O.P.Code: 23EC0427	R23	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. III Year I Semester Regular Examinations December-2025
COMPUTER ARCHITECTURE & ORGANIZATION
(Electronics & Communications Engineering)

Time: 3 Hours **Max. Marks: 70**

PART-A
(Answer all the Questions **10 x 2 = 20** Marks)

1	a	List the any two purpose of the Instruction Cycle in a basic computer.	CO1	L1	2M
	b	What is Register Transfer Language (RTL)? Give one example of a register transfer statement.	CO1	L1	2M
	c	Define Program Control instructions.	CO2	L1	2M
	d	What is Control Memory in microprogrammed control?	CO2	L1	2M
	e	State one advantage of using 2's complement representation.	CO3	L1	2M
	f	Represent +13 and –13 in 8-bit signed fixed point form.	CO3	L2	2M
	g	What is the need for an I/O interface in a computer?	CO1	L2	2M
	h	Write two methods of asynchronous data transfer.	CO1	L2	2M
	i	What is cache coherence?	CO3	L2	2M
	j	Define inter-processor communication.	CO3	L2	2M

PART-B
(Answer all Five Units **5 x 10 = 50** Marks)

UNIT-I

2		Elaborate the details of Common Bus system using of four registers with a neat Sketch.	CO2	L2	10M

OR

3	a	Describe the types of Computer Instructions and their formats.	CO2	L2	5M
	b	Differentiate a Subroutine and Nested subroutine.	CO3	L2	5M

UNIT-II

4	a	Explain the concept of Control Memory and its role in microprogrammed control.	CO4	L2	5M
	b	Describe Address Sequencing in a microprogrammed control unit with a neat diagram.	CO4	L4	5M

OR

5	a	Explain Data Transfer and Manipulation instructions in detail.	CO3	L2	5M
	b	Describe Conditional and Unconditional Branching in program control.	CO3	L4	5M

UNIT-III

6		Discuss the Multiplication algorithm with Shift and add method with suitable flowchart. Multiply the binary numbers (01011) and (01101) Using Shift and add method.	CO3	L3	10M

OR

7		Explain Fixed Point representation with examples. Compare SignMagnitude, 1's complement, and 2's complement forms.	CO3	L2	10M

UNIT-IV

8	a	Justify how DMA bypasses CPU and speeds up the memory operation.	CO2	L5	6M
	b	Explain about main memory and its types.	CO4	L2	4M

OR

9		Explain Daisy-Chaining priority and Parallel priority Interrupt with its hardware diagram.	CO2	L3	

UNIT-V

10		Classify organization of computers using Flynn's criteria.	CO6	L2	

OR

11		Sketch the flowchart for floating point Addition and subtraction in arithmetic pipeline.	CO3	L3	

*** END ***