**Assignment 3**

**Due, Wednesday, October 12, 2022 for maximum 100%**

**Thursday, October 13, 2022 for maximum 90%**

**Friday, October 14, 2022 for maximum 80%**

**Saturday, October 15, 2022 for maximum 70%**

**Deliverables**

To complete this assignment, submit this completed document to Webcourses.

**Steps**

Simplification is based on the principle of combining the terms present in adjacent cells. The 1s in the adjacent cells can be grouped by drawing a loop around those cells following the given rules:

* Steps to solve expression using SOP form K-map
  1. Select K-map according to the number of variables
  2. Identify minterms as given in problem
  3. For SOP put 1’s in blocks of K-map respective to the minterms (0’s elsewhere)
  4. Make rectangular groups containing total terms in power of two like 2, 4, 8... (except 1) and try to cover as many elements as you can in one group
  5. From the groups made in step 4, find the product terms and sum them up for SOP form

**Example**

1. SOP form, Z= ∑A,B,C(1, 3, 6, 7)
   1. K-map

BC

A

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | B’C’ | B’C | BC | BC’ |
| 00 | 01 | 11 | 10 |
| A’ | 0 | 0  0 | 1  1 | 1  3 | 0  2 |
| A | 1 | 0  4 | 0  5 | 1  7 | 1  6 |

* 1. Sum the product terms
     1. From red group we get product term A’C
     2. Fromgreen group we get product term AB
     3. Final expression (A’C + AB)

**Assignment**

1. SOP form, Z= ∑A,B,C(2, 4, 5, 6)
   1. K-map
   2. Sum the product terms

Final expression:

1. SOP form, Z= ∑A,B,C(0, 1, 6, 7)
   1. K-map
   2. Sum the product terms

Final expression:

1. SOP form, Z= ∑A,B,C(2, 3, 4, 5)
   1. K-map
   2. Sum the product terms

Final expression:

1. SOP form, Z= ∑A,B,C(3, 4, 6, 7)
   1. K-map
   2. Sum the product terms

Final expression: