12425

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 of the following : **10**

(a) State the functions of the following pins of 8086 microprocessor :

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

(ii) READY

(b) What is role of XCHG instruction in assembly language program ?

(c) List assembly language programming tools.

(d) State any two difference between FAR and NEAR procedure.

(e) Write algorithm to add two 8 bit BCD number.

(f) Draw machine language instruction format for Register to Register transfer.

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

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

(a) Compare procedure and Macro based on

(i) Length of code

(ii) Calling method

(iii) Generation of object code

(iv) Passing parameter

(b) Explain concept pipelining in 8086. State the advantages of pipelining. (Any Two)

(c) Explain assembly language program development steps.

(d) What are the functions of CALL and RET instruction ? Write syntax of CALL and RET.

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

(a) Describe memory segmentation in 8086 and list its advantages. (Any Two).

(b) Write an ALP to count positive and negative numbers in array.

(c) Write an ALP to find length of string.

(d) Write an ALP to solve $p = x^2 + y^2$ using macro. (x and y are 8 bit nos.)

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

(a) Draw functional block diagram of 8086 microprocessor.

(b) Write an ALP to find largest number in array of elements 10H, 24H, 02H, 05H, 17H.

(c) Write an ALP to perform block transfer operation of 10 numbers.

(d) Write an ALP for addition of series of 8 bit numbers using procedure.

(e) Describe re-entrant and recursive procedure with schematic diagram.

5. Attempt any TWO of the following : **12**

(a) Define logical and effective address. Describe physical address generation process in 8086. If DS = 345AH and SI = 13DCH. Calculate physical address.

(b) Explain use of assembler directives :

(i) ASSUME

(ii) OFFSET

(iii) EQU

(iv) INCLUDE

(v) EXTRN

(vi) EVEN

(c) Describe any four bit manipulation instructions of 8086 assembly language.

6. Attempt any TWO of the following : **12**

(a) Describe any six addressing modes of 8086 with one example of each.

(b) Write an instruction to perform following operations :

(i) Multiply BL by 80H

(ii) Signed division of AL by BL

(iii) Rotate content of AX to left 3 times

(iv) Load SS with FFOOH

(v) MOVE 1238H to DS register

(vi) Shift content of BX register to right 4 times.

(c) Write ALP to reverse a string. Also draw flowchart for same.