Question Paper Code: 94805

B.E./B.Tech. DEGREE EXAMINATION, MAY 2022

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   CO1-U   (16)
        detail.

Or

    (b) What is an addressing mode? Explain various addressing modes in   CO1-U   (16)
        detail with example and neat diagram for each.

12. (a) Perform the integer division for the number 8/3 using restoring division   CO2-App   (16)

<div align="center">Or</div>

   (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)

<div align="center">Or</div>

   (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.   CO2-App   (16)
       1. Find the instruction latency on this machine.
       2. How much time does it take to execute 100 instructions?

<div align="center">Or</div>

   (b) How fast execution can we expect from a parallel computer for a concrete application?   CO3- Ana   (16)

15. (a) Describe the data transfer method using DMA.   CO1- U   (16)

<div align="center">Or</div>

   (b) Write the basic operations of cache in detail with diagram   CO1- U   (16)

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