Code No: R203105K **R20** SET - 1

III B. Tech I Semester Regular/Supplementary Examinations, December -2023
COMPUTER ORGANIZATION AND ARCHITECTURE
(Com to EEE,ECE)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
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UNIT-I

1.	a)	What is Hamming Code? Explain in detail.	[7M]
	b)	Convert the number 506210 to the binary system.	[7M]
		(OR)	
2.	a)	Explain 2-variable K-Map.	[7M]
	b)	Simplify the following Boolean expression using K-Map Y=A'B'C' D'+A' B' CD'+A' BCD'+A' BCD+AB' C' D'+ABCD'+ABCD.	[7M]

UNIT-II

3.	a)	Explain JK-Flip flop with a neat diagram. And write its applications.	[7M]
	b)	Explain Full adder with a diagram.	[7M]
		(OR)	
4.	a)	What is an Encoder? Explain how does 8-to-3 Encoder work with its diagram	[7M]
	b)	What is a De-Multiplexer? Explain how does 1X4 De-Multiplexer works with a diagram.	[7M]

UNIT-III

5.	a)	What are Multi Processors and Multi computers? Explain.	[7M]
	b)	Explain all Arithmetic Micro Operations.	[7M]
		(OR)	
6.	a)	Explain various Computer Registers and their purposes.	[7M]
	b)	What is the need of Bus Structure? Explain in detail.	[7M]

UNIT-IV

7.	a)	What is Program Control? Write about all Data Transfer Instructions.	[7M]
	b)	Discuss about design of Control Unit.	[7M]
		(OR)	
8.	a)	What is an addressing mode? Explain various addressing modes and their purposes.	[7M]
	b)	Explain all types of Instructions formats with suitable examples.	[7M]

UNIT-V

9.	a)	Explain Serial Communication in detail.	[7M]
	b)	What is RAID? Explain.	[7M]
		(OR)	
10.	a)	What is an Associative Memory? Explain.	[7M]
	b)	Write the steps how data is found in a C=8 word, 2-way set associative cache	[7M]

Code No: R203105K **R20** SET - 2

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COMPUTER ORGANIZATION AND ARCHITECTURE
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Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
*****

UNIT-I

1.	a)	Explain 3-variable K-Map.	[6M]
	b)	Simplify the following Boolean expression using K-Map Y=(A + B + C') + (A + B' + C') + (A' + B' + C) + (A' + B' + C')	[8M]
		(OR)	
2.	a)	Explain NOR-NOR and OR-AND two level logic gates with neat diagrams.	[9M]
	b)	Convert $(11001101)_2$binary number to decimal Number.	[5M]

UNIT-II

3.	a)	Explain NAND RS latch and NOR RS latch in detail.	[8M]
	b)	Write about RS Flip flop with a diagram.	[6M]
		(OR)	
4.	a)	What is a De-Multiplexer? Explain how does 1X 4 De-Multiplexer works with a diagram.	[7M]
	b)	Draw 4 x 4 multiplier. And Explain its functionality.	[7M]

UNIT-III

5.	a)	Explain various performance measures used to measure computer system performance.	[7M]
	b)	What is Register transfer bus? Explain it in detail and also its need.	[7M]
		(OR)	
6.	a)	Explain all Shift Micro Operations.	[7M]
	b)	What is Instructional Cycle? Explain.	[7M]

UNIT-IV

7.	a)	What is an Address sequencing? Explain in detail.	[7M]
	b)	Explain all Data transfer instructions.	[7M]
		(OR)	
8.	a)	Discuss about various Instruction formats? Give examples.	[7M]
	b)	Explain Control Unit Design in detail.	[7M]

UNIT-V

9.	a)	Explain Priority Interrupts in detail.Explain the concept of cache memory. Also define Miss Rate, Hit Rate and Average memory access time.	[7M]
	b)	Draw DMA diagram. How does it work ? Explain in detail.	[7M]
		(OR)	
10.	a)	Explain the concept of Memory hierarchy with the help of a diagram.	[7M]
	b)	Explain how a virtual address is translated into a physical address in virtual memory.	[7M]

