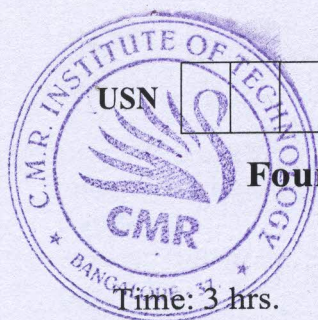


# CBCS SCHEME



17EC46

## Fourth Semester B.E. Degree Examination, June/July 2024 Microprocessors

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Why multiplexing technique is used in 8086? Mention its advantages. (05 Marks)
- b. Explain the internal architecture of Intel 8086 with neat block diagram and explain in brief. (10 Marks)
- c. Analyze the effective and physical address if:
  - i.  $Disp = 1B57H, DS = 2100H$
  - ii.  $DI = 1045H, DS = 2100H$
  - iii.  $BP = 8000H, DS = 5000H, SS = 1000H, Disp = 2345H$
  - iv.  $BX = 0158H, SI = 1045H, DS = 2100H, SS = 1400H$
  - v.  $BP = 0720H, Disp = 1000H, DS = 2000H, SS = 4000H.$  (05 Marks)

OR

- 2 a. List the need of control word register of Intel 8086. Explain with an example. (08 Marks)
- b. What is addressing modes? Explain any four addressing modes with an example to each. (08 Marks)
- c. Interpret the following instructions : i) SUB and CMP ii) AND and TEST. (04 Marks)

### Module-2

- 3 a. Explain the following instruction with examples:  
(i) LEA (ii) IDIV (iii) XLAT (iv) TEST (08 Marks)
- b. Write a complete assembly language program in 8086 which determines all the occurrences of a character in a given string. (08 Marks)
- c. What are assembler directives? Explain any three. (04 Marks)

OR

- 4 a. List and explain the string manipulation instructions. Also give its advantages. (10 Marks)
- b. Write an ALP to copy a 100 byte block of data from LOC1 to LOC2 using the MOVS instructions. (06 Marks)
- c. Write an ALP to find whether the given number is 2 out of 5 code. (04 Marks)

### Module-3

- 5 a. Explain the structure of stack in 8086 microprocessor. What is the role of stack during CALL and RET instructions? Illustrate with example. (10 Marks)
- b. Explain any three methods of passing the parameters to and from a procedure. (06 Marks)
- c. What is a macro? Give any two differences between macro and procedure. (04 Marks)

OR

- 6 a. Draw the interrupt vector table of 8086 and explain how an interrupt request is serviced, taking the example of type N interrupt. (10 Marks)
- b. Write an ALP to generate a time delay of 10 seconds using an 8086 system that runs on 10MHz frequency. (06 Marks)
- c. Bring out any four differences between maskable and non-maskable interrupts. (04 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

**Module-4**

- 7 a. Draw the pin configuration of Intel 8086 and explain the operation of pins in maximum mode of operation. (10 Marks)
- b. Interface two  $4K \times 8$  EPROM and two  $4K \times 8$  RAM chips with 8086. Show the memory mapping. (10 Marks)

**OR**

- 8 a. Show the block diagram of Intel 8255 and explain the operation of each unit in detail. (10 Marks)
- b. Interface 8 seven segment display using 8255 with 8086. Write ALP to display 1, 2, 3, 4, 5, 6, 7, 8 over the 8 seven segment display continuously. (10 Marks)

**Module-5**

- 9 a. Explain the internal architecture of 8087. (06 Marks)
- b. Write a program to read analog input connected to the last channel of ADC0808 interfaced to 8086 using 8255 and digital value to be stored at location 3000h. (06 Marks)
- c. Explain the following INT 21K DOS function calls:  
(i) Function 01H (ii) Function 02H (iii) Function 09H (iv) Function 0AH (08 Marks)

**OR**

- 10 a. Write an ALP to rotate a stepper motor by 100 steps in clockwise direction for a 1.8 degree connected to 8255 port. Show details of calculations. Motor is rotating at 12 rpm and processor speed is 10 MHz. (08 Marks)
- b. Explain Von-Neumann and Harvard CPU architecture and USC and RISC CPU architecture. (08 Marks)
- c. Write a program to generate triangular wave using DAC 0800. (04 Marks)

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