CBCS SCHEME

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

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)**

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 × 8 EPROM and two 4K × 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 OAH **(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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