Degree: B-Tech, Semester: 3rd

MID-SEMESTER EXAMINATION, September 2023

Max. Marks: 15
Duration: 1:30 Hours

Course Title: Microprocessor and Microcontrollers
Course Code: COECC08/CDECC08/CAECC08

Note: - Attempt all questions in the given order only. Missing data/information (if any), maybe suitably assumed & mentioned in the answer.

Q. No.	Question	Marks	CO
1a	Write in brief about the control bus and explain the different control and status signals	1.5	CO1
1b	Explain the function of following pins: a. INTA b. SID c. ALE	1.5	CO1
2a	Explain the steps of execution of the following instructions: a) CMP B b) XTHL c) DAA d) CALL and RET e) LHLD 2000H	1.5	CO1
2b	Differentiate between the following: a) CALL and JUMP instructions b) RAL and RLC instruction c) PUSH and POP instruction	1.5	CO1
3a	Draw and explain the timing diagram of opcode fetch cycle.	1.5	CO1
3b	Draw and explain the timing diagram of MVI B, 43H	1.5	CO1
4a	Draw the flag register of the 8086 Microprocessor. Also, state the role of the flag register in 8086.	1.5	CO2
4b	What are software interrupt? How 8086 responds to software interrupts ?	1.5	CO2
5a	Write an assembly language program (along with the algorithm containing logic) to transfer 16 bytes of data stored in memory locations (XX50H - XX5FH) to new memory locations starting at XX70H using an 8085 microprocessor	1.5	CO1
5b	Write an assembly language program (along with the algorithm containing logic) to find the total number of even and odd numbers from an array, using an 8086 microprocessor, where the size of the array is user defined.	1.5	CO1

Degree: B-Tech Semester: 3rd

END-SEMESTER EXAMINATION, Nov-Dec 2023

Course Title: Microprocessor and Microcontrollers.

Course Code: COECC08/CDECC08/CAECC08

Time: 03 Hours

Max. Marks: 40

Note: - Attempt all the five questions. Missing data/ information (if any), maybe suitably assumed & mentioned in the answer.

Q. No.	Question	Marks	CO
Q 1	**Attempt any 2 parts of the following**		
1a	i) What are the types of addressing modes in 8085 microprocessors? Briefly explain with suitable examples. ii) Write the difference between memory mapped I/O and peripheral I/O.	2+2	CO1
1b	Describe the interrupts of 8085 microprocessor with suitable diagram in detail.	4	CO1
1c	Write an assembly language program (along with the algorithm containing logic) to perform the multiplication of two 8-bit numbers using an 8085 microprocessor.	4	CO1
Q 2	**Attempt any 2 parts of the following**		
2a	Explain the following concepts for 8086 with suitable diagram. i) Memory Segmentation ii) Pipelining	2+2	CO2
2b	Write a short note on the predefined interrupts of 8086 and explain how 8086 microprocessors handle an interrupt request?	2+2	CO2
2c	Write a program (along with the algorithm containing logic) to find the largest number in an array of 10 numbers stored in memory.	4	CO2
Q 3	**Attempt any 2 parts of the following**		
3a	Write a program to generate a square wave of 1 kHz frequency on OUT 1 pin on 8254. Assume CLK 1 frequency is 1 MHz and address for control register = 0BH, counter 1 = 09H and counter 2 = 0AH.	4	CO3
3b	Design a circuit diagram to interface LED with 8085 microprocessors to glow the LEDs connected on pin 1,3 and 6?	4	CO3
3c	Discuss the organization and architecture of 8255 Programmable Peripheral interface IC with a functional block diagram?	4	CO3
Q 4	**Attempt any 2 parts of the following**		
4a	How many ports are there in the 8051 Microcontroller and what are their functions?	4	CO4
4b	Design how an 8051 microcontroller operating at 12 MHz can be interfaced with 4KB EPROM and 8KB RAM using 2KB EPROM and 4KB RAM memory chips, when the bar{EA} is set as 1.	4	CO4
4c	Assuming that bit P2.1 is used to control the outdoor light and bit P2.6 is used to control the light inside the office. Write a program using 8051, to turn OFF the outside light and turn ON the inside light.	4	CO4
Q 5	**Attempt any 2 parts of the following**		
5a	Describe the concept of paging in memory management and how it works to manage memory.	4	CO5
5b	Explain the role of page tables in virtual memory systems and how they are used to translate virtual addresses to physical addresses?	4	CO5
5c	Draw and explain the basic architecture of Arduino.	4	CO5