JAYPEE UNIVERSITY OF ENGINEERING & TECHNOLOGY
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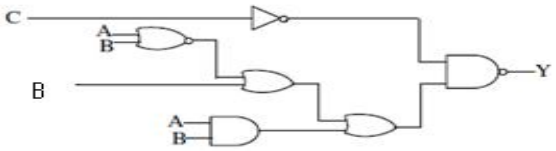
DIGITAL ELECTRONICS (14B11EC317)

Tutorial-4

Q1 **In the circuit shown in the figure, if C=0, the expression for *Y* is**



Q2 **Simplify the following Boolean expression using Karnaugh Map in (a) sum of product form (b) product of sum form:**

(i) **F(A,B,C,D,E) = ∑(13,15,17,18,19,20,21,23,25,27,29,31)**
d(A,B,C,D,E) = ∑(1,2,12,24)

(ii) **F(A,B,C) = ∑(0,1,2,4,5)**
d(A,B,C) = ∑(3,6,7)

(iii) **F(A,B,C,D) = ∑(0,6,8,13,14)**
d(A,B,C,D) = ∑(2,4,10)

(iv) **F(A,B,C,D) = A'B'D' +A'CD + A'BC**
d(A,B,C,D) = A'BC'D + ACD + AB'D'

Where'd' represent don't care condition.

Q3 **Simplify the following Boolean expression using Karnaugh Map in Product of sum**

(i) **F(A,B,C,D) = π(1,3,5,7,12,13,14,15)**

(ii) **F(x,y,z) = ∑(0,1,2,5,7)**

(iii) **F(A,B,C,D,E) = ∑(0,1,4,5,16,17,21,25,29)**

Q4 **Simplify the following Boolean expression using karnaugh Map and implement them with NAND gates only.**

(i) **F(A,B,C) = ∑(1,2,3,4,5,7)**

(ii) **F(A,B,C,D) = ∑(0,1,2,3,4,8,9,12)**

(iii) **F(A,B,C,D) = π(1,3,5,7,13,15)**

(iv) **F(A,B,C,D) = AB + A'BC + A'B'C'D**

(v) **F(A,B,C,D) = B'D +B'C + ABCD**
d(A,B,C,D) = A'BD + AB'C'D'

Q5 **Simplify the following Boolean expression using karnaugh Map and implement them with NOR gates only.**

(i) **F(A,B,C,D) = ∑(2,4,6,10,12)**
d(A,B,C,D) = ∑(0,8,9,13)

(ii) **F(A,B,C,D) = AB' + C'D' + A'CD'**

(iii) **F(A,B,C,D) = (A' + B' + D') (A' + B + C') (A' + B + D') (C+ A + D')**