

Roll No. ....

# National Institute of Technology, Delhi

Name of the Examination: B.Tech.

Branch : ECE

Semester : VI

Title of the Course : Microprocessor Systems

Course Code : EC 353

Time : 2 Hours

Maximum Marks: 30

**Note:**

- Questions are printed on BOTH sides. Answers should be CLEAR, TO THE POINT AND LEGIBLE.
- All parts of a single question must be answered together and in the same sequence as given in question paper. ELSE QUESTION SHALL NOT BE EVALUATED.

## SECTION-A

- Q.1. (a) In the following program for 8085 microprocessor, explain the range of bytes that will be displayed at PORT2

```
MVI A, BYTE1
MOV B, A
SUI 50H
JC DELETE
MOV A, B
SUI 80H
JC DISPLAY
DELETE: XRA A
OUT PORT1
HLT
DISPLAY: MOV A, B
OUT PORT2
HLT
```

(1.5)

- (b) What is the following assembly language program in 8086 doing?

```
2000 CLD
2001 MOV SI, 4000 H
2004 MOV DI, 5000 H
2007 MOV CX, 0064 H
200A LODSB
200B NEGAL
200D STOSB :
200E LOOPNZ 200A H.
2010 HLT
```

(1.5)

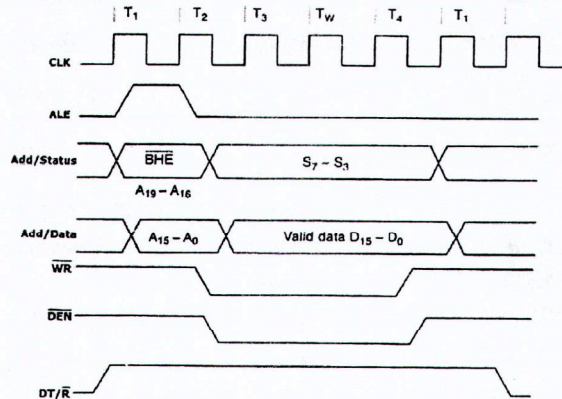
- Q.2. Give a comparative description of 8085 and 8086 microprocessors, preferably in a tabular form. (3)

- Q.3. Compute the delay which the following loop will insert. The numbers in the brackets are T-states for the instructions. For the loop 2, ignore the 3 T-states for the last JUMP instruction as the reduction in time delay will be insignificant. The frequency of the system is 2MHz. (3)

```
MVI B, 38H (7)
LOOP2: MVI C, FFH (7)
LOOP1: DCR C (4)
JNZ LOOP1 (10/7)
```

DCR B (4)  
JNZ LOOP2 (10/7)

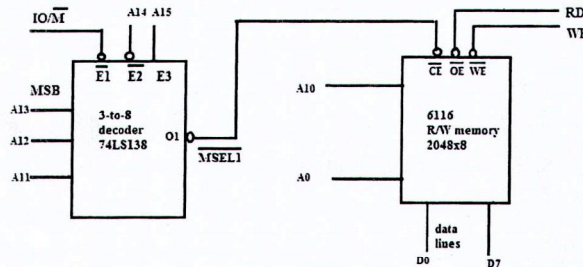
Q.4. Identify the timing diagram for the following figure. Also describe the function of the DEN' and DT/R' signal in 8086. (3)



Q.5. Give at least three points, how memory segmentation is a good technique to access memory in context of 8086 microprocessor. (3)

#### SECTION-B

Q.6. What is the memory address range for the following system? Also discuss the differences between a memory mapped and an I/O mapped I/O scheme(preferably in a tabular form) (5)



Q.7. Form the effective addresses for Direct addressing mode for MOV AX, [5000H], Register Indirect for MOV AX, [BX] and Register Relative addressing mode MOV AX, 5000[BX]. The contents of different registers are given below:  
Offset (displacement) = 5000H, [AX] = 1000H, [BX] = 2000H, [DS] = 1000H

Also explain the advantage of relative addressing mode.

(5)

Q.8. Discuss the various flags of an 8086 microprocessor. Also explain the function of source Index and Destination Index register in 8086.

(5)