Reg. No.												

Question Paper Code	21311

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

First Semester

M.E. - Computer Science and Engineering (Specialization in Networks)

(Common to M.E. - Computer Science and Engineering)

20PCNPC101 - ADVANCED COMPUTER ARCHITECTURE

(Regulations 2020)

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level,CO
1.	Write down the equation for calculating CPU performance Equation.	2,K1,CO1
2.	Define Data Hazards.	2,K1,CO1
3.	What do you mean by multiple Issue processor.	2,K1,CO2
4.	Define Principle of locality.	2,K1,CO2
5.	Differentiate Buses from crossbar networks.	2,K2,CO3
6.	Illustrate the Factors affecting the two components of miss rate in cache performance.	2,K2,CO3
7.	Differentiate between SMT and CMP.	2,K2,CO4
8.	Classify the elements of Interconnect Bus.	2,K2,CO4
9.	Compare scalar and vector processors.	2,K2,CO5
10.	Discuss SIMD.	2,K1,CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	What is ILP? Discuss about the types of dependencies with example.	13,K2,CO1
		OR	
	b)	Discuss how hardware based speculation is used to overcome control dependence.	13,K2,CO1
12.	a)	Explain the architecture and function of Super scalar processor.	13,K2,CO2
		OR	
	b)	What is memory hierarchy? Elaborate the level in memory hierarchy with a diagram.	13,K2,CO2
13.	a)	Explain Centralized Shared Memory Architectures.	13,K2,CO3
		OR	

b) Discuss in detail about the cache coherence protocols. 13,K2,CO3

14. a) (i) Describe the Computer Architecture of Warehouse-Scale Computers. 7,K2,CO4

(ii) Explain the Physical Infrastructure and Costs of Warehouse-Scale Computers. 6,K2,CO4

OR

b) (i) Suppose we have 8 memory banks with a bank busy time of 6 clocks and a total memory latency of 12 cycles. How long will it take to complete a 64-element vector load with a stride of 1? And with a stride of 32? Create the same. 7,K3,CO5

(ii) Explain the Layer 3 network used to link arrays together and to the Internet. 6,K2,CO5

15. a) (i) Describe Vector Architecture in detail 7,K2,CO5

(ii) Identify the need for SIMD Extension for multimedia. 6,K2,CO5

OR

b) (i) Explain the details of handling Multidimensional Arrays in Vector Architectures. 7,K2,CO4

(ii) Analyze how to Handle Sparse Matrices in Vector Architectures. 6,K2,CO4

PART - C (1 × 15 = 15 Marks)

16. a) Prepare the similarities and differences between the following 15,K3,CO6

(i) Vector architectures and GPUs.

(ii) Multimedia SIMD computers and GPUs.

OR

b) Develop any four multicore architectures which you have studied, analyze the advantages and disadvantages and present a summary of it. 15,K3,CO6