U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

April 2024 Semester End Main Examinations

Programme: B.E. **Semester: III**
Branch: Computer Science and Engineering **Duration: 3 hrs.**
Course Code: 23CS3ESCOA / 19CS3PCCOA **Max Marks: 100**
Course: Computer Organization and Architecture

Instructions: 1.Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	CO	PO	Marks
1	a)	Describe addressing mode. List any five addressing modes and explain with example	CO1	PO 3	**10**
	b)	Convert the following pairs of decimal number to 5-bit 2's complement numbers, and the perform addition and subtraction on each pair. For subtraction operation, consider second number of each pair is to be subtracted from the first number. Indicate whether or not overflow occurs for each case. i. 15 and 13 ii. -12 and 9	CO1	PO3	**10**
		UNIT - II			
2	a)	Using program controlled I/O, write program that reads a line of characters and display it.	CO1	PO3	**10**
	b)	Explain Polling, Vectored interrupt and Interrupt Nesting.	CO1	PO3	**10**
		UNIT - III			
3	a)	With neat diagram explain Virtual Memory Address Translation	CO3	PO2	**10**
	b)	Design 4M x 16 memory module using 512K x 8 memory chips. Show your design with neat diagram.	CO3	PO2	**10**
		OR			
4	a)	List and explain the different cache memory mapping techniques with an example for each.	CO3	PO2	**10**
	b)	Explain internal organization of 1Kx1 Memory Chip with a neat diagram.	CO3	PO2	**10**
		UNIT - IV			
5	a)	i) Explain single and double precision IEEE floating point number formats ii) Represent $(0.625)_{10}$ in single and double precision IEEE floating point numbers format	CO2	PO3	**10**
	b)	Divide 8 by 3 using Restoring and Non-restoring Division Algorithm	CO2	PO3	**10**

			OR			
	6	a)	Multiply -11 (Multiplicand) and 27 (Multiplier) using Booth's algorithm, consider 6-bit number representation	*CO2*	*PO3*	**5**
		b)	Multiply 010111 (Multiplicand) and 1101110 (Multiplier) using Bit pair recording algorithm	*CO2*	*PO3*	**5**
		c)	With neat diagram explain Sequential Multiplier. Using Sequential multiplication (or Add-Shift method) multiply 11 (Multiplicand) with 13 (Multiplier).	*CO2*	*PO3*	**10**
			UNIT - V			
	7	a)	Explain the sequence of actions needed to fetch and execute the instructions. (i) Add R1, R2, R3 (ii) Load R4, X(R5) (iii) Unconditional branch instruction	*CO2*	*PO3*	**10**
		b)	Explain with block diagram the basic organization of a Hardwired Control Unit.	*CO2*	*PO3*	**10**

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