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 4×4 keyboard to 8086, with a neat flow chart. **(08 Marks)**

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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