

# Vidyalankar

S.Y. Diploma : Sem. IV [CO/CD/CM/CW/IF]

## Microprocessor and Programming

Time: 3 Hrs.]

Prelim Question Paper

[Marks : 100

- 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) State the functions of the following pins of 8085 microprocessor:  
(1) TRAP (2) READY
  - (ii) What are various segment registers available in 8086?
  - (iii) List the various groups of instructions in 8086.
  - (iv) Draw the symbols used in a flowchart while developing ALP. Mention the use of each symbol (Any 4)
  - (v) Write the functions of special purpose registers (PC & SP) in 8085.
  - (vi) Explain the control flags in 8086.
  - (vii) Compare procedure with Macro.
  - (viii) Explain execution of ROR instruction in 8086.
- (b) Attempt any **TWO** of the following: [8]
- (i) State the function of following assembly language programming tools.  
(1) Editor (2) Assembler (3) Linker (4) Debugger
  - (ii) Explain following assembler directive  
(1) END (2) DW (3) EQU (4) ORG
  - (iii) Differentiate between NEAR and FAR CALLs (4points)
2. Attempt any **FOUR** of the following: [16]
- (a) Draw the architecture of 8085.
  - (b) Draw the flag register of 8086 and explain status flags in detail.
  - (c) Explain how queuing speeds up the processing of 8086 operations.
  - (d) What are the limitations of 8 bit microprocessors (8085).
  - (e) Write an ALP to find factorial of number for 8086.
  - (f) Explain memory segmentation in 8086.
3. Attempt any **FOUR** of the following: [16]
- (a) Explain the following instructions with one example each :  
(i) XCHG (ii) CMP
  - (b) Draw and explain minimum mode of 8086.
  - (c) Draw the interfacing diagram of octal latch and explain it.
  - (d) Explain conditional JUMP instruction in 8086.
  - (e) Write a ALP to Divide a 32-bit number by an 16-bit number.
  - (f) Explain based indexed addressing mode in 8086.

4. Attempt any **FOUR** of the following: [16]
- (a) Identify the addressing modes for the following instructions:
    - (i) MOV CL, 34H
    - (ii) MOV BX, [4172H]
    - (iii) MOV DS, AX
    - (iv) MOV AX, [SI + BX + 04]
  - (b) Write ALP to find the largest of n 8-bit numbers (Arrow).
  - (c) Write a ALP to subtract an 8-bit BCD number from another BCD 8-bit number.
  - (d) Write a ALP to Add 2 16-bit numbers.
  - (e) Explain the following instruction of 8086 :
    - (i) PUSH
    - (ii) POP
  - (f) Explain the process of passing parameters to the subroutine using points.

5. Attempt any **FOUR** of the following: [16]
- (a) Write a ALP to sum of series of 10 numbers and store result in memory location total.
  - (b) How many time LOOP1 will be executed in the following program? What will be the contents of BL after the execution?  
MOV BL, 00H  
MOV CL, 05H  
LOOP1: ADD BL, 02H  
DEC CL  
JNZ LOOP1
  - (c) Write a program to reverse the given string for 8086.
  - (d) Write the appropriate 8086 instructions to perform the following operations:
    - (i) Multiply AL register contents by 4 using shift instruction
    - (ii) Move 1234H into DS register.
  - (e) List and explain any two string handling instructions in 8086.
  - (f) Explain the terms :
    - (i) Linker
    - (ii) Debugger

6. Attempt any **TWO** of the following: [16]
- (a) Draw the maximum mode of 8086 microprocessor.
  - (b) Write an Assembly Language program to transfer 10 bytes of data from one memory location to another. Also draw the flowchart for the same.
  - (c) Draw the architecture of 8086 Microprocessor and explain BIU and EU.

