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1102E1601

Candidate's Seat No :_____

Int BSc+MSc IT SD (WM) Sem.-1 Examination

MDC-SMD-114T

Introduction to IT & Digital Electronics

Time : 2-00 Hours] **February-2025** **[Max. Marks : 50**

Instructions:
1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

			Marks
Q.1	(I)	Conversion of hexadecimal to decimal number system (E F. B 1)16= (.....)10	5
	(II)	Conversion of octal number system to hexadecimal number system (25)8 to (.....)16	5
		OR	
Q.1	(I)	Perform Subtraction using 10's complement 745.81 – 436.62	5
	(II)	Perform Subtraction using 2's complement 43.25 -89.75	5
Q.2	(I)	Perform XS-3 Addition 984 + 599	5
	(II)	Prove A+AB=A+B using Boolean algebra laws.	5
		OR	
Q.2	(I)	Perform XS-3 Subtraction 247.6 - 359.4	5
	(II)	Prove (A + B) (A + C) = A + BC using Boolean algebra laws.	5
Q.3	(I)	Explain the types of universal logic gates with truth tables.	5
	(II)	Prove De Morgan's Theorem states: $(X \cdot Y)' = X' + Y'$	5
		OR	
Q.3	(I)	Convert SOP to Standard SOP Form Y = ABC + AB'C + AC	5
	(II)	Convert the gray code to binary (1 1 1 0 1) gray.	5
Q.4	(I)	Reduce the following using Karnaugh map f (A, B, C, D) = Σm (0,1,4,8,9,10)	5
	(II)	Minimum the expression using k-map y = ABC+ ABC+ABC+ ABC+ABC	5
		OR	
Q.4	(I)	Minimize the following function in SOP minimal form using K-Maps: F(A, B, C, D) = m(1, 2, 6, 7, 8, 13, 14, 15) + d(0, 3, 5, 12)	5
	(II)	By using the Karnaugh map, simplify the following Boolean equation for 4-variables F (X, Y, Z, W) = (1, 5, 12, 13)	5

Q.5	(I)	Derive the minimum SOP expression for the following incompletely specified logic function: F(A,B,C,D) = Σ m(2, 4, 5, 6, 10) + D(12, 13, 14, 15)	5
	(II)	Implement the following Boolean function using basic logic gates. F = A B + A B	5