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Digital Electronics (EC0319)

(K map ,tabulation Method & SOP,POS Question Bank)

1) Obtain the simplified expressions & Find out F & F' in sum of products and product of sum for the Following Boolean functions: F(A,B,C,D,E) =Σ(0,1,4,5,16,17,21,25,29)

2) Simplify the Boolean function using kmap :
(1) F(w,x,y,z) = Σm (0,1,2,4,5, 12,13,)
(2) F =A'B'D'+A'CD+A'BC d=A'BC'D+ACD+AB'D' Where "d " indicates Don't care Conditions

3) Simplify the Boolean function using k-map & implement the expression using NOR & NAND logic. F(w,x,y,z) = Σm (0,1,2,4,5, 12,13)

4) Obtain the simplified expressions for the Following Boolean functions & Implement this logic into AOI logic:
F(A,B,C,D,E) = ⊓M (0,1,2,4,7,8,12,14,15,16,17,18,20,24,28,30,31)

5) Reduce the following expression in SOP form using mapping and implement the minimal expression using NAND and NOR logic F=Σm (0,2,3,10,11,12,13,16,17,18,19,20,21,26,27)

6) Simplify the following Boolean expression using K-map. Implement same using NAND gates only.F(a,b,c,d) = ∑m (0,3,6,7,11,14,15)

7) Minimize the following expression using K-map and and implement the minimal expression using NAND and NOR logic F(A,B,C,D) = ⊓M (4,5,7,12,14,15) +Σd (3,8,10)

8) Minimize the following expression using K-map:F=⊓M(2,3,7,8,9,10,11,12,16,17,18,19,20,21,23,26,27)

9) Obtain the simplified expressions in sum of products for the Following Boolean function, implement this logic into AOI logic and implement the minimal expression using NAND and NOR logic.: (A,B,C,D,E) = ⊓M (0,1,4,5,16,17,21,25,29)

10) Minimize the following expression using K-map and implement this logic into AOI logic and implement the minimal expression using NAND and NOR logic.:
11) F(A,B,C,D) = Σm (1,3,7,11,15)+ Σ d (0,2,5)

12) 11.Obtain the simplified expressions using k-map. *F*(A,B,C,D,E) =Σm(0,1,2,4,7,8,12,14,15,16,17,18,20,24,28,30,31)

13) Obtain the simplified expressions for the Following Boolean functions: F(A,B,C,D,E) = πM (0,1,4,5,16,17,21,25,29)

14) Expand F(A,B,C,D)= A+BC'+ABD'+ABCD to Maxtern & Minterm .

15) Obtain thr product of sum of the function: A (B'+A) B

16) Expand A (A'+B) (A'+B+C') to Maxtern & Minterm

17) Obtain the simplified expressions in sum of products for the Following Boolean functions & Implement it into Kmap : A′B′CE′ + A′B′C′D′ +B′D′E′ + B′C D.

18) Obtain the simplified expressions in SOP form for the following Boolean function & Implement it into Kmap: F(A, B, C, D) = ABD+A'C'D'+A' B+A'CD'+AB'D

19) Obtain minimal expression for Σm (1,2,3,5,6,7,8,9,12,13,15) using tabular method.

20) Minimize the following expression Σm(0,12,8,9,15,17,21,24,25,27,31) using tabular method.