06 FEB 2023

Reg. No.													

Question Paper Code	11689

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022

Third Semester

Information Technology

(Common to Computer Science and Engineering, Computer and Communication Engineering & M.Tech. - Computer Science and Engineering)

20ITPC303 – COMPUTER ORGANIZATION AND ARCHITECTURE

(Regulations 2020)

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	Define little endian format with big endian format.	*2,K1,CO1*
2.	What is program counter?	*2,K1,CO1*
3.	Show the number $(1259.125)_{10}$ in single precision format.	*2,K1,CO2*
4.	Draw the format for R-Type ,I type and J-Type Instruction.	*2,K1,CO3*
5.	State the 5 stages of pipelining.	*2,K1,CO3*
6.	Discriminate UMA and NUMA.	*2,K1,CO4*
7.	Differentiate strong scaling and weak scaling.	*2,K1,CO4*
8.	Define a cluster.	*2,K1,CO5*
9.	Define memory access time?	*2,K1,CO6*
10.	What is cache memory?	*2,K1,CO6*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	(i) Explain in detail the various components of computer system with neat diagram.	*7,K2,CO1*
		(ii) State the CPU performance equation and discuss the factors that affect performance.	*6,K2,CO1*
		OR	
	b)	Explain the various addressing modes with suitable examples.	*13,K2,CO1*
12.	a)	Explain data hazards and how to overcome it.	*13,K2,CO3*
		OR	
	b)	Explain dynamic branch prediction.	*13,K2,CO3*

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

13. a) (i) Compare and contrast fine grained and coarse grained multithreading. *10,K2,CO4*

(ii) Write a note on message passing. *3,K2,CO4*

OR

b) Describe the main characteristics of instruction level parallelism. Differentiate static and dynamic multiple issues. *13,K2,CO4*

14. a) (i) State the advantages of multiprocessor systems. *6,K2,CO5*

(ii) Explain clusters in detail. *7,K2,CO5*

OR

b) Write detailed Flynn's classification with necessary diagrams. *13,K2,CO5*

15. a) Explain in detail about memory Hierarchy with neat diagram. *13,K2,CO6*

OR

b) Explain in detail about DMA operations. *13,K2,CO6*

PART - C (1 × 15 = 15 Marks)

16. a) Explain Booth's Algorithm and Interpret the result of multiplying the following signed numbers using Booth's algorithm, $A=(-34)_{10} = (1011110)_2$ and $B=(22)_{10} = (0010110)_2$ where B is multiplicand and A is multiplier. *15,K2,CO2*

OR

b) Explain Restoring algorithm and Interpret the result of dividing the following unsigned numbers using the restoring division method where dividend = 1000 and Divisor= 00011. *15,K2,CO2*