UIC COLLEGE OF ENGINEERING
UNIVERSITY OF ILLINOIS AT CHICAGO
Department of Electrical and Computer Engineering

Advanced Digital System Design
ECE 594-Online Offering-Spring 2018
Assignment1- Due date: January 29

1. Determine the decimal values of the following unsigned numbers.

a. $(10100111)_2$

b. $(2017)_8$

c. $(EFA4)_{16}$

d. $(CED192A11)_{16}$

2. All numbers below are in 8-bit 2's complement. Perform operations shown. Indicate if overflow occurs, and show remedy for the overflow.

a. 10001010 + 01110110

b. 01011010 – 10011010

c. 11110111 + 11101010

d. 00101111 – 11110000

e. 11011010 – 10011010

3. Function f(a, b, c, d) is described below. **A)** Show a complete list of prime implicants of this function in the cubical form. **B)** Show essential prime implicants of f in the cubical form. **C)** Write all possible minimal realizations of f(a, b, c, d) in SOP form.

D) Show minimal circuit realization using 2- or 3-input NAND gates.

$$f(a, b, c, d) = Sm(2, 3, 4, 9, 11, 12, 13, 14), d(5,6)$$

A) Prime Implicants

B) Essential Prime Implicant

C) SOP

D) Minimal realization using NAND gates

Attention:

Make a PDF or Word file of your report and submit it to the course site. Also, compress all the files and documents mentioned in the "Deliverables" section into a zip file and email it to Navabi.ta03@gmail.com. The name of files must be in the format given with proper file type extension.

"YourFirstName-YourLastName-CA#1"