Reg. No. : | | | | | | | | | | |

Question Paper Code: 94805

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Fourth Semester

Information technology

19UIT405- COMPUTER ORGANIZATION AND ARCHITECTURE

(Regulations 2019)

Duration: Three hours Maximum: 100 Marks

Answer All Questions

PART A - (10x 2 = 20 Marks)

1.	What is Instruction Register (IR) and Program Counter (PC) used for?	CO1- U
2.	What are the two techniques used to increase the clock rate R?	CO1- U
3.	What is full adder?	CO1- U
4.	What are the ways to truncate the guard bits?	CO1- U
5.	List the state elements needed to store and access an instruction.	CO1- U
6.	Define register file.	CO1- U
7.	Draw the basic structure of Basic Structure of a Symmetric Shared Memory Multiprocessor	CO1- U
8.	What is Instruction Level Parallelism?	CO1- U
9.	Consider a direct-mapped cache with 64 blocks and a block size of 16 bytes. Byte address 1200 will map to block number …… of the cache.	CO2- App
10.	For a disk rotating at 10,000 rpm, what are the maximum and average rotational delays?	CO2- App

PART – B (5 x 16= 80Marks)

11.	(a)	Explain the functional unit of a computer with the block diagram in detail.	CO1-U	(16)
		Or		
	(b)	What is an addressing mode? Explain various addressing modes in detail with example and neat diagram for each.	CO1-U	(16)

12.	(a)	Perform the integer division for the number 8/3 using restoring division	CO2-App	(16)
		Or		
	(b)	Multiply given signed 2's complement numbers using bit pair recoding A=110011 (Multiplicand) B=101100 (Multiplier).	CO2-App	(16)
13.	(a)	Write the basic MIPS implementation of instruction set.	CO2-App	(16)
		Or		
	(b)	Examine the approaches would you use to handle exceptions in MIPS	CO2-App	(16)
14.	(a)	Consider a non-pipelined machine with 6 execution stages of lengths 50 ns, 50 ns, 60 ns, 60 ns, 50 ns, and 50 ns. 1. Find the instruction latency on this machine. 2. How much time does it take to execute 100 instructions?	CO2-App	(16)
		Or		
	(b)	How fast execution can we expect from a parallel computer for a concrete application?	CO2-App	(16)
15.	(a)	Describe the data transfer method using DMA.	CO1- U	(16)
		Or		
	(b)	Write the basic operations of cache in detail with diagram	CO1- U	(16)