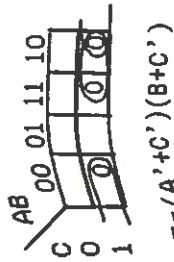
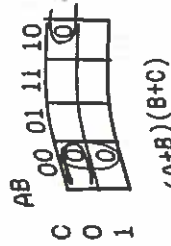


3.7 (a) $F = \sum m(0, 2, 3, 4, 6)$



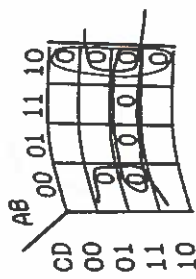
$F = (A' + C')(B + C')$

(b) $F = \prod M(0, 1, 4)$



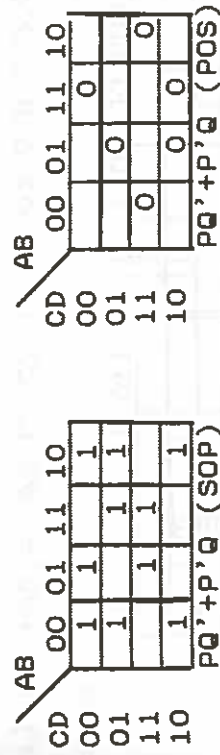
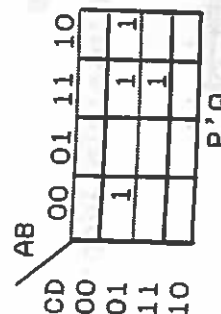
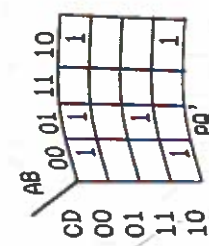
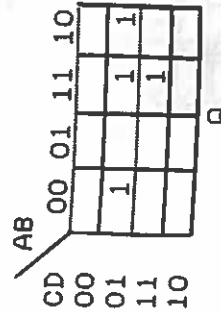
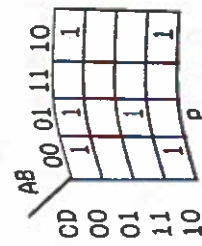
$F = (A + B)(B + C)$

(c) $F = BC'D' + BC'D + A'C'D' + BCD' + A'B'CD'$



$F = (A' + B)(C' + D')(B + D')$

3.8 $P(A, B, C, D) = \sum m(0, 2, 4, 7, 8, 10)$, $Q(A, B, C, D) = ABD + B'C'D$
(a) Minimum SOP



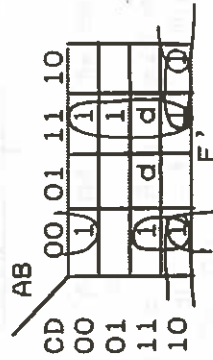
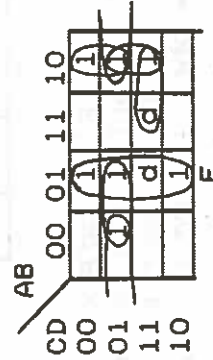
$P \oplus Q = B'D' + B'C' + BCD + A'C'D' + ABD$

(b) Minimum POS

See K-maps in (a)

$P \oplus Q = (A' + B' + D)(B' + C' + D)(B + C' + D')(A + B' + C + D')$

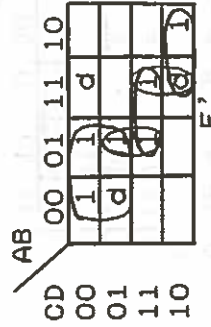
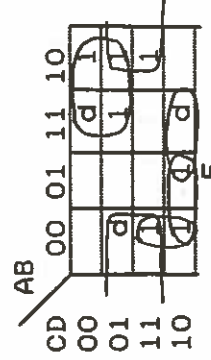
3.9 (i) $F = \sum m(1, 4, 5, 6, 8, 9, 11) + d(7, 15)$



(a) Prime implicants: $A'C'D$, $A'B$, ACD , $AB'C'$, $AB'D$, $B'C'D$
(b) Essential: $A'B$, $AB'C'$

(c) Minimum SOP $F = A'B + AB'C' + A'C'D + ACD$
(d) Minimum SOP $F = AB + A'B'D' + A'B'C + B'CD'$
(e) Minimum POS $F = (A' + B')(A + B + D)(A + B + C')(B + C' + D)$
(f) Minimum POS $F = (A + B')(A' + B + C)(A + C + D')(A' + C' + D')$

(ii) $F = \sum m(2, 3, 6, 8, 9, 11, 13) + d(1, 12, 14)$



(a) Prime implicants: AC' , $B'D$, $A'B'C$, $A'CD'$, BCD'
(b) Essential: AC' , $B'D$
(c) Minimum SOP $F = AC' + A'CD' + B'D$
(d) Minimum SOP $F = A'C' + BCD + ACD'$
(e) Minimum POS $F = (A + C)(B' + C' + D')(A' + C' + D)$
(f) Minimum POS $F = (A' + C)(A + C' + D)(B + D')$