CBCS SCHEME

USN | | | | | | | | | | |

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) $\frac{MN}{\overline{MX}}$ (ii) ALE (iii) $\frac{\overline{BHE}}{S_7}$ (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)**

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