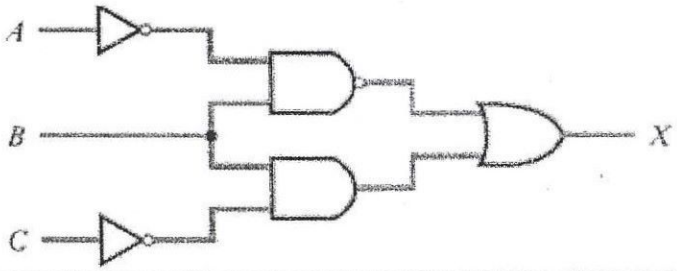
Term Evaluation (Odd) Semester Examination September 2025

Roll no.....

Name of the Course: BTech
Semester: 1st
Name of the Paper: Basic Electronics Engineering
Paper Code: TEC 101
Time: 1.5 hour **Maximum Marks: 50**

Note:
(i) Answer all the questions by choosing any one of the sub-questions
(ii) Each question carries 10 marks.

Q1	(10 marks)	CO1
a)	**Verify the below function with the help of truth table method:** $A + (B.C) = (A + B) . (A + C)$	
	OR	
b)	**Minimize the following by K map and realize the minimized function by NAND gate only** $F(A, B, C, D) = \pi M (0, 1, 3, 5, 7, 8, 9, 11, 13, 14, 15)$	
Q2	(10 marks)	CO1
a)	**Derive Boolean expression for output X for given digital circuit and sketch truth table. Identify the min-terms and max-terms as well.** 	
	OR	
b)	**(i)** $(7653.21)_8 = (?)_3 = (?)_{16}$ **(ii) If** $(211)_x = (152)_8$ **find the value of base x**	
Q3	(10 marks)	CO1
a)	**Express F (A, B, C, D) = (AB'C)+ (A'B') + (ABC'D) in canonical SOP and canonical POS form and minimize the function by K-map.**	
	OR	
b)	**Obtain the minimal SOP expression, with the help of k-map, for the following function and implement the same using NOR gate only:** $F(A, B, C, D) = \sum m(0,1,3,4,5,7,12,13,15) + \sum d(8,9)$	
Q4	(10 marks)	CO1
a)	**State and prove De Morgan's theorem. Explain min-terms and max-terms.**	
	OR	

Term Evaluation (Odd) Semester Examination September 2025

b)	(i) $(C8D83.0C)_{16} = (?)_{10}$ (ii) $\sqrt{(34)_x} = (5)_x$, find the base "x". (iii) $(3655)_7 = (?)_{10}$ (iv) $(656753)_8 = (?)_{16}$	
Q5	(10 marks)	
a)	(i) $(4362.25)_7 = (?)_4 = (?)_8$ (ii) The solution of the quadratic equation $x^2 - 11x + 22 = 0$ are $x = 3$ or $x = 6$. What is the base of the numbers?	CO1
	OR	
b)	Simplify folloing expressions with the help of Boolean algebra: Y= AB+(AC)'+AB'C(AB+C) Y= (A+A'B+A'B')'+(A+B')' Y= (C+D)'+A'CD'+AB'C+ACD'	