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Started on Wednesday, 20 October 2021, 9:17 AM

State Finished

Completed on Wednesday, 20 October 2021, 9:49 AM

Time taken 32 mins 24 secs

Marks 25.00/35.00

Grade 7.14 out of 10.00 (71%)

Question **1**

Incorrect

Mark 0.00 out of 1.00

Which properties execute "+" gate function?

- ☐ a. Associative properties
- ☐ b. Distributive properties
- ☒ c. All of the Mentioned
- ☐ d. Commutative properties

✗

Your answer is incorrect.

The correct answer is:
Distributive properties

Question **2**

Correct

Mark 1.00 out of 1.00

The function $Z(P,Q,R,S) = (Q+P)(R+S)(P+Q)$ represents the _____ operation?

- ☐ a. NAND
- ☒ b. POS
- ☐ c. AND
- ☐ d. SOP



Your answer is correct.

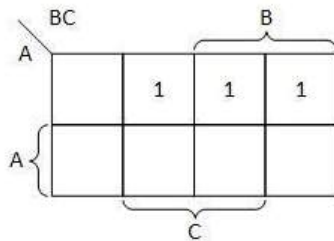
The correct answer is:
POS

Question **3**

Correct

Mark 1.00 out of 1.00

The K map of a Boolean Function is given below. What shall be a simplified function?



- ☐ a. AC
- ☐ b. $F=A+C$
- ☐ c. B
- ☒ d. $F=A'C+A'B$



Your answer is correct.

The correct answer is:
 $F=A'C+A'B$

Question 4

Correct

Mark 1.00 out of 1.00

Select the correct K map of the function $F(X,Y,Z) = \Sigma(2, 3, 6, 7)$?☒ a.

		Y	
	YZ		
X		1	1
X		1	1
		Z	

☐ b.

		Y	
	YZ		
X	1		1
X	1		1
		Z	

☐ c.

		Y	
	YZ		
X		1	1
X		1	1
		Z	

☐ d.

		Y	
	YZ		
X	1		1
X	1		1
		Z	

Your answer is correct.

The correct answer is:

		Y	
	YZ		
X		1	1
X		1	1
		Z	

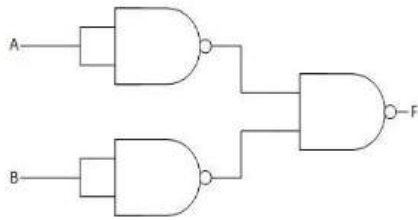


Question 5

Correct

Mark 1.00 out of 1.00

What shall be the truth table of this logic circuit?

☐ a.

A	B	F
0	0	1
0	1	1
1	0	1
1	1	1

☐ b.

A	B	F
0	0	0
0	1	0
1	0	0
1	1	1

☐ c.

A	B	F
0	0	0
0	1	0
1	0	0
1	1	0

☒ d.

A	B	F
0	0	0
0	1	1
1	0	1
1	1	1

Your answer is correct.

The correct answer is:

A	B	F
0	0	0
0	1	1
1	0	1
1	1	1

Question **6**

Correct

Mark 1.00 out of 1.00

The given hexadecimal number $(23AE)_{16}$ is equivalent to _____ ?

- ☒ a. $(9134)_{10}$
- ☐ b. $(9143)_{10}$
- ☐ c. $(9223)_{10}$
- ☐ d. $(9643)_{10}$



Your answer is correct.

The correct answer is:

$(9134)_{10}$

Question **7**

Correct

Mark 1.00 out of 1.00

The decimal equivalent of (1010)BCD is?

- ☐ a. 10
- ☒ b. Not assigned
- ☐ c. 12
- ☐ d. 11



Your answer is correct.

The correct answer is:
Not assigned

Question **8**

Correct

Mark 1.00 out of 1.00

Which of the following function is a simplification of $(X' + Y)(X' + Z)$?

- ☒ a. $X' + YZ$
- ☐ b. $XY + Z$
- ☐ c. None of the mentioned
- ☐ d. $X + YZ$



Your answer is correct.

The correct answer is:
 $X' + YZ$



Question **9**

Correct

Mark 1.00 out of 1.00

Realize the equation $(A+B)C + (A+B)C'$?

- ☐ a. $A' + B$
- ☐ b. AB
- ☒ c. $A + B$
- ☐ d. $A + B'$



Your answer is correct.

