CBCS SCHEME

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

17EC46

Fourth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Microprocessors

Time: 3 hrs. Max. Marks: 100

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

Module_1

1 a. Define Microprocessor. Describe the architecture of 8086 with neat block diag ram. (10 **Marks**)

b. Explain flag register of 8086 with its format. **(08 Marks)**

c. Explain the formation of opcode for MOV AX, BX. Opcode for MOV instruction is **"100010".** **(02 Marks)**

OR

2 a. Explain the following addressing modes of 8086:
(i) Register Addressing mode (ii) Based Indexed mode.
(iii) Immediate mode (iv) Direct addressing mode **(08 Marks)**

b. Write 8086 program to find the smallest number out of N 16 bit unsigned numbers stored in a memory block starting with the address 2000H. Store the result at word location 3000H. **(08 Marks)**

c. Explain the significance of following pins of 8086:
(i) ALE (ii) RESET (iii) TEST (iv) M/10 **(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 LOCI 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 stack structure of 8086 and the operations of PUSH and POP instructions with examples. **(08 Marks)**

b. Differentiate between procedure and macro. **(06 Marks)**

c. Write an ALP to change a sequence of sixteen 2 byte numbers from ascending to descending order. Store the new series at different address. Use LIFO property of the stack. **(06 Marks)**

OR

6 a. Explain the type of interrupts and the action taken by the 8086 when an interrupt occurs in detail. **(06 Marks)**

b. Explain the interrupt acknowledgement cycle of 8086 with the neat timing diagram. **(06 Marks)**

c. Write a program to generate a delay of 100ms using an 8086 system that runs on 10 MHz frequency. Show the calculations. **(08 Marks)**

Module_4

7 a. Sketch the minimum mode configuration of 8086 and explain the operation briefly. **(08 Marks)**

b. Interface two 4kx8 EPROM and two 4kx8 static RAM chips of 8086. The addresses of RAM and ROM should start from FC000H and FE000H respectively. **(08 Marks)**

C. Draw the timing diagram for RQ /GT for maximum mode. **(04 Marks)**

OR

8 a. Write the control word format of 8255 PIA. **(06 Marks)**

b. Show an interface of keyboard of 8086 and explain with a flowchart. **(10 Marks)**

C. How is key Debounce achieved through hardware? **(04 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 Mark.'**

c. Explain the following INT 21K DOS function calls:
(i) Function 01 H (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)**