17431

14115

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.

(5) Assume suitable data, if necessary.

Marks

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

(i) List any four salient features of 8085 microprocessor.

(ii) State the names of segment registers in 8086 microprocessor.

(iii) Define addressing mode. List any two addressing modes of 8086 microprocessor.

(iv) Define flowchart & algorithm.

(v) List the names of flags in flag register of 8085 microprocessor.

(vi) Define pipelining. What is the size of instruction prefetch queue in 8086 microprocessor ?

(vii) Write any two differences of FAR & NEAR procedures.

(viii) Write assembly language instructions of 8086 microprocessor to :

(a) Add 100 H to the contents of AX register.

(b) Rotate the contents of AX towards left by 2 bits.

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

(i) State the functions of

(a) Editor

(b) Assembler

(ii) List any four assembler directives. State the functions of any two assembler directives.

(iii) What do you mean by re-entrant procedures ? Write any assembly language program with re-entrant procedure.

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

(a) List & explain the functions of all general purpose registers of 8085 microprocessor.

(b) Draw the neat labelled architecture of flag register of 8086 microprocessor.

(c) State all the control signals generated by S0, S1, S2 with their functions.

(d) Compare 8085 microprocessor & 8086 microprocessor. (with respect to)

(i) No. of data lines

(ii) No. of address lines

(iii) Frequency of operation

(iv) Registers

(e) What will be contents to AX register after execution of following lines of code :

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MOV AL, 10
MOV DL, 20
MUL DL
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(f) Describe the physical memory address generation process in 8086 microprocessor. If, CS = 69FAH & IP = 834CH, calculate the physical address generated.

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

(a) Write any two arithmetic instructions & logical instructions with their functions. Give the syntax with one example each.

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

(i) ALE

(ii) DT / $\overline{R}$

(iii) M / $\overline{IO}$

(iv) HOLD

(c) Draw the interfacing of 8284 clock generator with 8086 microprocessor. List and explain interfacing signals.

(d) List & explain any four string operation instructions with their functions & syntax.

(e) Write an assembly language program to add two 16 bit numbers.

(f) Write any four important functions of any two units of 8086 microprocessor.

4. Attempt any FOUR of the following : 16

(a) Identify the addressing modes of following instructions :

(i) MUL AL, BL

(ii) MOV AX, BX

(iii) MOV BX, [S1]

(iv) MOV DX, 0040H

(b) Explain the following instructions of 8086 microprocessor with their syntax :

(i) STRCMP

(ii) ADD

(c) Write an assembly language program to find smallest number from array of 5 elements.

(d) Write an assembly language program to find the length of a string using 8086.

(e) Write an assembly language program to add two BCD numbers using 8086.

(f) Define Macro. Write assembler directives used in Macros. Explain.

5. Attempt any FOUR of the following : 16

(a) Write an assembly language program to add the series of 5 numbers.

(b) What will be the contents of AL, BL, AX, DX registers, after the execution of all 4 lines :

MOV AL, 03H

MOV BL, 03H

SUB AL, BL

MUL AL, O8H

Also write which flags will be affected ?

(c) Write an assembly language program to add only odd numbers in the list of following elements :

6, 5, 21, 3, 8, 9

(d) Write an assembly language instructions to perform following operations :

(i) Move contents of memory location pointed by DI into BX register.

(ii) Copy a string from one memory location to another using string manipulation instruction.

(e) What are the functions of CALL & RET instructions ? Write syntax of CALL & RET instructions.

(f) What do you mean by recursive procedure ? Write an assembly language program using recursive procedure to find factorial of a number.

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

(a) With the neat diagram, describe the maximum mode operation of 8086. List & describe functions of signals of maximum mode of 8086.

(b) Write an assembly language program to sort the array of 5 elements in ascending order. Also draw the flowchart for the same.

(c) Write an assembly language program to multiply two 8 bits numbers using NEAR procedure. Also draw the flowchart for the same.

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