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Code No: R203105K **R20** SET - 3

III B. Tech I Semester Regular/Supplementary Examinations, December -2023
COMPUTER ORGANIZATION AND ARCHITECTURE
(Com to EEE,ECE)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
*****

UNIT-I

1.	a)	Convert the number 102410 to the binary system.	[7M]
	b)	Explain NOR-NOR and AND-OR two level logic gates with neat diagrams.	[7M]
		(OR)	
2.	a)	Simplify the following Boolean expression using K-Map Y=(A + B + C') + (A + B' + C') + (A' + B' + C) + (A' + B' + C')	[7M]
	b)	Explain 4-variable K-Map.	[7M]

UNIT-II

3.	a)	Draw JK flip-flop? Explain how it works.	[7M]
	b)	How does an SR NOR latch work? Explain it with diagram.	[7M]
		(OR)	
4.	a)	Draw 4X1 Multiplexer. Explain its functionality.	[7M]
	b)	What is an 8 to 3 Encoder? Explain how does it work with its diagram	[7M]

UNIT-III

5.	a)	Write about various computer types.	[7M]
	b)	Explain all Logic Micro Operations.	[7M]
		(OR)	
6.	a)	What is a Register Bus? Explain .	[7M]
	b)	What is a Register? Explain various computer registers.	[7M]

UNIT-IV

7.	a)	What is the need of Program Control? Write about Address sequencing?	[7M]
	b)	Explain various addressing modes and their purposes.	[7M]
		(OR)	
8.	a)	Write about all Data Transfer Instructions	[7M]
	b)	Discuss about various Instruction formats? Give examples.	[7M]

UNIT-V

9.	a)	Draw DMA diagram. How does it work? Explain in detail.	[7M]
	b)	How many characters per second can be transmitted over a 1200 baud line in Synchronous serial transmission?	[7M]
		(OR)	
10.	a)	Differentiate the virtual memory and cache memory. Write the merits and demerits of virtual memory.	[7M]
	b)	What is Cache memory? Describe temporal locality and spatial locality with respect to cache memory. Give examples.	[7M]

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Code No: R203105K **R20** SET - 4

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Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
*****

UNIT-I

1.	a)	Explain NAND-NAND and AND-OR two level logic gates with neat diagrams.	[9M]
	b)	Convert $(11101110)_2$binary number to decimal Number.	[5M]
		(OR)	
2.	a)	Mention the various steps related to Error detecting and correcting codes.	[7M]
	b)	Explain 2-variable K-Map and Don't care conditions.	[7M]

UNIT-II

3.	a)	Explain how does 3-to-8 line decoder with a diagram.	[7M]
	b)	Explain Full Adder functionality and its usage.	[7M]
		(OR)	
4.	a)	How does an SR NAND latch work? Explain with diagram.	[7M]
	b)	Draw T flip-flop? Explain how does it work?	[7M]

UNIT-III

5.	a)	Explain Bus Structure in detail.	[7M]
	b)	What is functional Unit? and also Explain Instruction Cycle.	[7M]
		(OR)	
6.	a)	Write about various Arithmetic Micro Operations.	[7M]
	b)	Discuss about all Logic Micro Operations.	[7M]

UNIT-IV

7.	a)	Differentiate Hardwired control with Microprogrammed control. Explain.	[7M]
	b)	Explain all types of Instructions formats with suitable examples.	[7M]
		(OR)	
8.	a)	Write about Control Unit Design in detail.	[7M]
	b)	Discuss about Address sequencing?	[7M]

UNIT-V

9.	a)	What is the need of Shift Registers? Explain RAID	[7M]
	b)	How many characters per second can be transmitted over a 1200 baud line in Synchronous serial transmission?	[7M]
		(OR)	
10.	a)	Define Write through and Write Back Policies. Explain.	[7M]
	b)	Differentiate the virtual memory and cache memory. Write the merits and demerits of virtual memory.	[7M]

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