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K.S. SCHOOL OF ENGINEERING AND MANAGEMENT, BANGALORE - 560109
DEPARTMENT OF COMPUTER SCIENCE & BUSINESS SYSTEMS
SESSION: 2023-2024 (ODD SEMESTER)

FIRST ASSIGNMENT

Degree : B.E
Branch : CS & BS
Course Title : Digital Design & Computer Organization
Date : 27/12/2023

Semester : III
Course Code : BCS302
Max Marks : 10
Last Date for submission : 08 /01/2024

Q No.	Question	Marks	K-Level	CO mapping
1	Explain positive logic and negative logic. Prove that positive OR is equal to negative AND.	1	Understand(K2)	CO1
2	Simplify the following Boolean functions using k-map simplification technique and implement the circuit using only NAND gates. i. $F(A, B, C, D) = \sum m(0, 1, 3, 5, 7, 8, 9, 11, 13, 15)$ ii. $F(A, B, C, D) = BD + C'D + B'D'$	1	Apply(K3)	CO1
3	Simplify the following Boolean functions using k-map simplification technique and implement the circuit using only NOR gates. i. $F(A, B, C, D) = \pi M(3, 4, 5, 7, 9, 13, 14, 15)$ ii. $F(A, B, C, D) = \pi M(1, 3, 4, 6, 8, 9, 11, 13, 15) + \sum d(0, 2, 14)$ iii. $F(A, B, C) = \pi M(1, 2, 5, 7) + \sum d(0, 4, 6)$	1	Apply(K3)	CO1
4	Design and implement logic circuit which takes month name as input and provides an output when month has more than 30 days.	1	Apply(K3)	CO2
5	Solve the following Boolean expressions using 3:8 decoder and external gates $F1(A, B, C) = \sum(1, 4, 6)$ $F2(A, B, C) = \sum(3, 5)$ $F3(A, B, C) = \sum(2, 4, 6, 7)$	1	Apply(K3)	CO2
6	Design and implement a logic circuit to provide an output when any two or three of four switches are closed.	1	Apply(K3)	CO2
7	Design and implement BCD to excess-3 code convertor.	1	Apply(K3)	CO2
8	Design a combinational circuit with three inputs, x, y and z, and three outputs, A, B, and C. When the binary input is 0, 1, 2, or 3, the binary output is one	1	Apply(K3)	CO2

	greater than the input. When the binary input is 4, 5, 6, or 7, the binary output is two less than the input.			
9	Design a combinational circuit with three inputs and one output. (a) The output is 1 when the binary value of the inputs is less than 3. The output is 0 otherwise. (b) The output is 1 when the binary value of the inputs is an even number.	1	Apply(K3)	CO2
10	Design and implement full adder and full subtractor using basic gates	1	Apply(K3)	CO2



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DEPARTMENT OF COMPUTER SCIENCE & BUSINESS SYSTEMS
SESSION: 2023-2024 (ODD SEMESTER)

SECOND ASSIGNMENT

Degree : B.E
Branch : CS & BS
Course Title : Digital Design & Computer Organization
Date : 05/02/2024

Semester : III
Course Code : BCS302
Max Marks : 10
Last Date for submission : 12 /02/2024

Q No.	Question	Marks	K-Level	CO mapping
1	Implement the following Boolean functions using 8:1 multiplexer i. $F(A, B, C, D) = \sum m(0, 1, 3, 5, 7, 8, 9, 11, 13, 15)$ ii. $F(A, B, C, D) = \sum m(0, 1, 2, 5, 7, 8, 11, 12) + d(13, 14)$	1	Apply(K3)	CO2
2	Implement 8:1 multiplexer i. using two 4:1 and one 2:1 multiplexer ii. using only 2:1 multiplexer	1	Apply(K3)	CO2
3	Implement 16:1 multiplexer i. using 8:1 multiplexer and one 2:1 multiplexer ii. using only 4:1 multiplexer	1	Apply(K3)	CO2
4	Define multiplexer circuit. Design 8:1 multiplexer circuit using 4 input AND gates and OR gate	1	Apply(K3)	CO2
5	Develop Verilog codes for i. full adder and full subtractor ii. decimal adder	1	Apply(K3)	CO2
6	Write the block diagram, truth table and characteristics equation for JK flip-flop, T flip-flop and D flip-flop	1	Understand(K2)	CO2
7	With a neat diagram explain the internal structure of a processor and basic operational concept.	1	Understand(K2)	CO3
8	Explain how to measure the performance of the computer.	1	Understand(K2)	CO3
9	Explain the different basic types of instructions.	1	Understand(K2)	CO3
10	Explain Big-Endian and Little-Endian assignments with examples.	1	Understand(K2)	CO3

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