Course Code: **23CS5E02**

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(AUTONOMOUS)

III - B. Tech I-Semester Supplementary Examinations (BR23), Mar/Apr - 2026

COMPUTER ORGANIZATION AND ARCHITECTURE

(ECE)

Time: 3 hours | Max. Marks: 70

Question Paper consists of Part-A and Part-B
*Answer **ALL** the question in **Part-A and Part-B***

PART–A (10X2 = 20M)

		Marks	CO	BL
1. a)	What are the types of micro-operations?	(2M)	CO1	L1
b)	Define the (r – 1)'s complement of a number in base r.	(2M)	CO1	L2
c)	Write an assembly instruction to add two numbers.	(2M)	CO2	L2
d)	List any two computer registers and their functions	(2M)	CO2	L2
e)	What is meant by stack organization?	(2M)	CO3	L2
f)	What is an instruction format?	(2M)	CO3	L2
g)	Explain strobe	(2M)	CO4	L2
h)	Define asynchronous data transfer.	(2M)	CO4	L2
i)	What is cache memory?	(2M)	CO5	L2
j)	What is associative memory?	(2M)	CO5	L2

PART–B (5X10 = 50M)

2	Explain logic micro-operations in detail. Discuss their types, and hardware implementation with suitable examples.	10(M)	CO1	L2
	(OR)			
3a.	Explain how to find the 9's complement of a decimal number. Illustrate the process with suitable examples.	5(M)	CO1	L2
b.	Explain four-bit binary adder with neat block diagram.	5(M)	CO1	L2
4a.	Explain the micro-operations involved in executing the ISZ (Increment and Skip if Zero) instruction. Why can't memory words be incremented directly?	5(M)	CO2	L2
b.	Explain the structure and rules of the assembly language used for the basic computer	5(M)	CO2	L2

(OR)

5a.	Draw and explain the flowchart for the software implementation of multiplication on the basic computer.	10(M)	CO2	L3
6a.	Describe Booth's multiplication algorithm with an example.	10(M)	CO3	L3

(OR)

7a.	Describe the register and register-indirect addressing modes. How do they differ in accessing operands?	5(M)	CO3	L3
b.	Explain the following with an example a) Three-address instructions b) Two-address instructions	5(M)	CO3	L2
8a.	Explain the basic DMA operation with the help of a timing diagram.	5(M)	CO4	L2
b.	Explain how **interrupt-initiated I/O** reduces CPU idle time.	5(M)	CO4	L2

(OR)

9a.	Sketch and explain the message format of a character-oriented protocol.	5(M)	CO4	L2
b.	Explain the concept of handshaking with neat diagram.	5(M)	CO4	L2
10a.	Draw the memory hierarchy in a computer system. Define the terms a) auxiliary memory b) cache memory.	5(M)	CO5	L2
b.	Explain Associative Mapping in cache memory with a neat diagram. Mention its advantages and limitations.	5(M)	CO5	L2

(OR)

11a.	Draw and explain the block diagram of RAM with functional table.	5(M)	CO5	L2
b.	Distinguish between 'page', 'block', and 'page frame' with respect to virtual memory.	5(M)	CO5	L2

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