14.10.2016

Istanbul Technical University
Department of Computer Engineering

BLG 231E - Digital Circuits
Assignment 2

Due Date: 20.10.2016, **Thursday,** 17.00.

- Please **write <u>neatly</u>**.
- If you are not preparing your homework in a computer, please show complement of a symbol by putting a **dash** over the symbol (e.g. do not use *x'* use $\bar{x}$).
- **Consequences of plagiarism:** Disciplinary regulations of The Council of Higher Education and of the university are applied.
- **No late submissions** will be accepted.

Submissions: Please submit your solutions to the Digital Circuits Course Assignment Box at the department secretary's office.

f and ***g*** are two logical functions, where

$f(a,b,c,d) = \sum m(0,2,3,7,8,10,12,13)$,

$f(a,b,c,d) + g(a,b,c,d) = \prod M(1,4,6,14)$, and

$f(a,b,c,d) \cdot g(a,b,c,d) = \sum m(7,13)$.

i. Write the first and the second canonical forms for the function ***g (a, b, c, d)***.

ii. Minimize the logical expression for ***g*** in SoP (*sum of products*) form.

iii. Design and draw the circuit for the expression found in **ii** using only **2-input NOR gates**.