SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)
Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai
Accredited by NAAC-UGC with 'A++' Grade (Cycle III) &
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COIMBATORE-641 035, TAMIL NADU

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

B.E/B.Tech- Internal Assessment – I
Academic Year 2024-2025 (ODD Semester)
Fifth Semester
Artificial Intelligence and Machine Learning
23ITT202 – Computer Organization and Architecture

A

Time: $1^{1/2}$ Hours **Maximum Marks: 50**

Answer All Questions

				CO	Blooms
	PART – A (5*2 = 10 Marks)			**CO**	**Blooms**
1.	Write a program that can evaluate the expression A*B+C*D in a single- accumulator processor. Assume that the processor has load, store, multiply and add instruction and that all value fit in the accumulator.			CO1	**APP**
2.	Given a binary pattern in some memory location, is it possible to tell whether this pattern represents a machine instruction or a number?			CO1	**UND**
3.	Difference between little- endian and big-endian assignments.			CO1	**UND**
4.	Consider 5-bit signed number -14 and 11 and perform binary addition			CO2	**APP**
5.	Sketch the binary addition and subtraction logic Network			CO2	**UND**
	PART – B (2*13=26 Marks) & (1*14=14 Marks)				
				CO	**Blooms**
6.	(a)	(i) Summarize the functional units of computer by extending the basic operational concepts.	7	CO1	**UND**
		(ii) Explain in detail about different instruction types and instruction sequencing with your own example.	6	CO1	**UND**
		(OR)			
	(b)	Define addressing mode and explain the basic addressing modes with an example for each.	13	CO1	**UND**
7.	(a)	Explain the concept of addition and subtraction of signed numbers with algorithm and examine the usage of each level in a problem	13	CO2	**UND**
		(OR)			
	(b)	Illustrate the concept of Carry Look Ahead Adder with diagram.	13	CO2	**UND**

8.	(a)	i) Registers R1 and R2 of a computer contain the decimal values 1200 and 4600. In each of the following instructions determine the Addressing mode used in the instruction and find the effective address of the memory operand? a) Load 20(R1),R5 b) Move #3000,R5 c) Store R5,30(R1,R2) d) Add –(R2),R5 Subtract (R1)+,R5	7	CO1	**APP**
		ii) Register r5 is used in a program to point to the top of a stack. Write a sequence of instruction using index, auto increment and auto decrement addressing modes to perform each of the following tasks i. Pop the top two items off the stack, add them, and then push the result onto the stack ii. Copy the fifth item from the top into register R3 iii. Remove the top ten items from the stack	7	CO1	**APP**
		(OR)			
	(b)	i) Suppose we have two implementations of the same instruction set architecture. Computer A has a clock cycle time of 250 ps and a CPI of 2.0 for some program, and computer B has a clock cycle time of 500 ps and a CPI of 1.2 for the same program. Which computer is faster for this program and by how much?	7	CO1	**APP**
		ii) Our favorite program runs in 10 seconds on computer A, which has a 2 GHz clock. We are trying to help a computer designer build a computer, B, which will run this program in 6 seconds. The designer has determined that a substantial increase in the clock rate is possible, but this increase will affect the rest of the CPU design, causing computer B to require 1.2 times as many clock cycles as computer A for this program. What clock rate should we tell the designer to target?	7	CO1	**APP**

Bloom's Taxonomy:

REM – Remember **UND** – Understand **APP**– Apply **ANA**– Analyze **EVA -** Evaluate

CRT - Create

Faculty in-charge Teaching Coordinator HoD Dean