Reg. No.												

Question Paper Code	12488

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

Third Semester

Computer Science and Engineering (IoT)

20CIPC301 - COMPUTER ARCHITECTURE AND MICROCONTROLLERS

(Regulations 2020)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	Define Computer Architecture.	*2,K1,CO1*
2.	Express the MIPS code for the statement f = (g+h)-(i+j).	*2,K2,CO1*
3.	What is sub-word parallelism?	*2,K1,CO2*
4.	Give the IEEE standard floating point formats for single precision.	*2,K1,CO2*
5.	Define Data path.	*2,K1,CO3*
6.	State the use of sign extend unit.	*2,K2,CO3*
7.	Mention the features of 8051 microcontroller.	*2,K1,CO4*
8.	Compare program memory and data memory.	*2,K2,CO4*
9.	Write the function of PUSH and POP instruction in 8051.	*2,K2,CO5*
10.	What is the use of a watch dog timer?	*2,K1,CO5*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Explain the basic addressing modes with an example for each used in MIPS.	*13,K2,CO1*
		OR	
	b)	Explain the steps to convert the following high level language such as C into a MIPS code. A [300] = h + A[300].	*13,K2,CO1*
12.	a)	Explain the fixed point Division algorithm with a neat diagram.	*13,K2,CO2*
		OR	
	b)	Explain the floating point multiplication for the following 0.5_{10} and -0.4375_{10}.	*13,K2,CO2*
13.	a)	Explain the operation and control signals used in data path of I-type instructions in detail.	*13,K2,CO3*

OR

b) Explain Control hazards and stalls with a neat diagrams and suitable examples. *13,K2,CO3*

14. a) Explain the memory organization of 8051 Microcontroller with a neat diagram. *13,K2,CO4*

OR

b) Explain the functions of the following signals RST, EA, PSEN and ALE used in 8051. *13,K2,CO4*

15. a) Explain the different modes of operation of timers/counters in 8051 with its associated register. *13,K2,CO5*

OR

b) Explain in detail about different steps to receive data serially using 8051. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) With necessary hardware & software details explain how to interface LCD with 8051. *15,K2,CO6*

OR

b) How do you interface an 8051 microcontroller with a keyboard? Explain in detail. *15,K2,CO6*