The correct answer is:

 $A + B$ Question **10**

Correct

Mark 1.00 out of 1.00

Realize the equation $X \text{ xor } Y \text{ xor } XY$?

- ☐ a. $X.Y$
- ☐ b. Y
- ☒ c. $X + Y$
- ☐ d. X



Your answer is correct.

The correct answer is:

 $X + Y$ 

Question **11**

Correct

Mark 1.00 out of 1.00

Reduce the Boolean expressions $ABC'D + A'BD + ABCD$ to an expression having two literals?

- ☐ a. $A+D$
- ☒ b. BD
- ☐ c. $B+D$
- ☐ d. AB



Your answer is correct.

The correct answer is:
 BD

Question **12**

Correct

Mark 1.00 out of 1.00

$(75)_8$ is equivalent to?

- ☐ a. $(3C)_{16}$
- ☒ b. $(3D)_{16}$
- ☐ c. $(3A)_{16}$
- ☐ d. $(DC)_{16}$



Your answer is correct.

The correct answer is:
 $(3D)_{16}$



Question **13**

Correct

Mark 1.00 out of 1.00

Realize the equation $X(X+Y)$?

- ☐ a. $X+Y$
- ☐ b. $X.Y$
- ☐ c. Y
- ☒ d. X



Your answer is correct.

The correct answer is:

 X Question **14**

Correct

Mark 1.00 out of 1.00

The sum of product form of the function $F(X, Y, Z) = \prod(1, 2, 4, 6, 7)$ is given by ____?

- ☐ a. $F(X, Y, Z) = \sum(1, 2, 4, 6, 7)$
- ☐ b. $F(X, Y, Z) = \sum(0, 3, 4, 5)$
- ☒ c. $F(X, Y, Z) = \sum(0, 3, 5)$
- ☐ d. $F(X, Y, Z) = \sum(0, 3, 5, 8)$



Your answer is correct.

The correct answer is:

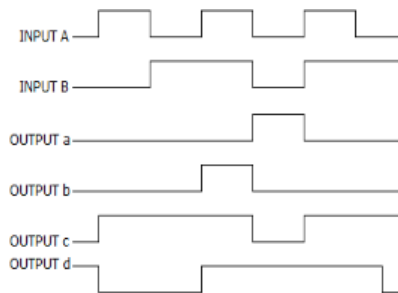
 $F(X, Y, Z) = \sum(0, 3, 5)$

Question 15

Correct

Mark 1.00 out of 1.00

For a two-input XNOR gate, with the input waveforms as shown below, which output waveform is correct?



- ☐ a. b
- ☐ b. c
- ☐ c. a
- ☒ d. d



Your answer is correct.

The correct answer is:

d

Question 16

Incorrect

Mark 0.00 out of 1.00

What is the minimum number of NAND gates required to implement the function: $AB' + ABC + ABC'$?

- ☐ a. 0
- ☐ b. 3
- ☐ c. 1
- ☒ d. 2



Your answer is incorrect.

The correct answer is:

0



Question **17**

Correct

Mark 1.00 out of 1.00

Which of the following options is correct for these three statements?

1. The Boolean functions expressed as a sum of minterms or product of max terms are said to be in canonical form.
2. The Boolean functions expressed as a product of max terms is said to be in canonical form.
3. The maxterm with subscript j is a complement of the minterm with the same subscript j and vice versa

- ☐ a. All are false
- ☒ b. All are true
- ☐ c. I & II are false and III is true
- ☐ d. I & II is true and III is false



Your answer is correct.

The correct answer is:

All are true

Question **18**

Correct

Mark 1.00 out of 1.00

How many AND gates can be utilized for the function $Z = AB + C + BC$?

- ☐ a. 5
- ☐ b. 3
- ☒ c. 2
- ☐ d. 4



Your answer is correct.

The correct answer is:

2



Question **19**

Correct

Mark 1.00 out of 1.00

The complement of the function $F(X, Y, Z) = \Sigma(1, 3, 4, 6)$ is given by ____ ?

- ☐ a. $F(X, Y, Z) = \Pi(0, 3, 4, 6)$
- ☐ b. $F(X, Y, Z) = \Pi(1, 2, 4, 6)$
- ☒ c. $F(X, Y, Z) = \Pi(1, 3, 4, 6)$
- ☐ d. $F(X, Y, Z) = \Pi(1, 3, 5, 6)$



Your answer is correct.

