit manipulation instructions of 8086.

(g)   State the use of REP in string related instructions.

2.   **Attempt any THREE of the following :**   **12**

(a)   Explain the concept of pipelining in 8086. State the advantages of pipelining (any two).

(b)   Compare Procedure and Macros. (4 points).

(c)   Explain any two assembler directives of 8086.

(d)   Write classification of instruction set of 8086. Explain any one type out of them.

3. **Attempt any THREE :** 12
   (a) Explain memory segmentation in 8086 and list its advantages. (any two)
   (b) Write on ALP to count the number of positive and negative numbers in array.
   (c) Write ALP to find the sum of series. Assume series of 10 numbers.
   (d) With the neat sketches demonstrate the use of re-entrant and recursive procedure.

4. **Attempt any THREE :** 12
   (a) Describe the mechanism for generation of physical address in 8086 with suitable example.
   (b) Write an ALP to count ODD and EVEN numbers in array.
   (c) Write an ALP to perform block transfer operation of 10 numbers.
   (d) Write an ALP using procedure to solve equation such as $Z = (A + B) * (C + D)$
   (e) Write an ALP using macro to perform multiplication of two 8 bit unsigned numbers.

5. **Attempt any TWO :** 12
   (a) Draw architectural block diagram of 8086 and describe its register organization.
   (b) Demonstrate in detail the program development steps in assembly language programming.
   (c) Illustrate the use of any three Branching instructions.

6. **Attempt any TWO :** 12
   (a) Describe any six addressing modes of 8086 with suitable diagram.
   (b) Select an appropriate instruction for each of the following & write :
       (i) Rotate the contents of Dx to write 2 times without carry.
       (ii) Multiply contents of Ax by 06H.
       (iii) Load 4000 H in SP register.
       (iv) Copy the contents of Bx register to CS.
       (v) Signed division of BL and AL.
       (vi) Rotate Ax register to right through carry 3 times.
   (c) Write an ALP to arrange numbers in array in descending order.

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