CPSC 1050 – Chapter 3 & 4 Lab

Lab Questions (10 Points)

1. Complete the following table: (3 Points)

Binary Number	What is the decimal number if this binary number is interpreted as an unsigned integer	What is the decimal number if this binary number is interpreted as a signed integer using sign-magnitude notation	What is the decimal number if this binary number is interpreted as a signed integer using 2's complement notation
1101 1101	221	-93	35

2. Huffman Encoding – Decode the following text with the following Huffman encoding scheme and determine what is the compression ratio: (1 Point)

Encoded Passage/Text	Encoding Scheme	
Decode 1010110111011011 BORED	**Huffman Code**	**Character**
	00	A
	01	E
	100	L
	110	O
	111	. R
	1010	B
	1011	D

Compression Ratio is?

3. Run-Length Encoding – Encode the following using Run-Length Encoding and determine the compression ratio. **Use * as the flag character**. (1 Point)

llllllllaaaaaaaabbbkkkkkkkjjjkkkkooooooo$$$$$

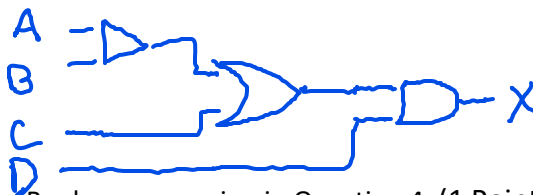*l7*a7bbb*k6jjjkkk*o7*$5

Compression Ratio is?

24/41 = ~ 58.5%

4. Boolean Expressions - Draw (by hand) a circuit diagram corresponding to the following Boolean expression: (1 Point)
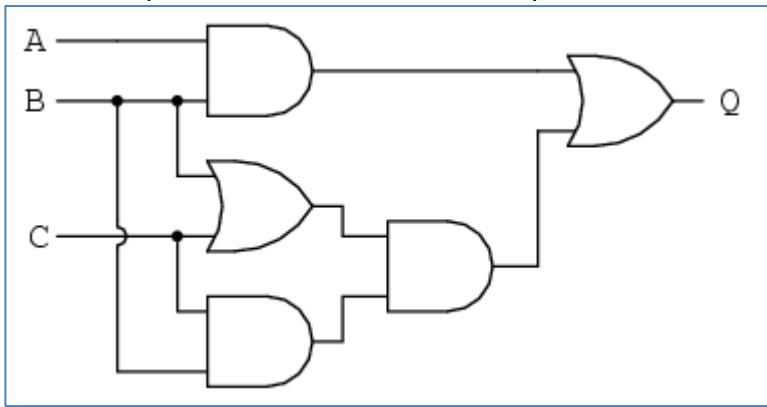
X = (A'B + C)D

5. Create the truth table for the Boolean expression in Question 4. (1 Point)

6. Boolean Expressions: Write a Boolean expression for the following circuit diagram: (2 Points)

$Q = (BC)(B+C) + AB$

Q = ?

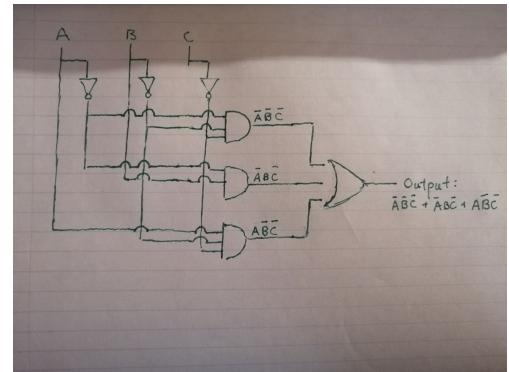7. Given the following truth-table, where W is the output. (1 Point)

A	B	C	W
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	0

$\bar{A}\bar{B}\bar{C} = 1$

$\bar{A}B\bar{C} = 1$

$A\bar{B}\bar{C} = 1$

What is the Boolean expression for W – not simplified?

W = (A'B'C')+(A'BC')+(AB'C')

SUBMISSION

One document with all answers to BrightSpace in the folder called **Chapter 3 & 4 Lab**. The file format may be PDF, DOCx, or whatever file format based on the platform you choose to create your file.

DUE DATE

<u>**See BrightSpace. No late submissions accepted nor graded.**</u>