

**B.Sc. ELECTRONICS**  
**Fifth Semester**  
**MICROPROCESSORS AND MICROCONTROLLER**  
**(BSE - 21)**

**Duration: 3Hrs.**

**Full Marks: 70**

Part-A (Objective) =20  
Part-B (Descriptive) =50

**(PART-B: Descriptive)**

**Duration: 2 hrs. 40 mins.**

**Marks: 50**

**Answer any five of the following questions:**

- (a) What are the different addressing modes of 8085? Briefly describe. (5+5=10)  
(b) What are the different addressing modes of 8086? Briefly describe.
- (a) WAP to perform 16 bit addition of two 16-bit numbers. Assume first number is stored in 7215H and 7216H. Assume second number is stored in 7315H and 7316H. Save the result in 7415H and 7416H. (5)  
(b) Write a program to perform 8-bit multiplication of two numbers stored at location 7200H and 7201H. Save the result in 7203H. (5)
- Draw the functional block diagram of 8051 microcontroller. (10)
- (a) Describe the function of each flag of the Program Status Word of 8086. (7+3=10)  
(b) Determine the physical ending address of each segment located by following segment register values: CS=3402H, DS=E500H, ES=A000H
- (a) Calculate the time delay for the following instructions having a 0.5  $\mu$ s clock period- (5+5=10)

```
MVI B, 40H
LOOP2: MVI C, EEH
LOOP1: DCR C
      JNZ LOOP1
      DCR B
      JNZ LOOP2
```



(b) Find the count value for the system with 1  $\mu$ s clock period and having a time delay of 2 ms-

```
MVI C, COUNT
LOOP: DCR C
      JNZ LOOP
```

6. (a) Name the different sources of interrupts of 8086? (2+3+5=10)  
(b) Draw the 8086 interrupt vector table.  
(c) What are the different steps involved during the execution of a Single Step Interrupt?
7. Write short notes on any two topic: 8085 Interrupts, Architecture of 8086, or Applications and advantages of 8051 microcontroller. (5+5=10)
8. Draw the functional block diagram of 80386 microprocessor. (10)

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**Duration: 20 minutes**

**Marks – 20**

**(PART A- Objective Type)**

**I. Fill in the blanks:**

**1×10=10**

1. The total memory space of 8085 is \_\_\_\_\_.
2. If the result of an 8085 operation contains even numbers of 1, the parity flag is set to \_\_\_\_\_.
3. 8086 is the Intel's first \_\_\_\_\_ bit microprocessor.
4. The data memory space of 8051 microcontroller is \_\_\_\_\_.
5. The microcontrollers with small instruction set are called \_\_\_\_\_ machines.
6. 8085 is (Intel/Motorola/Zilog) microprocessor. \_\_\_\_\_
7. 8086 has (4/5) \_\_\_\_\_ interrupt sources.
8. If the result of an 8086 operation has 1 in its MSB, then the sign flag is set to \_\_\_\_\_.
9. 8086 can access \_\_\_\_\_ memory locations.
10. 8085 microprocessor has five active flags. (True/False) \_\_\_\_\_

**II. Write 8085 instruction for each of the following:**

**1×5=5**

1. Store the content of accumulator to the register pair BC. \_\_\_\_\_
2. The content of register D is added along with the content of carry flag and accumulator. \_\_\_\_\_
3. Perform 1's complement of the content of accumulator. \_\_\_\_\_
4. The content of register D is inclusively ORed with the content of the accumulator. \_\_\_\_\_
5. Jump to the address 7203H if parity flag is even. \_\_\_\_\_

**III. Write the 8086 instruction for each of the following:**

**1×5=5**

1. Shift right the 8-bit content of register AL by 1-bit position. \_\_\_\_\_
2. Rotate left the 8-bit content of register AH through carry by 1-bit position. \_\_\_\_\_
3. Clear direction flag. \_\_\_\_\_
4. Jump if not overflow. \_\_\_\_\_
5. Jump if above or equal. \_\_\_\_\_

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