Prelim Paper **17431**

3 Hours / 100 Marks **Microprocessor and Programming**

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.
(5) Preferably, write the answers in sequential order.

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

(i) Explain four features of 8085 microprocessor.
(ii) Give the syntax for defining a procedure.
(iii) Write assembly language instruction of 8086 microprocessor to :
(1) Copy 1000H to register BX
(2) Rotate register BL left four times
(iv) State the function of the following :
(1) ALE (2) WR#
(v) Define the terms algorithm and flowchart.
(vi) List maskable and non-maskable interrupts of 8085.
(vii) List the program development steps for assembly language programming.
(viii) Explain four features of 8085 microprocessor.

(b) Attempt any **TWO** of the following: **[8]**

(i) Describe the functions of the following directives:
(1) DD (2) DB (3) INCLUDE (4) DUP
(ii) Differentiate between Re-entrant & Recursive procedure.
(iii) Write an ALP to find sum of 10 numbers.

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 :
- MN/ MX#
- READY
- ALE
- DT/R#

(c) Explain the concept of segmentation in 8086.
(d) Name the general purpose registers of 8086 giving brief description of each.
(e) Describe various string instructions in brief.
(f) Explain the concept of pipelining in 8086 microprocessor with diagram.

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

(a) Write an ALP to subtract two 8 bit numbers.
(b) Explain following addressing modes of 8086 with example.
(i) Implicit addressing mode (ii) Immediate addressing mode.
(c) Compare minimum mode and maximum mode.(Any four points)
(d) Describe how 20 bit physical address is formed in 8086 microprocessor with one suitable example.
(e) Define MACRO with its syntax. Also give two advantages of it.
(f) Write an ALP to reverse the string.

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

(a) Write an ALP for 8086 to sort the array in ascending order. Draw flowchart. [Assume array of size 10]

(b) Explain NEAR CALL and FAR CALL procedure.

(c) Draw the neat interfacing diagram in minimum mode of 8086.

(d) Write suitable example explain following instructions.

(i) DAA (ii) ADC (iii) MUL (iv) XCHG

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

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

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

(a) Write an ALP using procedure for performing the operation Z = (A +B) * (C +D) A, B, C, D are of 8 bit number.

(b) Draw the functional block diagram of 8086 microprocessor and describe instruction queue in detail.

(c) What will be content of register BX after execution of instructions?

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MOV BX, 2050H
MOV CL, 05H
SHL BX, CL
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(d) Identify addressing modes in following instructions:

(i) MOV AX, 2050H (ii) STC

(iii) MOV AL, DS:[SI] (iv) INC BX

(e) Write an ALP to convert BCD to HEX.

(f) Write an ALP to count number of 1's in register DL.

6. Attempt any **FOUR** of the following: **[16]**

(a) Describe the model of assembly language programming.

(b) Write an ALP to perform addition of two 16 bit BCD number.

(c) Draw and explain the architecture of 8288 Bus Controller.

(d) List four machine control instructions and state their functions.

(e) Draw the flag register format of 8085 microprocessor and explain all the flags.

(f) State functions of following assembly language programming tool.

(i) Assembler (ii) Linker

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