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POSITIVE LOGIC VS. NEGATIVE LOGIC (1/1 points)

Which of the following statements are true?

Positive logic is defined as

- ☒ a) The configuration where the "true" state has a higher voltage than the "false" state. ✓
- ☐ b) The state where the signal is "high".
- ☐ c) The state where the transistor is "on".
- ☐ d) The state where the transistor is "off".
- ☐ e) None of the above

EXPLANATION

Positive logic is the configuration where the "true" state has a higher voltage than the "false" state. For example, if a switch is said to be "true" when it is pressed, then in a positive logic interface a high voltage will be read when the switch is pressed. In a negative logic interface, a low voltage would be read when the switch is pressed.

Check

Hide Answer(s)

BINARY OPERATORS (3/3 points)

Calculate the logic expression for each set of inputs A, B, C. Specify the answers in 4-bit binary. For example if you think the answer is 5, enter it as 0101

A	B	C	A & (B   C)
0100 <sub>2</sub> =4	0101 <sub>2</sub> =5	0110 <sub>2</sub> =6	0100 Answer: 0100
0111 <sub>2</sub> =7	1010 <sub>2</sub> =10	0001 <sub>2</sub> =1	0011 Answer: 0011

$1110_2=14$  $1001_2=9$  $0111_2=7$ 

1110

**Answer:** 1110**EXPLANATION**

Binary operators operate on their operands in a bitwise fashion. The & symbol signifies a bitwise AND operation and the | symbol signifies a bitwise OR operation. Operations within parentheses are always carried out first in the order of operations.

Check

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**LOGIC VOLTAGE LEVELS** (1/1 points)

If a voltage on an input of the TM4C123 is between 0 and 1.3 V, that input considered:

- ☒ a) Low or logic "0" ✓
- ☐ b) Unknown or illegal
- ☐ c) High or logic "1"

**EXPLANATION**

Voltages between 0 and 1.3 V are considered logical "low".

Check

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**BOOLEAN ALGEBRA** (4/4 points)

Calculate the Boolean expression for each set of inputs A, B, C. Specify the answer as **True** or **False**

A	B	C	A && (B   C)
True	False	False	False Answer: False
True	False	True	True Answer: True
False	True	False	False Answer: False
True	True	False	True Answer: True

**EXPLANATION**

Boolean operators operate on boolean values - 1 (true) and 0 (false) - and the result is a boolean value. In C, the double ampersand and double OR symbols (&& and |) signify logical, or boolean, AND and OR, respectively. This is in contrast to the single ampersand and OR symbol (& and |), which signify bitwise AND and OR.


Help

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**LOGIC VOLTAGE LEVELS** (1/1 points)

If a voltage on an input of the TM4C123 is between 1.3 and 2 V, that input considered:

- ☐ a) Low or logic "0"
- ☒ b) Unknown or illegal 
- ☐ c) High or logic "1"

**EXPLANATION**

Voltages that fall within the range 1.3 to 2 V could potentially be interpreted by the microcontroller as high or low. For this reason, voltages in this range are considered invalid or illegal and their digital logical value is undefined or unknown.

Check

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**LOGIC VOLTAGE LEVELS** (1/1 points)

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If a voltage on an input of the TM4C123 is between 2 and 5 V, that input considered:

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- ☐ a) Low or logic "0"
- ☐ b) Unknown or illegal
- ☒ c) High or logic "1" ✓

**EXPLANATION**

A voltage on an input of the TM4C123 between 2 and 5 V is considered high or logic "1".

[Check](#)[Hide Answer\(s\)](#)

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