Course Name:

Course Outcome

CO1- To learn the fundamental concepts of digital logic design.

CO2- To study methods of logic expression simplification.

CO3- To understand the procedure for the analysis of combinational and sequential logic circuits.

CO4- To understand terms used in the designing of a memory and programmable logic devices.

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Mid Term Examination, Even Semester 2023-24
B. Tech (CCV/CSF/AIML & IIOT/DA/BCT), Ist year, IInd Sem
BCSG 0153: Digital Logic Design

Time: 2 Hours   Maximum Marks: 30

Section – A

Attempt All Questions   3 X 5 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
1	Reduce the following Boolean expression to the minimum literal $(A' + C)(A' + C')(A + B + C'D)$	3	2	U	C
2	Represent +83.025 into single precision floating point format.	3	1	U	P
3	We can perform logical operations on strings of bit by considering each pair of corresponding bits separately (called bitwise operation). Given two eight bit strings A= 10010101 and B= 10001100, evaluate the eight bit result after the following logical operations: a) NAND b) OR c) XOR	3	1	A	C
4	Express the following function as a canonical sum of minterm and as a canonical product of Maxterm. $F(A, B, C, D) = A'BC + BC + BC'D$	3	1	U	P
5	Consider you are working in a telecommunication industry as an engineer whose job profile is to extract original message from received data after rectifying error if present. Find original message from 12 bit received hamming code word using even parity: 000011101010	3	1	A	P

Section – B

Attempt All Questions   5 X 3 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
6	The state of 12 bit register is 010010010111. What is its content if it represents (a) Three decimal digits in BCD ? (b) Three decimal digits in the excess-3 code ? (c) A Octal number ? (d) A binary number ? (e) A gray code then find its binary equivalent value.	5	1	U	C
7	Simplify the Boolean function, using four variable K map and implement reduced expression using logic gates: $F(A, B, C, D) = \sum (0, 2, 4, 5, 6, 7, 8, 10, 13, 15)$	5	2	U	P
8	As an arithmetic unit designer you asked to design a digital circuit that can add 3 binary bit. Design that circuit and give relation between all possible set of input and their respective output.	5	3	A	P