CSCE/EE A241 Homework Assignment 3

Dur: Monday, January 31, 2022, at 11:59 PM

Please submit your solutions as an email attachment to [fwmoore@alaska.edu](mailto:fwmoore@alaska.edu). The graders will return your scores and comments via email next week.

Consider the following truth table:

W X Y Z F

0 0 0 0 1

0 0 0 1 0

0 0 1 0 0

0 0 1 1 1

0 1 0 0 1

0 1 0 1 0

0 1 1 0 0

0 1 1 1 0

1 0 0 0 0

1 0 0 1 1

1 0 1 0 1

1 0 1 1 0

1 1 0 0 0

1 1 0 1 1

1 1 1 0 1

1 1 1 1 1

* Write the sum-of-minterms expression for F.

F = (W'X'Y'Z') + (W'X'YZ) + (W'XY'Z') + (WX'Y'Z) + (WX'YZ') + (WXY'Z) + (WXYZ') + (WXYZ)

F = (W'X'YZ) + (WX'Y'Z) + (WYZ') + (W'Y'Z') + (WXZ)

(0, 3, 4, 9, 10, 13, 14, 15)

* Write the product-of-maxterms expression for F.

F = (W + X + Y' + Z')(W' + X + Y + Z')(W' + Y' + Z)(W + Y + Z)(W' + X' + Z')

(1, 2, 5, 6, 7, 8, 11, 12)

* Write the sum-of-minterms expression for F’.

F = (W'X'Y'Z) + (W'X'YZ') + (W'XY'Z) + (W'XYZ') + (W'XYZ) + (WX'Y'Z') + (WX'YZ) + (WXY'Z')

F' = (W'X'Y'Z) + (WX'YZ) + (WY'Z) + (W'YZ') + (W'XZ)

(1, 2, 5, 6, 7, 8, 11, 12)

* Write the product-of-maxterms expression for F’.

F' = (W + X + Y + Z')(W' + X + Y' + Z')(W' + Y + Z')(W + Y' + Z)(W + X' + Z')

(0, 3, 4, 9, 10, 13, 14, 15)