Course Code: 20CS0504 **R20**

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY :: PUTTUR
(AUTONOMOUS)
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QUESTION BANK (DESCRIPTIVE)

Subject with Code: Computer Organization & Architecture(20CS0504) **Year & Sem :** II B.Tech & I-Sem
Course & Branch : B.Tech - CSE, CSIT, CSM, CIC **Regulation :** R20

UNIT –I

BASIC STRUCTURE OF COMPUTERS

1	a	Define Computer architecture, organization and list basic functional units in Computer.	[L1][CO1]	**[04M]**
	b	Sketch the basic functional unit of computer and explain each unit in detail.	[L3][CO2]	**[08M]**
2	a	Differentiate between I/O unit and memory Unit.	[L4][CO6]	**[04M]**
	b	Describe in detail about the Basic Operational Concepts with neat diagram	[L2][CO1]	**[08M]**
3	a	Discuss on basic I/O operations.	[L2][CO1]	**[06M]**
	b	Discuss about Bus structure with neat sketch.	[L2][CO1]	**[06M]**
4	a	Illustrate the types of Bus.	[L3][CO1]	**[06M]**
	b	Identify various steps of instruction cycle.	[L3][CO1]	**[06M]**
5	a	Demonstrate the Instruction Cycle with neat diagram.	[L2][CO1]	**[08M]**
	b	Differentiate between fetch cycle and execute cycle.	[L4][CO1]	**[04M]**
6	a	List out the Computer Instructions and Explain about it.	[L1][CO1]	**[06M]**
	b	Explain in detail about Data Transfer Instructions.	[L2][CO2]	**[06M]**
7	Assess the Data Manipulation Instructions and their types.		[L5][CO1]	**[12M]**
8	a	Describe the Arithmetic Instructions with example.	[L2][CO1]	**[06M]**
	b	Illustrate Logical instructions with example.	[L3][CO1]	**[06M]**
9	a	Discuss about Program counter and Memory Address register.	[L2][CO3]	**[04M]**
	b	Explain Program Control Instructions.	[L2][CO1]	**[08M]**
10	Illustrate the addressing modes with neat sketch.		[L3][CO3]	**[12M]**

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UNIT –II

DATA REPRESENTATION & COMPUTER ARITHMETIC

1	a	Illustrate the signed number representations	[L3][CO3]	**[06M]**
	b	Explain fixed point representations	[L2][CO3]	**[06M]**
2	a	Compare fixed and floating point representations.	[L5][CO1]	**[08M]**
	b	Describe about Character representation.	[L2][CO1]	**[04M]**
3	a	Develop a Flowchart for Addition and Subtraction.	[L3][CO3]	**[04M]**
	b	Illustrate the steps for Addition and Subtraction with an example.	[L3][CO3]	**[08M]**
4	a	Prepare a flowchart for multiplication of positive numbers.	[L6][CO3]	**[04M]**
	b	Illustrate the steps multiplication algorithm with an example.	[L3][CO3]	**[08M]**
5	a	Evaluate $(0010)_2$ with $(0011)_2$ using multiplication algorithm.	[L4][CO3]	**[06M]**
	b	Explain about signed and unsigned numbers representation in binary.	[L2][CO1]	**[06M]**
6		Illustrate the steps in Booth multiplication algorithm and Draw the flowchart with an example.	[L3][CO3]	**[12M]**
7		Invent the steps of Division restoring and draw the flow chart with an example.	[L6][CO3]	**[12M]**
8		Show the step by step signed-operand multiplication process using Booth algorithm When (-9) and (-13) are multiplied. Assume 5-bit registers to hold signed numbers and (-9) to be the multiplicand	[L4][CO3]	**[12M]**
9	a	Show the steps of signed operand multiplication with example?	[L2][CO1]	**[06M]**
	b	Write an algorithm for the division of floating point number and illustrate with an example.	[L2][CO3]	**[06M]**
10		Describe the Floating point numbers, its operations and implementation.	[L2][CO1]	**[12M]**