The correct answer is:

$F(X, Y, Z) = \Pi(1, 3, 4, 6)$

Question **20**

Correct

Mark 1.00 out of 1.00

Which of the following statement is true?

- ☐ a. None of the mentioned
- ☐ b. In choosing adjacent squares to simplify the function in a map, the don't-care minterms is assumed to be 1 always
- ☒ c. A don't-care minterm is a combination of variables whose logical value is not specified
- ☐ d. In choosing adjacent squares to simplify the function in a map, the don't-care minterms is assumed to be 0 always



Your answer is correct.

The correct answer is:

A don't-care minterm is a combination of variables whose logical value is not specified



Question **21**

Incorrect

Mark 0.00 out of 1.00

The decimal equivalent of $(FF.F)_{16}$ is ____ ?

- ☐ a. 253.9375
- ☐ b. 255.9375
- ☐ c. 259.3975
- ☒ d. 255.3975



Your answer is incorrect.

The correct answer is:

255.9375

Question **22**

Correct

Mark 1.00 out of 1.00

The logic gate circuit of simplified Boolean function $(X+Y)'(X'+Y')$ shall be?

- ☐ a. One AND gate with X and Y as input
- ☒ b. One AND gate with inverted X and inverted Y as input
- ☐ c. One OR gate with X and Y as input
- ☐ d. One OR gate with inverted X and inverted Y as input



Your answer is correct.

The correct answer is:

One AND gate with inverted X and inverted Y as input

Question **23**

Correct

Mark 1.00 out of 1.00

The Boolean function is given by $A'B + ACB + AC'B$. The reduced expression shall be ?

- ☐ a. A
- ☐ b. AB
- ☐ c. $A(B+D)$
- ☒ d. B



Your answer is correct.

The correct answer is:

B

Question **24**

Correct

Mark 1.00 out of 1.00

Convert decimal number $(12.5)_{10}$ to binary number?

- ☐ a. 1011.1
- ☐ b. 1110.1
- ☐ c. 1001.1
- ☒ d. 1100.1



Your answer is correct.

The correct answer is:

1100.1

Question **25**

Incorrect

Mark 0.00 out of 1.00

A locker has been rented in the bank. Express the process of opening the locker in terms of digital operation?

- ☒ a. $C=A+B$
- ☐ b. $C=A \text{ XOR } B$
- ☐ c. $C= A.B$
- ☐ d. $C= A' + B'$



Your answer is incorrect.

The correct answer is:

$C= A.B$

Question **26**

Correct

Mark 1.00 out of 1.00

The Absorption Law expression is defined by?

- ☐ a. $PQ+PP'=P$
- ☐ b. $P+PQ=Q$
- ☒ c. $P+PQ=P$
- ☐ d. $P+Q=Q+P$



Your answer is correct.

The correct answer is:

$P+PQ=P$

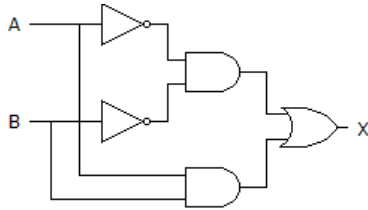


Question **27**

Correct

Mark 1.00 out of 1.00

What is the output x of the following diagram?



- ☐ a. $X = AB' + A'B$
- ☐ b. $X = (AB)' + A'B'$
- ☐ c. $X = (AB)' + AB$
- ☒ d. $X = A'B' + AB$



Your answer is correct.

The correct answer is:

$X = A'B' + AB$

Question **28**

Incorrect

Mark 0.00 out of 1.00

For $n=4$ what is the total number of logical expressions?

- ☐ a. None of the mentioned
- ☐ b. 36636
- ☒ c. 36536
- ☐ d. 35536



Your answer is incorrect.

The correct answer is:

35536



Question **29**

Incorrect

Mark 0.00 out of 1.00

How many inputs are required for a truth table of 16 entries?

- ☐ a. 3
- ☒ b. 8
- ☐ c. 4
- ☐ d. 12



Your answer is incorrect.

The correct answer is:

4

Question **30**

Correct

Mark 1.00 out of 1.00

A binary operator $*$ on a set S is said to be commutative whenever?

- ☐ a. Both A and B
- ☒ b. $x * y = y * x$ for all $x, y \in S$
- ☐ c. None of the above
- ☐ d. $(x * y) * z = x * (y * z)$ for all $x, y, z \in S$



Your answer is correct.

