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Started on Monday, 13 February 2023, 4:35 AM

State Finished

Completed on Monday, 13 February 2023, 4:55 AM

Time taken 19 mins 20 secs

Marks 37.00/38.00

Grade 97.37 out of 100.00

Question **1**

Correct

Mark 1.00 out of 1.00

What is the decimal equivalent of the binary number 10011101? Assume "unsigned" binary for the conversion.

Select one:

- ☒ a. 157 ✓
- ☐ b. 99
- ☐ c. -99
- ☐ d. -29

The correct answer is: 157

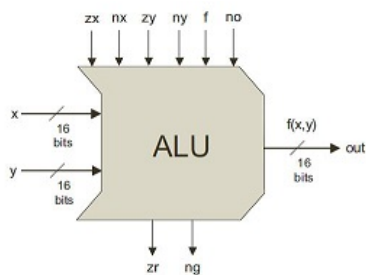


Question 2

Correct

Mark 2.00 out of 2.00

The **ny** control bit will:



Select one:

- ☐ a. Zero the y input.
- ☐ b. Negate the x input.
- ☐ c. Negate the ng output.
- ☒ d. Negate the y input. ✓

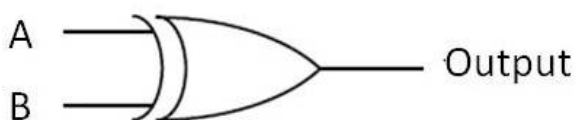
The correct answer is: Negate the y input.

Question 3

Correct

Mark 1.00 out of 1.00

Given the following logic gate, select the truth table from below that is NOT valid given the format A - B - Output:



Select one:

- ☐ a. 0 - 0 - 0
- ☐ b. 0 - 1 - 1
- ☒ c. 1 - 1 - 1 ✓
- ☐ d. 1 - 0 - 1

The correct answer is: 1 - 1 - 1

Question **4**

Correct

Mark 2.00 out of 2.00

What is the **decimal** value of this 16-bit 2's complement number?

1111111111111100_{two}

Answer:



The correct answer is: -4

Question **5**

Correct

Mark 1.00 out of 1.00

True/False: According to DeMorgan's Theorem, inverting the output of an AND gate yields the same output as an OR gate with inverted inputs?

Select one:

☒ True ☐ False

The correct answer is 'True'.

Question **6**

Correct

Mark 1.00 out of 1.00

In an 8-way multiplexor the selection is specified by a set of ____ control bits.

Answer: 

The correct answer is: 3



Question 7

Incorrect

Mark 0.00 out of 1.00

A decoder described as a 2-to-4 decoder will have how many active outputs?

Answer:

4



The correct answer is: 1

Question 8

Correct

Mark 1.00 out of 1.00

A coding approach that recognizes the MSB with a value of 1 to be a negative number is called?

Select one:

- ☒ a. Signed Magnitude ✓
- ☐ b. 1's complement
- ☐ c. 2's complement
- ☐ d. Binary Coded Decimal

The correct answer is: Signed Magnitude

Question 9

Correct

Mark 2.00 out of 2.00

Name an **unary** Boolean function:

Answer:

Not



The correct answer is: Not



Question 10

Correct

Mark 2.00 out of 2.00

Which Two-Input Boolean function will return 0 for every input it receives?

Select one:

- ☒ a. Constant 0 ✓
- ☐ b. Not
- ☐ c. Nor
- ☐ d. And

The correct answer is: Constant 0

Question 11

Correct

Mark 1.00 out of 1.00

What circuit does the following truth table belong to?

Inputs		Outputs	
a	b	carry	sum
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

Select one:

- ☒ a. half-adder ✓
- ☐ b. full-adder
- ☐ c. incrementer
- ☐ d. ALU (Arithmetic Logic Unit)

The correct answer is: half-adder



Question **12**

Correct

Mark 1.00 out of 1.00

The boolean expression $\overline{A+B}$ represents which of the following:

Select one:

- ☒ a. A NOR B ✓
- ☐ b. A AND B
- ☐ c. A NOT B
- ☐ d. A NAND B

The correct answer is: A NOR B

Question **13**

Correct

Mark 2.00 out of 2.00

The Full Adder chip has:

Select one:

- ☐ a. 2 input pins, 2 output pins.
- ☐ b. 2 input pins, 1 output pin.
- ☒ c. 3 input pins, 2 output pins. ✓
- ☐ d. 3 input pins, 1 output pin.

The correct answer is: 3 input pins, 2 output pins.

Question **14**

Correct

Mark 1.00 out of 1.00

True/False: An unsigned binary number can represent positive and negative numbers but not floating point numbers.

Select one:

- ☐ True
- ☒ False ✓

The correct answer is 'False'.



Question **15**

Correct

Mark 1.00 out of 1.00

True/False: A decoder has a unique output represented for a set of inputs in a truth table?

Select one:

- ☒ True ✓
- ☐ False

The correct answer is 'True'.

