

# CBCS SCHEME

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15EC42

## Fourth Semester B.E. Degree Examination, Feb./Mar. 2022 Microprocessors

Time: 3 hrs.

Max. Marks: 80

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

### Module-1

- 1 a. Explain the architecture of 8086 microprocessor, with a neat diagram, and functions of each block and register. (12 Marks)  
b. Discuss the advantages of segmentation. (04 Marks)

OR

- 2 a. Identify the addressing modes of the instructions given below and justify the answer with clear explanation:  
(i) MOV WORD PTR[SI], 50  
(ii) MOV DS:[1000H], 10H  
(iii) MOV AX, NUM[BX + DI] (06 Marks)  
b. Generate machine code for following instructions assuming the opcode for MOV as 100010  
(i) MOV AX, [BX] (ii) MOV AL, [SI + 05] (04 Marks)  
c. Explain the following instructions:  
(i) LEA (ii) DAS (iii) CMP (06 Marks)

### Module-2

- 3 a. Explain the following instructions :  
(i) CMPS (ii) SCAS (iii) LODS (iv) STOS (08 Marks)  
b. Define assembler directives and explain them. (08 Marks)

OR

- 4 a. Write a program to convert a 16 bit binary number into equivalent BCD number. (08 Marks)  
b. Explain flag manipulation and processor control instructions in 8086 processor. (08 Marks)

### Module-3

- 5 a. Define stack. Explain stack operation with relevant instructions and stack structure. (08 Marks)  
b. What do you mean by an IVT? Explain IVT in 8086 microprocessor. (08 Marks)

OR

- 6 a. What is NEAR CALL and FAR CALL procedure statements in 8086? Mention the methods available for parameter passing in procedures? (06 Marks)  
b. Write a MACRO function (i) to read a character with echo (ii) to read a string of characters from keyboard. (10 Marks)

### Module-4

- 7 a. Explain the general 8086 bus structure and its operation. (08 Marks)  
b. Explain with a neat diagram the interfacing of a 4x4 keyboard to 8086, with a neat flow chart. (08 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.

OR

- 8 a. Explain the memory read cycle of 8086 in MINIMUM mode with a neat timing diagram. (09 Marks)  
b. Briefly explain the modes of operation of 8255. (07 Marks)

Module-5

- 9 a. Interface DAC 0800 to 8086 microprocessor. Also write an ALP to generate a square wave. (10 Marks)  
b. Explain mode-1 operation of 8254 timer. (06 Marks)

OR

- 10 a. Compare 8086 and 8088 processors. (05 Marks)  
b. Design a stepper motor controller and write an ALP to rotate shaft of a stepper motor using 8255. (11 Marks)

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