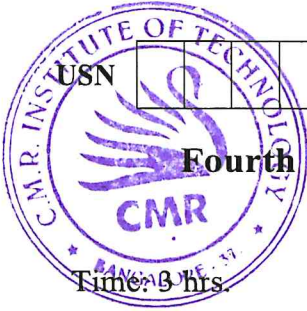


CBCS SCHEME



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15EC42

Fourth Semester B.E. Degree Examination, July/August 2022

Microprocessor

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 neat diagram. (08 Marks)
b. Describe the following signals of 8086 microprocessor:
- (i) $\frac{MN}{MX}$ (ii) ALE (iii) $\frac{BHE}{S_7}$ (iv) $\frac{\overline{R_Q}}{GT_0}$
- (08 Marks)

OR

- 2 a. Explain the addressing modes of 8086 and given an example each. (08 Marks)
b. Write an assembly language program to move a block of data from one memory location to another. (08 Marks)

Module-2

- 3 a. What are assembler directives? Explain any three assembler directives. (08 Marks)
b. Write an ALP to add 'N' BCD numbers. (08 Marks)

OR

- 4 a. Write a program to find the number of even and odd numbers from a given series of 16 bit hexadecimal numbers. (08 Marks)
b. Explain the following instructions of 8086 μP :
(i) MOVSB (ii) XOR (iii) STD (iv) RCR
- (08 Marks)

Module-3

- 5 a. What is stack? Explain the stack structure of 8086 microprocessor. (06 Marks)
b. Write a program to calculate squares of BCD numbers 0 to 9 and store them sequentially from 2000h offset onwards in the current data segment. The numbers and their squares are in the BCD format. Write a subroutine for the calculation of the square of a number. (10 Marks)

OR

- 6 a. What is an interrupt? Write the sequence of operations that are performed when an interrupt is recognized. (06 Marks)
b. List the differences between procedures and macros. (05 Marks)
c. Describe stepwise procedure of generating delays using a microprocessor based system. (05 Marks)

Module-4

- 7 a. Write the general bus operation cycle of 8086 microprocessor. (06 Marks)
b. With neat diagram, explain the maximum mode 8086 system. (10 Marks)

OR

- 8 a. Interface two 4K×8 EPROMS and two 4K×8 RAM chips with 8086. Select suitable maps. (06 Marks)
- b. Interface a 4×4 keyboard with 8086 using 8255, and write an ALP for detecting a key closure and return the key code in AL. The debouncing period for a key is 10 ms. Use software key debouncing technique. DEBOUNCE is an available 10 ms delay routine. (10 Marks)

Module-5

- 9 a. Interface ADC 0808 with 8086 using 8255 ports. Use Port A of 8255 for transferring digital data output of ADC to the CPU and Port C for control signals. Assume that an analog input is present at I/P of the ADC and a clock input of suitable frequency is available for ADC. Draw the schematic and write required ALP. (08 Marks)
- b. Explain the architecture of NDP 8087 with neat diagram. (08 Marks)

OR

- 10 a. Explain the different operating modes of 8254. (10 Marks)
- b. Discuss the following DOS function calls mentioning their register input and return output:
- (i) Function 01h
 - (ii) Function 09h
 - (iii) Function 2ch. (06 Marks)
