Roll Number:_____

Thapar Institute of Engineering & Technology, Patiala

Department of Computer Science and Engineering

MID SEMESTER EXAMINATION

B. E. (Third Year): Semester-VI (2019/20) (COE)	Course Code: UCS617 Course Name: Microprocessor Based Systems Design
March 7, 2020	Saturday 8:00 – 10:00 AM
Time: 2 Hours, M. Marks: 25	Name of Faculty: ANJ, MJU, ASG, HRS, SAS

Note: Attempt all questions in sequence with proper justification. Assume missing data, if any, suitably.

Q1 Draw and explain the timing diagram for the instruction STA 8550H and indicate Total number of T-states and Machine cycles required to execute the instruction. (3+1)

Q2(a) Write 8085 Assembly language program to generate the first ten elements of the Fibonacci sequence using registers only and store them in memory locations 8050H to 8059H. (4)

Q2(b) Discuss the various flags of 8086 which are not covered in the flag register of 8085 microprocessor. (2)

Q3(a) Write a program and show the contents of accumulator for RIM instruction that will mask RST 6.5, 5.5 and Pending Interrupt is RST 7.5. (2)

Q3(b) Differentiate between Hardware and Software Interrupts in 8085 microprocessor along with their vectored locations. (2)

Q4(a) Write a subroutine to generate a delay of 1ms in a processor using 8-bit counter with crystal frequency of 3MHz. (2)

Q4(b) Let the content of the different registers in the 8086 be as follows: DS = 1000H, SS = 2000H, ES = 3000H, BX = 4000H, SI = 5000H, DI = 6000H, and BP = 7000H. Find the memory address/addresses from where the 8086 accesses the data while executing the following instructions: (3)

i.	MOV AX, [BX]
ii.	MOV CX, [BP]
iii.	MOV BX, [BP + DI + 5]
iv.	MOV AH, [BX + 10H]
v.	MOV CX, DS: [BP + 4]
vi.	MOV BX, [SI – 5]

Q5(a) Discuss the following pins for 8086 microprocessor: (3)

i. QS_1, QS_0 ii. S_3, S_4 iii. $\overline{RQ}/\overline{GT_1}, \overline{RQ}/\overline{GT_0}$

Q5(b) An 8085 assembly language program is given below. Assume that all the flags are initially reset. What are the contents of the A, B and flag register after the step wise execution of the program? (3)

MVI A, 07H
RLC
MOV B, A
RLC
RLC
ADD B
RRC