The correct answer is:

$x * y = y * x$ for all $x, y \in S$



Question **31**

Correct

Mark 1.00 out of 1.00

The product of max terms form of the function $F=XY+X'Z$ shall be_____?

- ☐ a. $F=\prod(0, 2, 4, 6)$
- ☐ b. $F=\prod(0, 2, 3, 5)$
- ☒ c. $F=\prod(0, 2, 4, 5)$
- ☐ d. $F=\prod(0, 2, 4, 7)$



Your answer is correct.

The correct answer is:

$F=\prod(0, 2, 4, 5)$

Question **32**

Incorrect

Mark 0.00 out of 1.00

What are the basic gates required to construct the XOR gate?

- ☐ a. AND gates, OR gates, and NOT gates
- ☐ b. OR gates only
- ☐ c. AND gates and NOT gates
- ☒ d. OR gates and NOT gates



Your answer is incorrect.

The correct answer is:

AND gates, OR gates, and NOT gates

Question **33**

Incorrect

Mark 0.00 out of 1.00

The product of the sum form of the function $F(X, Y, Z) = \Sigma(1, 3, 5, 6, 7)$ is given by ____?

- ☐ a. $(X+Y+Z)(X+Y'+Z)(X'+Y+Z)$
- ☐ b. $(X'+Y'+Z)(X+Y'+Z)(X'+Y+Z)$
- ☒ c. $(X+Y+Z)(X+Y'+Z)(X'+Y'+Z')$
- ☐ d. $(X+Y+Z)(X'+Y'+Z)(X'+Y+Z)$

✗

Your answer is incorrect.

The correct answer is:

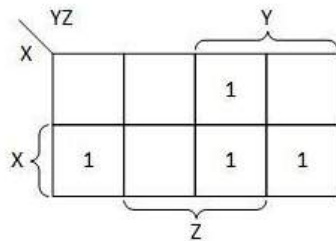
$$(X+Y+Z)(X+Y'+Z)(X'+Y+Z)$$

Question **34**

Not answered

Marked out of 1.00

The K map of a Boolean Function is given below. What shall be a simplified function?



- ☐ a. $F = YZ + XZ'$
- ☐ b. $F = XY$
- ☐ c. $F = YZ$
- ☐ d. $F = X + Y$

Your answer is incorrect.

The correct answer is:

$$F = YZ + XZ'$$

Question **35**

Not answered

Marked out of 1.00

The hexadecimal equivalent of number $(4096)_{10}$ is?

- ☐ a. 1111
- ☐ b. FFF
- ☐ c. 1000
- ☐ d. FFFF

Your answer is incorrect.

The correct answer is:
1000

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Started on Wednesday, 27 October 2021, 9:10 AM

State Finished

Completed on Wednesday, 27 October 2021, 9:16 AM

Time taken 6 mins 40 secs

Marks 3.00/5.00

Grade 6.00 out of 10.00 (60%)

Question **1**

Complete

Mark 1.00 out of 1.00

The four inputs to a circuit (A, B, C, D) represent an 8-4-2-1 binary-coded-decimal Digit. Design the circuit so that the output (Z) is 1 if the decimal number represented by the inputs is exactly divisible by 3. Assume that only valid BCD digits occur as inputs.

- ☒ a. $\sum m(0,3,6,9) + \sum d(10,11,12,13,14,15)$
- ☐ b. $\sum m(3,6,9) + \sum d(10,11,12,13,14,15)$
- ☐ c. $\sum m(0,3,6) + \sum d(10,11,12,13,14,15)$
- ☐ d. $\sum m(0,6,9) + \sum d(10,11,12,13,14,15)$

Question **2**

Complete

Mark 1.00 out of 1.00

In a subtraction circuit, P1, P2 are the inputs, if $P1=P2$, then what will be the output?

- ☐ a. P2
- ☒ b. 0
- ☐ c. 1
- ☐ d. P1



Question 3

Complete

Mark 0.00 out of 1.00

For the 4-bit full adder circuit, binary streams are A= 1101 and B= 1011 select the correct option.

