17431

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

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

(4) Figures to the right indicate full marks.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any SIX of the following:**   12

(i) State the functions of temporary registers of 8085 microprocessor.

(ii) State the functions of following pins of 8085

1) SOD

2) HLDA

(iii) Define pipelining.

(iv) State the use of OF and DF flags of 8086 microprocessor.

(v) Differentiate between SHL and ROL instructions of 8086. (two points).

(vi) Enlist any four addressing modes of 8086 microprocessor.

(vii) Write an algorithm to subtract two 16 bit numbers (With borrow) in 8086 microprocessor.

(viii) Give the syntax for defining Macro.

Marks

b) **Attempt any TWO of the following:** **8**

    (i)   Write an algorithm and draw the flowchart to find sum of series of numbers.

    (ii)   Explain the following assembler directives.

        1) DB

        2) DUP

        3) EQU

        4) ENDs.

    (iii) Describe re-entrant procedure with the help of schematic diagram.

2. **Attempt any FOUR of the following:** **16**

a) Describe the functions of stack pointer and program counter of 8085.

b) Enlist the features of 8085 microprocessor. (eight points).

c) Define memory segmentation. How memory segmentation is achieved in 8086? State advantages of memory segmentation.

d) Draw typical 8086 minimum mode configuration and explain function of any two signals used in minimum mode.

e) State the functions of the following pins of 8086.

    (i) $MN/\overline{MX}$

    (ii)   NMI

    (iii) INTR

    (iv) $\overline{LOCK}$

f) Enlist the instruction formats used in 8086. Describe any one of them.

3.   **Attempt any <u>FOUR</u> of the following:**   **16**

   a)   Describe the concept of pipelining in 8086.

   b)   Differentiate between minimum and maximum mode of 8086. (four points).

   c)   Differentiate RCL and RCR instructions on the basis of
     (i)   Syntax
     (ii)   Operation
     (iii) Example
     (iv) Status of carry flag.

   d)   Analyze the content of AL register and status of carry and auxilary carry flag after the execution of following instructions.

           MOV AL, 34H

           ADD AL, 12H

           DAA

   e)   Describe the concept of physical address generation on 8086. If CS=4312H and IP=5387H. Calculate physical address.

   f)   Write an 8086 assembly language program to find smaller of two 8 bit numbers.

4.   **Attempt any <u>FOUR</u> of the following:**   **16**

   a)   State the functions of AAA and AAS instructions of 8086 with example of each.

   b)   Identify the addressing modes of following 8086 instructions.
     (i)   MOV Bx, 0354H
     (ii)   ADD AL, [Bx+04]
     (iii) MOV Ax, [Bx+SI]
     (iv) MOV Ax, [Bx+SI+04].

   c)   Write an 8086 assembly language program to find two's complement of 16 bit number.

   d)   Write an 8086 assembly language program to count number of 1's in 8 bit number.

Marks

e) Write an 8086 assembly language programme to find length of a string.

f) Describe with suitable example how a parameter is passed in register in 8086 assembly language procedure.

5. Attempt any <u>FOUR</u> of the following: **16**

a) State two instructions each for arithmetic multiplication and division with example.

b) Write an 8086 assembly language program to arrange five 8 bit numbers in ascending order.

c) Write an 8086 assembly language program to add two BCD numbers.

d) Write an 8086 assembly language program to multiply two 16 bit unsigned numbers.

e) Describe MACRO with suitable example.

f) State the functions of CALL and RET with suitable example.

6. Attempt any <u>TWO</u> of the following: **16**

a) Draw the functional block diagram of 8086 and describe the functions of any two segment registers.

b) Write an 8086 assembly language program to compare two strings using

   (i) String instructions

   (ii) Without using string instructions.

c) (i) Define recursive procedure and enlist the directives used in procedure.

   (ii) Write a procedure to find the factorial of a number.

————