01.11.2012

Istanbul Technical University
Department of Computer Engineering

BLG 231E - Digital Circuits
Assignment 3

Due Date: 08.11.2012, **Thursday,** 17.00.

- Write your answers to the **Answer Sheet** provided in "Sınıf Dosyaları" folder at the *ni-nova* system. Any other paper will not be accepted.
- Plagiarized assignments will be given a negative mark.
- **No late submissions** will be accepted.

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

1. Find the prime implicants of the following fuction using a Kaurnaugh Diagram.

$$f(a,b,c,d) = \cup_0(4,6,11,15) + \cup_\Phi(0,3,10,13,14)$$

2. Create the prime implicant chart of the above function according to the given cost criteria and simplify it. Explain the steps of the simplification. Write the expression of the fuction with the least cost and give the total cost.
Cost criteria: 2 units for each variable and 1 unit for each complement.

3. Draw the least cost expression of the function using only **2-input NAND** gates.