**Student Names: Metin Dumandağ, Fatih İver**
**Student IDs: 201540008, 2016400264**
**Group ID: 16**
**Session ID: 1**

# CMPE 240 2018 Experiment 2 Preliminary Work

## Truth Table

| # | i2 | i1 | i0 | b |
|---|---|---|---|---|
| **0** | 0 | 0 | 0 | 1 |
| **1** | 0 | 0 | 1 | 0 |
| **2** | 0 | 1 | 0 | 1 |
| **3** | 0 | 1 | 1 | 0 |
| **4** | 1 | 0 | 0 | 1 |
| **5** | 1 | 0 | 1 | 1 |
| **6** | 1 | 1 | 0 | 1 |
| **7** | 1 | 1 | 1 | 0 |

## Sum of Products (SOP)

**b = (i0'.i1'.i2') + (i0'.i1.i2') + (i0'.i1'.i2) + (i0.i1'.i2) + (i0'.i1.i2)**

## Minimized SOP

**b = (i0'.i1'.i2') + (i0'.i1.i2') + (i0'.i1'.i2) + (i0.i1'.i2) + (i0'.i1.i2)**
**= (i0'.i1'.i2') + (i0'.i1'.i2) + (i0'.i1.i2') + (i0'.i1.i2) + (i0.i1'.i2)**
**= (i0'.i1').(i2'+i2) + (i0'.i1).(i2'+i2) + (i0.i1'.i2) - Distributivity**
**= (i0'.i1').(1) + (i0'.i1).(1) + (i0.i1'.i2) - Complement**
**= (i0'.i1') + (i0'.i1) + (i0.i1'.i2) - Identity**
**= (i0').(i1'+i1) + (i0.i1'.i2) - Distributivity**
**= (i0').(1) + (i0.i1'.i2) - Complement**
**= (i0') + (i0.i1'.i2) - Identity**
**= (i0'+i0).(i0'+(i1'.i2)) - Distributivity**
**= (1).(i0'+(i1'.i2)) - Complement**
**= i0'+(i1'.i2) - Identity**

**Student Names: Metin Dumandağ, Fatih İver**
**Student IDs: 201540008, 2016400264**
**Group ID: 16**

## Product of Sums (POS)

**b = (i0'+i1+i2).(i0'+i1'+i2).(i0'+i1'+i2')**

## Minimized POS

| | |
|---|---|
| **b = (i0'+i1+i2).(i0'+i1'+i2).(i0'+i1'+i2')** | |
| **= (i0'+i1+i2).((i0'+i1'+i2).(i0'+i1'+i2'))** | **- Associativity** |
| **= (i0'+i1+i2).((i0'+i1').(i2+i2'))** | **- Distributivity** |
| **= (i0'+i1+i2).((i0'+i1').(1))** | **- Complement** |
| **= (i0'+i1+i2).(i0'+i1')** | **- Identity** |
| **= (i0')+((i1+i2).i1')** | **- Distributivity** |
| **= (i0')+((i1.i1')+(i2.i1'))** | **- Distributivity** |
| **= (i0')+(0 + (i2.i1'))** | **- Complement** |
| **= (i0')+(i2.i1')** | **- Identity** |
| **= (i0'+i2).(i0'+i1')** | **- Distributivity** |

## Circuit