**WANDYEZ - CSC 1500 – Homework 1**

**(1)** Create a truth table for the following logical statement, showing all eight possible combinations of the three variables A, B, and C. (*25 pts.*)

**((A XOR B) NOR !C) AND ((B NAND C) OR !A)**

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**(2)** Use truth tables for the three following logical statements, and then state which of the basic logical statements (AND, OR, NOT, XOR, NAND, NOR, XNOR) is equivalent with it. Don’t forget to spot the NOT (!) symbols. (*8 pts. Each)*

(2.1) **!(!A OR !B)**

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This is the equivalent of a NAND statement.

(2.2) **((A AND !B) OR (!A AND A)) OR (B AND !A)**

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This is the equivalent of a XOR statement.

(2.3) **(A NOR B) NAND (B NOR A)**

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This is the equivalent of an OR statement.

**(3)** Write out the logical statement that matches the following logical circuit. (*25 pts.*)

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(!A AND (B AND C)) XOR (( A NOR B) NAND C)

**(4)** Using ONLY NAND, create a logical GATE DIAGRAM equivalent to the one given. (*26 pts.)*

I was unclear if you wanted the above diagram, or the text included below. I have included both. Note: the text included below is not a ‘diagram’, it is therefore unclear if you wanted a GATE DIAGRAM of the text given, or an equivalent diagram of the diagram already given.

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**(A AND B) OR !B**

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