SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS), PUTTUR

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QUESTION BANK (DESCRIPTIVE)

Subject with Code: Digital Logic and Computer Organization (23CS0506)
Course & Branch: B.Tech –CSE, CCC, CIC & CSIT
Year & Semester: II - B.Tech. & I-Semester   **Regulation:** R23

UNIT I
PART-A (2 MARKS)

1.	(a)	What is binary number system?	[L1][CO1]	[2M]
	(b)	What is an Excess3 code?	[L1][CO1]	[2M]
	(c)	What are the basic properties of Boolean algebra?	[L1][CO1]	[2M]
	(d)	List out the names of basic logical operators.	[L1][CO1]	[2M]
	(e)	List the names of universal gates with symbols	[L1][CO1]	[2M]

PART-B (10 MARKS)

2.	a)	Differentiate between floating point representation and fixed-point representation.	[L2][CO1]	[5M]
	b)	What is number system? explain the different types of number systems	[L1][CO1]	[5M]
3	a)	Convert the $(555)_{10}$ into binary, octal and Hexadecimal number systems.	[L2][CO1]	[5M]
	b)	Convert the following into binary to decimal i) $(1101.1)_2$ ii) $(1100.001)_2$	[L2][CO1]	[5M]
4	a)	Convert the following into decimal into hexa decimal i) $(5386.34)_{10}$ ii) $(214.35)_{10}$	[L2][CO1]	[5M]
	b)	Represent signed numbers from +7 to -8 using different ways of representation.	[L2][CO1]	[5M]
5		Explain the Binary codes with examples.	[L2][CO1]	[10M]
6	a)	List the Basic Logic functions.	[L1][CO1]	[3M]
	b)	Explain about Basic Logic gates with symbols and truth table.	[L2][CO1]	[7M]
7	a)	Explain about Universal Logic gates with symbols and truth table.	[L2][CO1]	[5M]
	b)	Prove the following identities: A' B' C' + A' B C' + A B' C' + A B C' = C' A B + A B C + A' B + A B' C = B + A C	[L3][CO1]	[5M]
8	a)	Simplify the following Boolean Expressions: A'C'+ABC+AC'+AB to three literals. A'B (D'+C'D) +B (A+A'CD) to one literal.	[L4][CO1]	[5M]
	b)	Simplify the given Boolean expression using K-map F(A,B,C,D)= ∑m(0,2,3,8,10,11,12,14)	[L4][CO1]	[5M]
9	a)	Simplify the following Boolean expressions using K-map i) F (x, y, z) = ∑m (2, 3, 4, 5) ii) F (x, y, z) = ∑m (3, 4, 6, 7).	[L4][CO1]	[5M]
	b)	Define combinational circuit and explain the procedure for designing a combinational circuit.	[L1][CO1]	[5M]
10	a)	Explain about Binary Half Adder with truth table and logic diagram.	[L2][CO1]	[5M]
	b)	Design and draw a full adder circuit.	[L6][CO1]	[5M]
11	a)	Define Decoder and explain in detail about a 2-to-4-line binary decoder.	[L1][CO1]	[5M]
	b)	Design and implement the following Boolean function by 8:1 Multiplexer. (A,B,C.D)=Σm(0,1,2,5,7,8,9,14,15).	[L6][CO1]	[5M]

UNIT II

PART-A (2 MARKS)

1.	(a)	Define a sequential circuit and draw its block diagram.	[L1][CO1]	[2M]
	(b)	What is Flipflop and different types of Flipflop?	[L1][CO1]	[2M]
	(c)	List the types of Buses.	[L1][CO2]	[2M]
	(d)	Sketch the basic functional units of computer.	[L3][CO2]	[2M]
	(e)	List the Classification of Computer Generations.	L1][CO2]	[2M]

PART-B (10 MARKS)

2.	a)	Differentiate between Combinational & Sequential circuits.	[L4][CO1]	[5M]
	b)	Distinguish between latches and flipflops.	[L4][CO1]	[5M]
3	a)	Explain the working principle of SR and JK flip-flops	[L2][CO1]	[5M]
	b)	Explain the working principle of T and D flip-flops.	[L2][CO1]	[5M]
4	a)	What is a counter? List the applications of counters.	[L1][CO1]	[5M]
	b)	Explain in detail about 3-bit ripple Up-counter using suitable diagram.	[L2][CO1]	[5M]
5		Define a Register. Explain in detail about various Shift Registers.	[L1][CO1]	[10M]
6	a)	List the different types of a computer.	[L1][CO2]	[5M]
	b)	Explain the functional units in the computer.	[L2][CO2]	[5M]
7	a)	Differentiate between I/O unit and memory unit.	[L4][CO2]	[5M]
	b)	Differentiate between control unit and ALU.	[L4][CO5]	[5M]
8		Describe the Basic Operational Concepts of computer with neat diagram.	[L2][CO3]	[10M]
9	a)	Give the Structure of BUS Interface with various devices in computer.	[L2][CO6]	[5M]
	b)	Explain briefly about the software of a computer.	[L2][CO6]	[5M]
10	a)	Explain briefly about the performance of a computer.	[L2][CO2]	[5M]
	b)	Explain briefly about the multiprocessors and multi computers of a computer.	[L2][CO2]	[5M]
11	a)	List the different types of computer generations.	[L1][CO2]	[5M]
	b)	Explain briefly about the Von- Neumann Architecture of a computer.	[L2][CO3]	[5M]

UNIT III

PART-A (2 MARKS)

