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PRANVEER SINGH INSTITUTE OF TECHNOLOGY KANPUR

Pre-University

Even Semester Session: 2022-23

B. Tech. 4th Semester

Microprocessor (KCS-403)

Course Outcome (Please include all COs of your Course here)

CO Number	
CO1	Define the functioning of 8085, 8086 microprocessor and Peripheral devices.
CO2	Describe the functioning of 8085, 8086 microprocessor. Peripheral devices and programming concepts.
CO3	Illustrate interfacing concepts of 8085, 8086 microprocessors.
CO4	Examine the assembly language programming for 8085, 8086 microprocessors.
CO5	Design the various interfacing circuits for 8085, 8086 with peripheral devices and its programming.

Time: 3 Hrs. M. M. 100

Section A

(2X10 =20 Marks)

Q1. Attempt all questions:

a) Calculate the physical address for 8086 microprocessors if the segment address and offset address registers are respectively CS: 4004H & IP: 0058H. CO1

b) Find out the status of CY, P, AC, Z flag after execution of XRA A instruction. CO4

c) What are differences between a return and a restart instruction? CO2

d) What is the concept of pipelining in 8086? CO1

e) Calculate the vector address of software interrupt RST 7.0 in 8085 Microprocessor. CO2

f) Analyze the error in a given program: CO4

```
      LXI H, 5000 H
      MOV A, M
LOOP: DCR H
      JNZ LOOP
```

g) What is difference between memory mapped I/O and direct I/O? CO2

h) Calculate the address lines required for an 8K-byte memory chip. CO1

i) Write any two examples of implied addressing mode of 8085 CO2

j) Examine the mode which is known as software trigger mode in 8253/8254. CO5

Section B

(10X3 = 30 Marks)

Q2. Attempt all questions.

(a) Explain the operation performed in 8085 and also name the machine cycles taken for executions, addressing mode of instructions and size of instruction. CO2

1. ACI 40H 2. CNC 2000H 3. DAD H 4. IN 40H 5. MVI M, 07H

b-(i) Draw and explain the block diagram of 8255 programmable peripheral interface and its operating modes. CO5

OR

(ii) Draw and explain the internal architecture of 8259 programmable interrupt controller and its operating modes. CO5

c-(i) Draw the timing diagram of STA 526A, if starting address of instruction is 41FF as given below: CO2

Address	Mnemonics	Opcode
41FF	STA 526A	32 H
4200		6A H
4201		52 H

OR

(ii) Examine content of each register, flag register, program counter and stack pointer after CO2

each instruction executed in given program: -

```
5000H: LXI SP,2500H
       XRA A
       LXI H, ABCD H
       LXI B, 4321 H
       DAD B
       PUSH B
       PUSH H
       POP B
       POP H
```

Section C

Q3. Attempt all questions: **(10X5 = 50 Marks)**

a i) Write an 8085-assembly language program to find the sum of two 16-bit numbers. The first number is stored at memory locations 4000H and 4001H and the second number is stored at memory locations 4002 H and 4003 H. Store the 16-bit result at memory location at memory location 5000 H and 5001 H. (Assume the higher bytes are stored at memory location 4001H, 4003H and 5001H.) CO4

OR

ii) Calculate the 16-bit count to be loaded in register DE to obtain the loop delay of two seconds in LOOP2 (assume the clock frequency of the system to be 5 MHz). CO4

```
       MVI B, 14H
LOOP2: LXI D, COUNT
LOOP1: DCX D
       MOV A, D
       ORA E
       JNZ LOOP1
       DCR B
       JNZ LOOP2
```

b i) How the interfacing of 8237 DMA (Direct Memory Access) controller with 8085 can be done? Explain it using suitable block diagram. CO5

OR

ii) Discuss all the working modes of 8253/8254 programmable interval timer with block diagram. CO5

c i) What is significance of control flag in 8086? Explain various flag used in 8086 microprocess. CO1

OR

ii) Explain the functional unit BIU and EU of 8086 Microprocessor with the help of block diagram. CO1

d i) Write an assembly language program to convert a binary number stored at memory location 2000 H, into its equivalent ASCII-Hex code, store the codes at memory locations 3030H and 3031H. CO4

OR

ii) Write an 8085-assembly language program to convert (65) BCD to its equivalent binary number. The BCD number is stored at memory location 2000 H, store the result in memory location 3000 H. CO4

e i) What are addressing modes of 8086? Explain each of them with suitable example. CO2

OR

ii) How the software and hardware interrupt of 8086 are different form 8085? Explain software and hardware interrupts of 8085. CO2