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UNIT –III

REGISTER TRANSFER & MICRO OPERATIONS AND CPU CONTROL UNIT DESIGN

1	a	Define register transfer language? Explain in detail.	[L4][CO3]	**[06M]**
	b	Design the block diagram of the hardware that implements the following register transfer statement P: R2←R1.	[L6][CO3]	**[06M]**
2	a	Summarize the Register Representations and way it is used.	[L5][CO3]	**[06M]**
	b	Construct a 4-line common bus system with a neat diagram.	[L6][CO3]	**[06M]**
3	a	Examine the Bus transfer with neat diagram.	[L3][CO3]	**[08M]**
	b	Draw and explain four bit adder-subtractor circuit.	[L2][CO3]	**[04M]**
4	a	Illustrate the three-state bus buffers with neat sketch.	[L3][CO3]	**[06M]**
	b	Discuss about binary increment with neat sketch.	[L4][CO3]	**[06M]**
5	Explain in detail about Arithmetic Micro Operations?		[L3][CO3]	**[12M]**
6	Describe about Logic Micro Operations with neat representation?		[L2][CO3]	**[12M]**
7	a	Explain shift micro operations and draw 4 bit combinational circuit shifter.	[L3][CO3]	**[08M]**
	b	Differentiate between Hardwired Control and Micro-programmed control.	[L4][CO6]	**[04M]**
8	What is Hardwired Control? Explain in detail with a neat diagram.		[L4][CO6]	**[12M]**
9	a	Describe the Micro Programmed Control with a neat sketch.	[L2][CO6]	**[06M]**
	b	Draw and explain typical hardware control unit.	[L2][CO6]	**[06M]**
10	Survey the Address Sequencing with neat diagram.		[L4][CO4]	**[12M]**

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UNIT –IV

MEMORY ORGANIZATION

1	a	Assess the Memory Hierarchy with neat sketch	[L5][CO3]	**[08M]**
	b	Differentiate between RAM & ROM?	[L4][CO2]	**[04M]**
2	What is Main Memory and what are the types in it? Explain in detail.		[L4][CO3]	**[12M]**
3	Categorize the semiconductor RAM in detail.		[L4][CO3]	**[12M]**
4	a	Distinguish between SRAM & DRAM?	[L4][CO2]	**[04M]**
	b	Discuss briefly about synchronous DRAMs?	[L2][CO3]	**[08M]**
5	a	Classify in detail about ROM.	[L4][CO3]	**[04M]**
	b	Compare the various cache mapping techniques.	[L2][CO4]	**[08M]**
6	a	Define Cache Memory? Explain in detail its mapping functions.	[L3][CO4]	**[08M]**
	b	Explain about hit and miss in the memory?	[L2][CO4]	**[04M]**
7	a	What is Virtual Memory? Discuss how paging helps in implementing virtual memory.	[L2][CO4]	**[08M]**
	b	What is the need of a page replacement? Discuss the LRU page replacement algorithm with an example.	[L2][CO3]	**[04M]**
8	a	Compare various types of Auxiliary memory.	[L2][CO2]	**[06M]**
	b	Define track and sector. Analyze the importance of auxiliary memory?	[L4][CO3]	**[06M]**
9	Describe the use of DMA controllers in a computer system with a neat block diagram.		[L2][CO6]	**[12M]**
10	a	Describe in detail about the DMA operations with neat diagram.	[L2][CO6]	**[06M]**
	b	Give detailed notes on DMA transfers with neat sketch.	[L4][CO6]	**[06M]**

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UNIT –V

PIPELINIG & PARALLEL PROCESSORS

1		Describe the concept of Pipelining with clear example.	[L2][CO5]	**[12M]**
2	a	Explain in detail about basic pipeline processing?	[L2][CO6]	**[06M]**
	b	Sketch the arithmetic pipeline for floating point multiplication?	[L3][CO5]	**[06M]**
3	a	Anticipate the conflicts in pipelining and describe about it.	[L6][CO5]	**[06M]**
	b	Illustrate the instruction pipeline with neat timing diagram.	[L3][CO5]	**[06M]**
4	a	Construct 4-segment Instruction Pipeline and explain.	[L6][CO5]	**[06M]**
	b	Define the hazards? Explain in detail about instruction hazards?	[L3][CO1]	**[06M]**
5		Categorize and discuss various forms of parallel processing based on Flynn's taxonomy with a neat sketch.	[L4][CO5]	**[12M]**
6	a	Visualize the characteristics of Multiprocessor.	[L1][CO5]	**[06M]**
	b	Implement three types multiprocessor system with neat sketch.	[L6][CO5]	**[06M]**
7		Describe the Interconnection Structures in detail.	[L3][CO6]	**[12M]**
8	a	Sketch 8×8 omega switching network and explain it.	[L3][CO6]	**[06M]**
	b	Express about crossbar switch with neat sketch?	[L2][CO6]	**[06M]**
9	a	What is multistage network? Appraise it with neat sketch.	[L5][CO6]	**[06M]**
	b	Analyze about the hyper cube network with neat sketch?	[L4][CO6]	**[06M]**
10		Illustrate the cache coherency.	[L4][CO6]	**[12M]**

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