Reg. No.												

Question Paper Code	12037

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023

Fourth Semester

Electronics and Communication Engineering

20ECPC402 - MICROCONTROLLERS AND EMBEDDED SYSTEMS

(Regulations 2020)

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	What are the three classifications of 8086 interrupts?	*2,K1,CO1*
2.	Draw the flag register of the 8086.	*2,K2,CO1*
3.	Reproduce the PCON Register format.	*2,K1,CO2*
4.	Write an 8051 program for finding two's complement of a number.	*2,K2,CO2*
5.	Compare Simplex and Duplex transmission?	*2,K2,CO3*
6.	What is meant by Direct Memory Access?	*2,K1,CO3*
7.	List out the challenges of embedded systems.	*2,K1,CO5*
8.	Compare OS and RTOS.	*2,K2,CO5*
9.	What is meant by the term 'AMBA'?	*2,K1,CO6*
10.	List out the important features that make ARM ideal for embedded applications.	*2,K1,CO6*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Explain Data transfer, arithmetic and branch instructions with examples.	*13,K2,CO1*
		OR	
	b)	Draw and explain about the internal architecture of 8086.	*13,K2,CO1*
12.	a)	Explain the special function register of 8051.	*13,K2,CO2*
		OR	
	b)	Discuss timers of 8051 microcontroller.	*13,K2,CO2*
13.	a)	Explain in detail about DMA controller with its diagram.	*13,K2,CO3*
		OR	
	b)	With functional block diagram, explain the operation and programming of 8251 USART (Serial communication Interface in detail.	*13,K2,CO3*

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

14. a) Describe in detail about the design of model train controller. *13,K2,CO5*

OR

b) Describe the difference between waterfall and spiral development model. *13,K2,CO5*

15. a) Discuss about the types of stacks and subroutines supported by ARM processor. *13,K2,CO6*

OR

b) Draw the architecture of the ARM 9 processor and explain its functional units. *13,K2,CO6*

PART - C (1 × 15 = 15 Marks)

16. a) With suitable diagram explain the DAC interfacing with 8051 microcontroller. *15,K2,CO4*

OR

b) Draw the block diagram of traffic light control system using 8051 and explain in detail. *15,K2,CO4*