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DIGITAL ELECTRONICS (14B11EC317)

Tutorial-3

Q1 **Simplify the following Boolean expression using Karnaugh Map in sum of Product**

(i) **F(A,B,C,D) = ACD' + C'D + AB' + ABCD**

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

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

(iv) **F(A,B,C,D,E) = A'B'CE' + B'C'D'E' + A'B'D' + B'CD' + A'CD + A'BD**

Q2 **Minimize the following Boolean expression using k-map and verify it by laws of Boolean algebra:**

(i) **F(A,B,C) = ABC + A'B+ABC'+ AC+A'B'C'**

(ii) **F(A,B,C) = A'C'+ABC+AC'+AB'+A**

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

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) = $\sum$(0,1,2,5,7)**

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

Q4 **Simplify the following Boolean expression using Karnaugh Map in (a) sum of Product (b) Product of sum**

(i) **F(A,B,C,D) = π(1,3,5,7,12,13,14,15,2,10)**

(ii) **F(x,y,z) = $\sum$(0,1,2,5)**

(iii) **F(A,B,C,D,E) = $\sum$(0,1,4,5,16,17,21)**

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

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

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

(vii) **F(A,B,C,D,E) = A'B'CE' + B'C'D'E' + A'B'D' + A'CD + A'BD**

Q5 **Simplify the following Boolean expression in (a) sum of Product (b) Product of sum**

(i) **F(A,B,C,D) = π(1,3,5,7,12,13,14,15,2)**

(ii) **F(x,y,z) = $\sum$(0,1,2,5,7,4)**

(iii) **F(A,B,C,D,E) = $\sum$(0,1,4,5,16,17,21,25,29,12,10)**