- ☒ a. Carry = 1 and Sum = 1001
- ☐ b. Carry = 1 and Sum = 1000
- ☐ c. Carry = 0 and Sum = 1100
- ☐ d. Carry = 0 and Sum = 1000

Question 4

Complete

Mark 0.00 out of 1.00

Simplify the following

AB \ CD	00	01	11	10
00	1 0	1 1	0 3	1 2
01	1 4	0 5	0 7	0 6
11	0 12	0 13	1 15	1 14
10	1 8	1 9	0 11	0 10

- ☒ a. $Y = (A + C') . (A + B')$
- ☐ b. $Y = (A + C') . (A + B)$
- ☐ c. $Y = (A + C) . (A' + B')$
- ☐ d. $Y = (A + C') . (A' + B')$

Question **5**

Complete

Mark 1.00 out of 1.00

3 bits full adder contains _____

- ☒ a. **8 combinational inputs**
- ☐ b. **2 combinational inputs**
- ☐ c. **4 combinational inputs**
- ☐ d. **6 combinational inputs**

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Started on Saturday, 11 December 2021, 10:00 AM

State Finished

Completed on Saturday, 11 December 2021, 10:03 AM

Time taken 3 mins 34 secs

Marks 4.00/5.00

Grade 8.00 out of 10.00 (80%)

Question **1**

Complete

Mark 1.00 out of 1.00

The flip flop is?

- ☐ a. Rising edge triggered
- ☐ b. None
- ☐ c. Falling edge triggered
- ☒ d. Both Rising and falling triggered

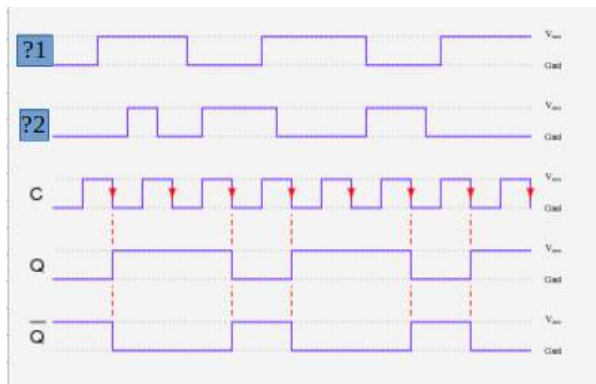


Question 2

Complete

Mark 0.00 out of 1.00

Find out the waveforms of the flip-flops



- ☐ a. S,R
- ☐ b. T
- ☒ c. R,S
- ☐ d. J,K

Question 3

Complete

Mark 1.00 out of 1.00

Adders can be used in

- ☐ a. Table indices
- ☐ b. Addresses
- ☐ c. Increment and decrement operators
- ☒ d. All of the mentioned

Question **4**

Complete

Mark 1.00 out of 1.00

If A, B and C are the inputs of a full adder then the carry is given by-----

- ☐ a. $A \text{ OR } B \text{ OR } (A \text{ AND } B) C$
- ☐ b. $(A \text{ AND } B) \text{ OR } (A \text{ AND } B)C$
- ☒ c. $A \text{ AND } B \text{ OR } (A \text{ XOR } B) \text{ AND } C$
- ☐ d. $A \text{ XOR } B \text{ XOR } (A \text{ XOR } B) \text{ AND } C$

Question **5**

Complete

Mark 1.00 out of 1.00

The Comparison between the half adder and full adder is -----

- ☐ a. Half adder has one output while full adder has two outputs
- ☐ b. Half adder has two inputs while full adder has four inputs
- ☐ c. All of the Mentioned
- ☒ d. Half adder has two inputs while full adder has three inputs

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Started on Sunday, 26 December 2021, 10:00 AM

State Finished

Completed on Sunday, 26 December 2021, 10:07 AM

Time taken 6 mins 42 secs

Marks 3.00/5.00

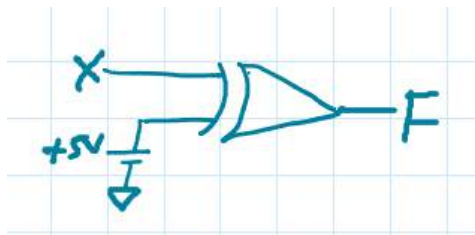
Grade 6.00 out of 10.00 (60%)

Question 1

Complete

Mark 1.00 out of 1.00

The output F of the circuit given below is?



