Indian Institute of Technology Kharagpur

SPRING Semester, 2013
COMPUTER SCIENCE AND ENGINEERING

CS21002: Switching Circuits and Logic Design

Practice Assignment–1

Full Marks: 100

Time allowed: ϵ hours

INSTRUCTIONS: INSTRUCTIONS: These assignments are for your practice and would not be graded. All problem numbers in this assignment refer to the book *Switching and Finite Automata Theory* (3rd Edition) by *Z. Kohavi* and *N. K. Jha*, unless stated otherwise.
Tutorial Date: 23/01/2013.

Chapter 1: Number Systems and Codes

1. 1.1(f).

2. 1.2.

3. 1.4(f)

4. 1.8(a).

5. Convert +46, +29, -46 and -29 to binary, using the signed 2's complement representation and just enough bits to accommodate the number with the larger absolute value. Then perform the binary operations (+29)+(-49), (-29)+(+49), and (-29)+(-49). Indicate overflow, if any.

Chapter 3: Switching Algebra and its Applications

6. Problem 3.3(d)

7. Problem 5.4. Do not use Karnaugh maps. At every step, indicate the property that you are using (*distributive law*, *absorbtion*, etc.).

8. Implement a 2-input XOR gate using only 2–input NAND gates. Use the minimum number of gates (should be four). Give algebraic justification to establish the correctness of your design.

9. Problem 3.16 (both parts (a) and (b)).

10. Problem 3.20.

11. Problem 3.25(c).