JADAVPUR UNIVERSITY

B. E. (C.S.E.) 2ND YEAR 2ND SEMESTER EXAMINATION 2024

MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

Time: Three Hours | Full Marks: 100

Different parts of the same question must be answered ***together***

Answer any one from questions 1 and 2:

1.	CO1	(a)	What is addressing mode? Describe different addressing modes of 8085 μP with examples.	2+10
	CO3	(b)	How many machine cycle and T states are required to execute MVI M, 05_H? Write the names of these machine cycles. Write the steps and draw the timing diagram of data flow to execute the instruction. Assume that the instruction is stored from 2050_H.	3+4+6
2.	CO1	(a)	Describe the functions of BIU and EU of the 8086 μP using their schematic diagrams. If the CS register contains 2550_H and IP register contains $B05D_H$, what is the physical address of the instruction to be fetched?	10+2
	CO3	(b)	Let the instruction MVI A, 15_H is stored from m/m location 2500_H. Write the sequence of steps of fetch cycle and execution cycle to execute the instruction. Write the functions of the (i) MOV A, M (ii) LXI H, 2050_H (iii) LHLD 3000_H and (iv) RAR instructions with proper examples.	5 2+2+2+2

Answer any two from the following questions 3 – 5:

3.	CO2	(a)	A set of N data bytes is stored in m/m locations starting from 2501_H. The value of N is stored in 2500_H. Write a program (with comments) to store these data bytes from m/m location 2600_H if $D_7D_0 = 10$ or $D_7D_0 = 01$.	12
		(b)	There are N bytes stored from m/m location 2500_H. The value of N is stored in 2400_H. Write a program (with comments) to find the sum of these bytes if $D_4D_3 = 11$ and number of 1's is even. Store the result in locations 2300_H and 2301_H.	13
4.	CO2	(a)	There are N data bytes stored from m/m location 2500_H. Write an 8085 program to copy the even and odd integers into the m/m locations starting from 5050_H and 6050_H, respectively.	12
		(b)	Write an 8085 program to perform $2X^2$. The value of X is stored in 2250_H. Store the result in 2251_H and 2252_H (Assume the result will be of 16-bits).	13
5.	CO2	(a)	N bytes are stored in consecutive m/m location starting from 2050_H. The value N is stored in $204F_H$. Write an 8085 program to find the sum of the maximum and minimum bytes and store the result in 2600_H and 2601_H.	12

		(b)	Write a delay program for 1.0 ms in a 2 MHz microcomputer system.	13

Answer question 6.

6.	CO4	Interface 4K RAM chip as two memory chips (modules) of 2K (M1) and 2K (M2) beginning at address 4000_H using a suitable decoder. Explain its address decoding technique and find its RAM address range. Assume/generate appropriate signals and pins.	10

Answer any one from questions 7 and 8:

7.	CO5	(a)	Describe the priority encoder scheme with a schematic diagram to resolve multiple interrupts from two or more peripherals simultaneously through INTR line.	8
	CO6	(b)	Describe the sequence of steps required for data transfer from microprocessor to an I/O device with appropriate schematic diagram.	7
8.	CO5	(a)	Describe the daisy chain scheme with a schematic diagram to resolve multiple interrupts from two or more peripherals simultaneously through INTR line.	8
	CO6	(b)	Describe the sequence of steps required for data transfer from an I/O device to microprocessor with appropriate schematic diagram.	7