Question **16**

Correct

Mark 1.00 out of 1.00

The boolean expression $A \cdot B$ represents which of the following:

Select one:

- ☒ a. A AND B ✓
- ☐ b. A OR B
- ☐ c. A AND NOT B
- ☐ d. A NAND B

The correct answer is: A AND B

Question **17**

Correct

Mark 1.00 out of 1.00

Which of the following is NOT a component required to represent a floating point number in binary?

Select one:

- ☐ a. Exponent
- ☐ b. Fraction
- ☐ c. Sign bit
- ☒ d. Precision ✓

The correct answer is: Precision

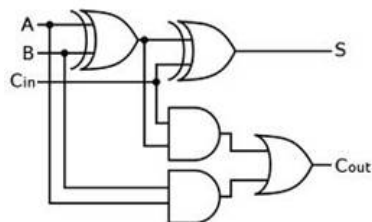


Question 18

Correct

Mark 1.00 out of 1.00

What is the function of the following logic circuit?



Select one:

- ☒ a. full adder ✓
- ☐ b. half adder
- ☐ c. And circuit
- ☐ d. Inverter

The correct answer is: full adder

Question 19

Correct

Mark 1.00 out of 1.00

True/False: Adding 01101101_2 to 10100010_2 in 8-bit unsigned binary will cause an overflow.

Select one:

- ☒ True ✓
- ☐ False

The correct answer is 'True'.



Question **20**

Correct

Mark 1.00 out of 1.00

What is the decimal value of 54 (base 10) converted to binary?

Select one:

- ☒ a. 00110110 ✓
- ☐ b. 11001010
- ☐ c. 11001001
- ☐ d. 11110001
- ☐ e. 10100001

The correct answer is: 00110110

Question **21**

Correct

Mark 2.00 out of 2.00

What is the most basic element of every computer system?

Select one:

- ☐ a. CPU
- ☐ b. Memory
- ☒ c. Logic Gate ✓
- ☐ d. ALU

The correct answer is: Logic Gate

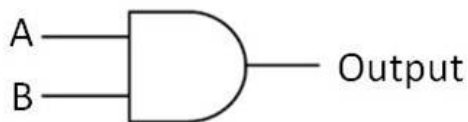


Question **22**

Correct

Mark 1.00 out of 1.00

Given the following logic gate, select the truth table from below that is NOT valid given the format A - B - Output:



Select one:

- ☐ a. 0 - 0 - 0
- ☒ b. 0 - 1 - 1 ✓
- ☐ c. 1 - 1 - 1
- ☐ d. 1 - 0 - 0

The correct answer is: 0 - 1 - 1

Question **23**

Correct

Mark 2.00 out of 2.00

Every Boolean function can be constructed from **only**:

Select one:

- ☐ a. And function
- ☐ b. Or function
- ☒ c. Nand function ✓
- ☐ d. Not Function

The correct answer is: Nand function

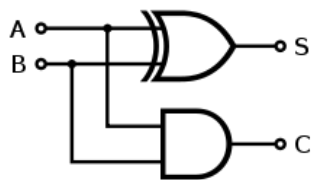


Question **24**

Correct

Mark 1.00 out of 1.00

What is the function of the following logic circuit?



Select one:

- ☒ a. half adder ✓
- ☐ b. full adder
- ☐ c. subtractor
- ☐ d. counter

The correct answer is: half adder

Question **25**

Correct

Mark 2.00 out of 2.00

Match the following gates to their description.

And	If a=b=1 then out=1 else out=0	✓
Not	If in=0 then out=1 else out=0	✓
Nand	If a=b=1 then out=0 else out=1	✓
Or	If a=b=0 then out=0 else out=1	✓

Match the following gates to their description.

The correct answer is: And → If a=b=1 then out=1 else out=0, Not → If in=0 then out=1 else out=0, Nand → If a=b=1 then out=0 else out=1, Or → If a=b=0 then out=0 else out=1



Question **26**

Correct

Mark 1.00 out of 1.00

In a 16-bit Multiplexor the selector is 16-bit wide.

Select one:

- ☐ True
- ☒ False ✓

The correct answer is 'False'.

Question **27**

Correct

Mark 1.00 out of 1.00

If a **demultiplexor** selector bit is set to 1 , and both outputs (a and b) are 0 , then the input must have been:

Answer: 0



The correct answer is: 0

Question **28**

Correct

Mark 1.00 out of 1.00

True / False: The 2's complement bit string 10101011 converted to decimal equals 85.

Select one:

- ☐ True
- ☒ False ✓

The correct answer is 'False'.



Question **29**

Correct

Mark 1.00 out of 1.00

True/False: The operation to be performed within the ALU is selected with a multiplexor circuit.

Select one:

- ☒ True ✓
- ☐ False

The correct answer is 'True'.

Question **30**

Correct

Mark 1.00 out of 1.00

What is the binary pattern that represents 6_{ten} (in a 16-bit binary system)?

Answer:

0000000000000110

✓

The correct answer is: 0000000000000110

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Chapter 8: Combinational Logic Applications (Tarnoff) ▶

