Code: 20EC3403

II B.Tech - II Semester – Regular / Supplementary Examinations
MAY - 2024

MICROPROCESSOR & MICROCONTROLLERS
(ELECTRONICS & COMMUNICATION ENGINEERING)

Duration: 3 hours   Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level   CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I						
1	a)	List the basic components of a microprocessor and their functions.	L1	CO1	7 M
	b)	Compare CISC and RISC systems in terms of architecture, instruction set, and performance.	L4	CO1	7 M
OR						
2	a)	Develop a strategy to Optimize Cache Memory in a high-performance computing environment.	L3	CO1	7 M
	b)	Analyze the evolution of microcontrollers from 4-bit to 8-bit architectures, highlighting the impact on instruction set complexity, data processing capabilities, and diversified applications.	L4	CO1	7 M

UNIT-II

3	a)	Explain the concept of register organization in the 8086.	L3	CO2	7 M
	b)	What is the purpose of the Read Cycle Timing Diagram in the minimum mode configuration of the 8086 microprocessors, illustrate?	L2	CO2	7 M

OR

4	Examine the pin configuration of the 8086 microprocessor to assess potential limitations or constraints in system design.	L5	CO2	14 M

UNIT-III

5	a)	List key features of the MSP430 microcontroller.	L1	CO3	7 M
	b)	Explain the role of registers in the operation of a 16-Bit RISC CPU.	L2	CO3	7 M

OR

6	a)	Evaluate and compare different target applications to determine which ones would benefit most from MSP430's low power features.	L3	CO3	7 M
	b)	Analyze the trade-offs between different low-power practices in MSP430 - based designs and assess their impact on overall system performance. Also explain the memory sub system of MSP430 micro controllers.	L4	CO3	7 M

		UNIT-IV			
7	a)	Explain the process of setting up and handling Watchdog Timer interrupts in MSP430 microcontrollers. What are the key steps involved in configuring interrupt service routines for WDT events?	L2	CO4	7 M
	b)	How Real Time clock of MSP430 Microcontrollers are used in DAC.	L3	CO4	7 M
		OR			
8	a)	Describe the DMA Registers, providing concise information on their key attributes and functions.	L2	CO4	7 M
	b)	Discuss the techniques used to interface LCD with MSP430 microcontrollers.	L2	CO4	7 M
		UNIT-V			
9	a)	Evaluate the implications of using different addressing modes in MSP430 programming.	L5	CO5	7 M
	b)	Explain the purpose of logical instructions in MSP430 programming. Provide examples of logical instructions and describe their operation briefly.	L2	CO5	7 M
		OR			
10	a)	How single operand core instructions are used to perform a bitwise complement operation on a register?	L3	CO5	7 M
	b)	Explain program flow control instructions in MSP430 programming.	L2	CO5	7 M