EE203 – HW2

Due Mar 3, 2020 during regular class hour. HW should be submitted to the instructor in the first 5 minutes of the class.

Q1: Demonstrate the validity of the following identities by means of truth tables:

a) DeMorgan's theorem for three variables: $(x + y + z)' = x'y'z'$ and $(xyz)' = x' + y' + z'$
b) The distributive law: $x + yz = (x + y)(x + z)$
c) The distributive law: $x(y + z) = xy + xz$
d) The associative law: $x + (y + z) = (x + y) + z$
e) The associative law and $x(yz) = (xy)z$

Q2: Simplify the following Boolean expressions to a minimum number of literals:

a) $xy + xy'$
b) $(x + y) (x + y')$
c) $xyz + x' y + xyz'$
d) $(A + B)'(A' + B')'$
e) $(a + b + c')(a' b' + c)$
f) $a'bc + abc' + abc + a'bc'$

Q3: Obtain the truth table of the following functions and express each function in sum of minterms and product of maxterms:

a) $(xy + z)(y+xz)$
b) $(A' + B)(B' + C)$
c) $y'z + wxy' + wxz' + w'x'z$

Q4: List the truth table of the function:

a) $F = xy + xy' + y'z$
b) $F = bc + a'c'$