Ex/PRN/PC/B/CSE/T/226/2023

**BACHELOR OF ENGINEERING IN PRINTING ENGINEERING**
**2ND YEAR 2ND SEMESTER EXAMINATION 2023**

Time : Three hours **MICROPROCESSORS** Full Marks : 100

The figures in the margin indicate full marks.

***Candidates are required to give their answers in their own words as far as practicable. Assembly language program questions must contain pseudo code/flow chart, assembly code and output.***

**(Long Answer Type Questions)**

Answer any five of the following. 20×5 = 100

1.Explain stack operation in 8085 microprocessor with example. Explain several addressing modes with example. Write an assembly code of finding addition of two 8-bit numbers. Write functions of logical instructions. Write down the MODE-0 control word for the following :
i) Port A = Not Used
ii) Port B = Input
iii) Port C upper = Output, Port C lower = Input 3+5+6+3+3

2. Show the timing diagram of MOV instruction for both read and write. Design the interfacing circuit to interface of 8K*8 bit RAM with microprocessor. Assume the starting address is 7000H. Show the memory mapping. Write an Assembly program to transfer the data to the locations in the reverse order. Write the flow chart of finding largest of 3 no's in assembly concepts. 4+5+6+5

3. What is interrupt. Explain the classification of several interrupt with example. Explain the functional block diagram of DMA controller(8257) with diagram and explain functions of different registers of 8257. What is Interrupt Service Routine. 2+5+(6+5)+2

4. i) If a system clock is 2MHZ, find the time to execute given instruction code. Also specify all flag register values and accumulator values after executing this code.
MVI A, 5A H
MVI B,A7 H
ADD B
INR A
XRA A
HLT
ii) Show the block architecture of 8085 and explain function of 5 pins.
iii) Write a program to find out no of even and odd numbers in a series of signed numbers.
iv) Explain several flag registers of 8085. 3+8+5+4

5. i) Design the interfacing circuit to interface two 8K RAM and two 4K ROM with 8085 microprocessor. Assume start address is 9000H. Show memory map.

| ii) Mnemonics | T-State |
|---|---|
| MVI B,80 | 7 |
| loopII MVI C,FF | 7 |
| loopI DCR C | 5 |
| JNZ loopI | 10 |
| DCR B | 5 |
| JNZ loopII | 10 |

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What will be the total time delay of using both loops in the program.

iii) Write a assembly program to convert binary to ascii no.

iv) Write functions of i) ORA ii) JPO iii) XCHG instructions. 6+5+4+5

6) i) What is Subroutines call explain with example. What is nested subroutine.
ii) Show memory organization of 2K*8 using 1K*4 bits.
iii) State what happens to the Flag register when the instruction SUB B and CMP B are executed in Intel 8085.
iv)
Specify the register contents and the flag status as the following instructions are executed.
Initially : A B S Z CY 6+6+4+4
XX XX X X X

```
SUB A
MOV B, A
DCR B
INR B
SUI 01H
HLT.
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7) Explain the Functional description of 8259A interrupt controller with diagram. Show the status of SET INTERRUPT MASK so that RST 5.5, RST 6.5, RST 7.5, is enabled. Shoe entire SIM structure for it. Explain the fields significances of RIM instruction. What are the functions of different bus of 8085 show their connections with diagram. 8+3+5+4