1.	(a)	Represent -7 in signed magnitude, 1s complement and 2s complement	[L2][CO1]	[2M]
	(b)	What is the advantage of using Booth algorithm?	[L5][CO1]	[2M]
	(c)	What is floating point numbers?	[L2][CO1]	[2M]
	(d)	What are the basic operations to execute a complete instruction?	[L1][CO3]	[2M]
	(e)	What is the need of multiple organization?	[L2][CO3]	[2M]

PART-B (10 MARKS)

2.	a)	Explain the Flow chart for Addition and Subtraction.	[L2][CO3]	[5M]
	b)	Subtract 1101 and -1001 using 2's complement subtractions.	[L5][CO1]	[5M]
3	a)	Explain the working of a Ripple carry adder.	[L2][CO1]	[5M]
	b)	Illustrate the steps in Booth multiplication flow chart. Show the step by step signed multiplication of (-7) and (-11) using Booth algorithm	[L3][CO1]	[5M]
4		Develop flowchart for the Multiplication of floating-point number and illustrate with an example.	[L6][CO1]	[10M]
5		Develop and discuss the Flow chart for Division of numbers Give the step-by-step procedure to Divide 01101010100 with 10001and find the results	[L6][CO1]	[10M]
6		Develop flow chart for the addition/subtraction of floating-point number and illustrate with an example.	[L6][CO1]	[10M]
7.		Explain the fundamental concept in processor organization?	[L3][CO3]	[10M]
8.		Describe the execution of a complete instruction?	[L2][CO3]	[10M]
9.	a)	Explain the multiple bus organization.	[L3][CO3]	[6M]
	b)	Differentiate between Hardwired Control and Micro-programmed control.	[L2][CO4]	[4M]
10.		What is Hardwired Control? Explain in detail with a neat diagram.	[L3][CO4]	[10M]
11.		What is micro programed Control? Explain in detail with a neat diagram.	[L3][CO4]	[10M]

UNIT IV

PART-A (2 MARKS)

1.	(a)	What is the need of memory?	[L2][CO5]	[2M]
	(b)	Define main memory and auxiliary memory	[L5][CO5]	[2M]
	(c)	Classify main memory and secondary memory?	[L2][CO5]	[2M]
	(d)	What is cache memory?	[L1][CO5]	[2M]
	(e)	Define virtual memory?	[L2][CO5]	[2M]

PART-B (10 MARKS)

2.		Explain different types of ROM memories in detail?	[L2][CO5]	[10M]
3.		Categorize the semiconductor RAM in detail.	[L4][CO5]	[10M]
4.	a)	Describe about memory hierarchy concept in detail?	[L1][CO5]	[5M]
	b)	Discuss the speed, size and cost of a memory?	[L2][CO5]	[5M]
5.	a)	Explain 128*8 RAM with block diagram and function table.	[L3][CO5]	[6M]
	b)	Distinguish between SRAM & DRAM?	[L2][CO5]	[4M]
6.		Explain how memories connected with CPU with diagram.	[L3][CO5]	[10M]
7.	a)	What is cache memory? What is hit and miss in the cache memory.	[L2][CO5]	[5M]
	b)	List and explain different mapping in Cache memory	[L2][CO5]	[4M]
8.	a)	Compare the various cache mapping techniques.	[L2][CO5]	[5M]
	b)	What are the performance considerations in cache memory?	[L2][CO5]	[5M]
9.	a)	What is Virtual Memory? Discuss how address mapping using pages.	[L2][CO5]	[5M]
	b)	Compare Cache and virtual memory?	[L2][CO5]	[5M]
10.	a)	Describe in detail about the memory management requirements.	[L1][CO5]	[5M]
	b)	Compare various types of secondary storage systems.	[L2][CO5]	[5M]
11.	a)	Describe the secondary storage and explain with a neat block diagram.	[L1][CO5]	[5M]
	b)	Compare Cache and Auxiliary memories?	[L2][CO5]	[5M]

UNIT V
PART-A (2 MARKS)

1.	(a)	Define debugging?	[L1][CO6]	[2M]
	(b)	What is interrupt and classify?	[L1][CO6]	[2M]
	(c)	Classify interface circuits?	[L1][CO6]	[2M]
	(d)	What are the examples of processor?	[L1][CO6]	[2M]
	(e)	What is the need of buses and classify the bus structure?	[L1][CO6]	[2M]

PART-B (10 MARKS)

2.		Explain how to access input and output devices in detail?	[L3][CO6]	[10M]
3.		Explain the interrupts in input/output organization?	[L3][CO6]	[10M]
4.	a)	Explain the interrupt Nesting?	[L3][CO6]	[5M]
	b)	Explain about interrupt service routine (ISR)?	[L3][CO6]	[5M]
5.		Give detailed notes on DMA transfers with neat sketch.	[L2][CO6]	[10M]
6.	a)	Distinguish between Centralized arbitration and Distributed arbitration?	[L2][CO6]	[5M]
	b)	What is the need of BUS and explain different types in detail?	[L1][CO6]	[5M]
7.		Types of interfacing circuits and explain it?	[L2][CO6]	[10M]
8.		Explain the standard I/O devices?	[L3][CO6]	[10M]
9.		Draw the USB architecture and explain it?	[L1][CO6]	[10M]
10.	a)	Draw the PCI bus architecture and explain its operation?	[L1][CO6]	[5M]
	b)	Explain about SCSI BUS in detail?	[L3][C06]	[5M]
11.	a)	Compare data, address and control buses?	[L2][CO6]	[5M]
	b)	Explain about input and output interface circuits?	[L3][CO6]	[5M]

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