



BITS Pilani

Hyderabad Campus

Department of Electrical Engineering



Digital Design

First Semester 2020-21

Tutorial : 02

Boolean Algebra & Logic Gates

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1. Simplify

$$F = BC + B\bar{C} + BA$$

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2. Simplify

$$F = A + \bar{A}B + \bar{A}\bar{B}C + \bar{A}\bar{B}\bar{C}D + \bar{A}\bar{B}\bar{C}\bar{D}E$$

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3. Simplify

$$(X + Y) (X + \overline{Y}) (\overline{X} + Z)$$

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4. Simplify

$$XYZ + X \bar{Y} Z + XY \bar{Z}$$

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5. Show that

$$\overline{A(\overline{B}\overline{C} + BC)} = \overline{A} + (B + C)(\overline{B} + \overline{C})$$

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6. Write Minterms of

$$F(A, B, C) = \bar{A}\bar{B}\bar{C} + \bar{A}\bar{B}C + A\bar{B}\bar{C} + A\bar{B}C$$

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7. Write maxterms of

$$F(A, B, C) = (A + B + \bar{C})(\bar{A} + B + C)(\bar{A} + \bar{B} + \bar{C})$$

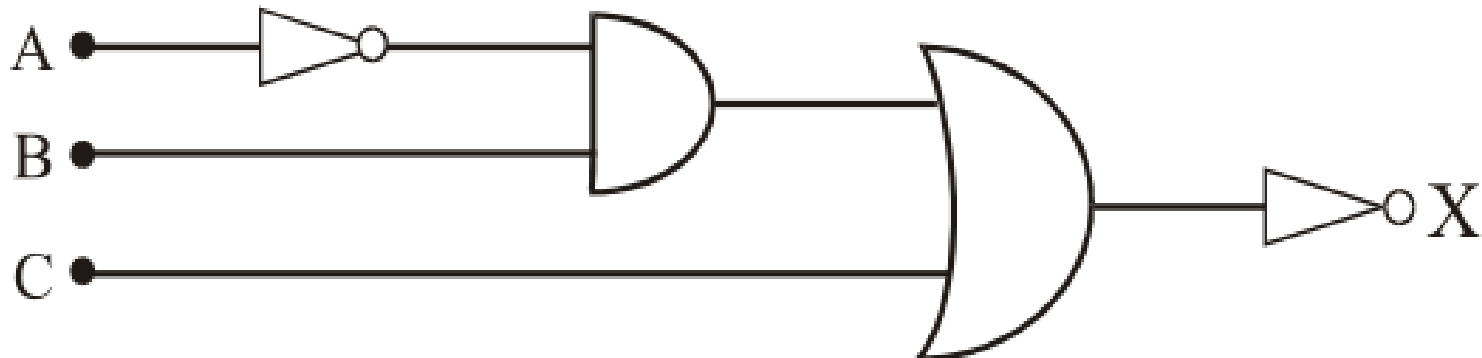
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8. Write canonical form and Truth Table of

$$F(A, B, C) = AB + \bar{B}(\bar{A} + \bar{C})$$

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9. Write the Boolean expression that describes mathematically the behavior of logic circuit shown in fig.10. Use a truth table to determine what input conditions produce a logic 1 output.



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10.

Given the Boolean expression

$$X = AB + ABC + A \overline{B} \overline{C} + A \overline{C}$$

- (a) Draw the logic diagram for the expression.
- (b) Minimize the expression.
- (c) Draw the logic diagram for the reduced expression.