16172

3 Hours / 100 Marks   Seat No.

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.

Marks

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

(a)   State the function of following pins of 8085 microprocessor :

(i)   INTR

(ii) $\overline{\text{INTA}}$

(b)   List any four features of 8086 microprocessor.

(c)   Define immediate and direct addressing mode. Also give one example of each.

(d)   List the program development steps for assembly language programming.

(e)   Draw the format for flag register of 8085 microprocessor.

(f)   Give the steps in physical address generation in 8086 microprocessor.

(g)   Give the syntax for defining a procedure.

(h)   Write assembly language instruction of 8086 microprocessor to :

(i)   Copy 1000H to register BX

(ii)   Rotate register BL left four times

(B)   Attempt any TWO of the following :   **8**

(a)   State the function of Assembler and Debugger.

(b)   Explain following assembler directives :

(i) DB   (ii) DW   (iii) DD   (iv) DQ

(c)   Differentiate between Re-entrant & Recursive procedure.

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

(a) Draw the Architecture of 8085 microprocessor.

(b) Explain the function of following pins of 8086 microprocessor :

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

(ii) READY

(iii) ALE

(iv) DT/ $\overline{\text{R}}$

(c) Explain the concept of pipelining in 8086 microprocessor with diagram.

(d) List any four features and four limitation of 8085 microprocessor.

(e) What will be the content of register AL after the execution of last instruction ?

MOV AL, 02H

MOV BL, 02H

SUB AL, BL

MUL 08H

(f) Calculate the physical address for given :

(i) DS = 73A2H   SI = 3216H

(ii) CS = 7370H   IP = 561EH

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

   (a) Write any two conditional and two unconditional branching instruction with their function. Give the syntax with one example each.

   (b) State the function of following registers of 8086 microprocessor :

      (i) General purpose register

      (ii) Segment register

   (c) Draw the interfacing of 8284 clock generator with 8086 microprocessor.

   (d) List and explain any four process control instruction with their function.

   (e) Write an assembly language program to add two BCD numbers.

   (f) Explain the concept of segmentation with diagram.

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

   (a) Identify the addressing modes for following instructions :

      (i) MOV AX, 2034H

      (ii) MOV AL, [6000H]

      (iii) ADD AL, CL

      (iv) MOV AX, 50H [BX] [SI]

   (b) Explain the following instruction of 8086 :

      (i) XLAT

      (ii) XCHG

   (c) Write an ALP to count no. of zero's in BL register.

   (d) Write an ALP to substract two 8 bit numbers.

   (e) Write an ALP to add two 16 bit numbers.

   (f) Define MACRO with its syntax. Also give two advantages of it.

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

   (a) Write an ALP to find sum of series 0BH, 05H, 07H, 0AH, 01H.

   (b) Write an ALP to compute, whether the number in BL register is even or odd.

   (c) Write an ALP to reverse the string.

   (d) Write an appropriate 8086 instruction to perform following operation :

      (i) Initialize stock of 4200H

      (ii) Multiply AL by 05H

   (e) Explain NEAR and FAR procedure.

   (f) Explain the directives used for defining MACRO. Give an example.

6. **Attempt any TWO of the following :** 16

   (a) Draw and explain the working of 8086 in maximum mode.

   (b) Write an ALP to transfer 10 bytes of data from one memory location to another. Also draw the flow chart for the same.

   (c) (i) Write an ALP to find smallest number using procedure.

      (ii) Write a procedure to find the factorial.

   _____