CSCI 101 Intro to Computer Science Josh Stangle Spring 2018

TEST 2

Your Name (please PRINT): _____

==========**INSTRUCTIONS**==========

- Fill in the above items.
- There is a total of 5 problems, for a maximum possible total value of 60 points. **Make sure you have all 6 test pages (this cover page + 5 test pages)**. You are responsible to check that your test booklet has all 6 pages. Alert a proctor if your copy is missing any pages.
- **Show all your work.** Only minimal credit will be given for answers without supporting work.
- **Write your answer in the box** at the bottom of pages 2-6.
- **Use the back of test pages if additional space is needed**, and for scratch paper.
- You may use scientific or standard calculators. No graphing calculators are allowed.

Do not write below this line

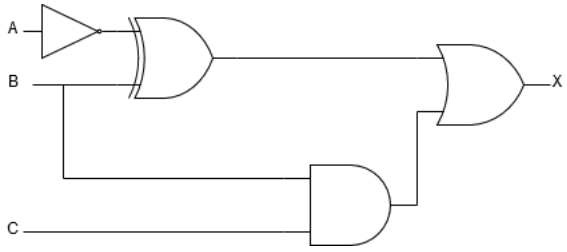
Pb. #	Max Points	Your Score
1	6	
2	14	
3	10	
4	10	
5	10	
6	10	
Total	(60)	

1. Draw two different circuit diagrams which are equivalent. You can either use the laws of Boolean Algebra or truth tables to prove they are equivalent.

2. For the following Boolean expression give the Circuit Diagram and truth table:

$$(AC + B)' \oplus BC$$

3. For the following Circuit diagram, give the Boolean Expression and truth table:



4. (a) For the following numbers, find their representation in Binary and then find A+B and A-B *using binary addition and subtraction.*

$$A = 151,\ B = 288$$

(b) Express A+B from part (a) in octal.

5. Suppose you have 8 digits to represent positive and negative numbers using fixed-size representation. Suppose $X = 01101010$ in binary. Determine the quantity of X and find $-X$ in Binary using the Two's Complement rule.

6. Express the following number in base 4:

$$(1264)_7.$$

Bonus: (5pts) Given the following Huffman Code,

Letter	Code
A	00
E	01
L	100
O	110
R	111
B	1010
D	1011

find the value of the following data:

101111011011101001100100

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