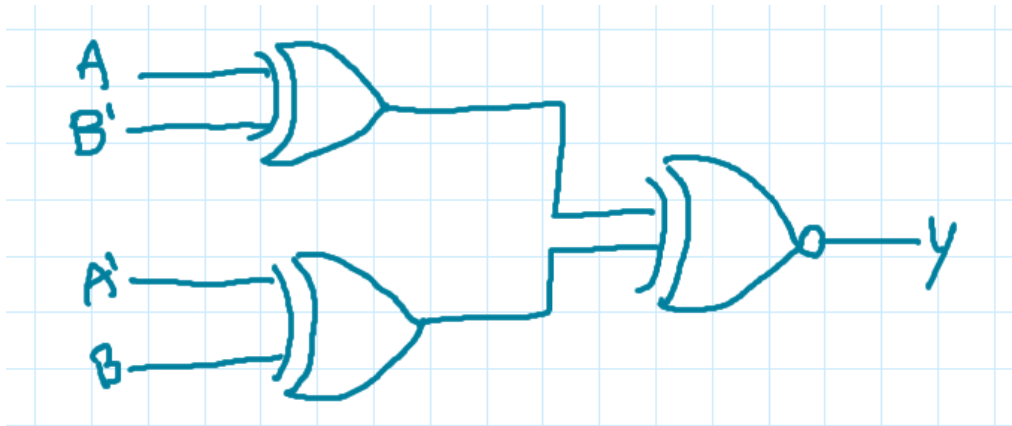
- ☐ a. 5V
- ☒ b. X'
- ☐ c. X
- ☐ d. 0V

Question 2

Complete

Mark 0.00 out of 1.00

The out Y of the circuit is?



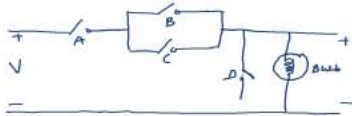
- ☐ a. Logic 0
- ☐ b. None
- ☒ c. $A'B + AB'$
- ☐ d. Logic 1

Question 3

Complete

Mark 1.00 out of 1.00

The output of the switching circuit given below is?



- ☐ a. None
- ☐ b. $A' \cdot (B+C) \cdot D'$
- ☐ c. $A \cdot (B+C') \cdot D$
- ☒ d. $A \cdot (B+C) \cdot D'$

Question 4

Complete

Mark 0.00 out of 1.00

The minimum number of NAND gates required to implement the function $F(A, B, C) = AB'C$ are?

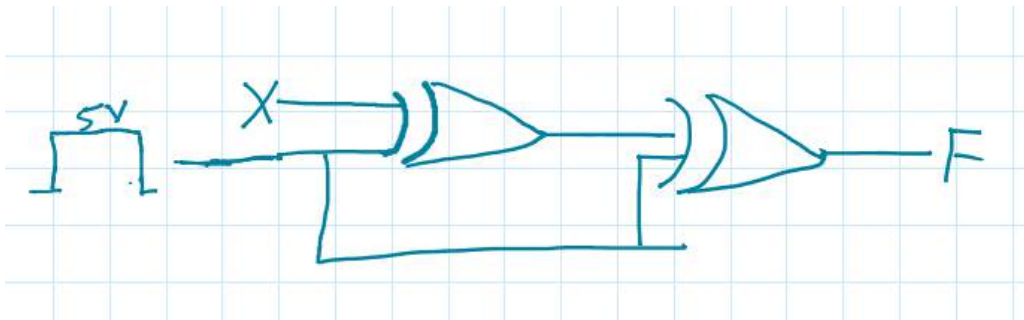
- ☒ a. 0
- ☐ b. 7
- ☐ c. 3
- ☐ d. 5

Question 5

Complete

Mark 1.00 out of 1.00

The output F of the circuit given below is?



- ☒ a. None
- ☐ b. X'
- ☐ c. Logic 1
- ☐ d. logic 0

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Started on Friday, 12 November 2021, 9:01 AM

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Completed on Friday, 12 November 2021, 9:39 AM

Time taken 38 mins 49 secs

Marks 18.00/30.00

Grade 6.00 out of 10.00 (60%)

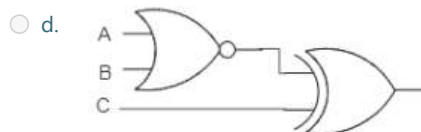
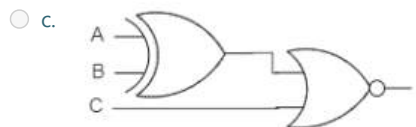
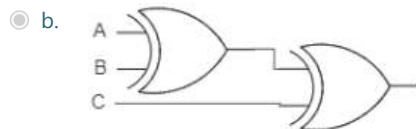
Question 1

Complete

Mark 1.00 out of 1.00

Which one of the following represents an odd function?

☐ a. None of the Mentioned



Question **2**

Complete

Mark 0.00 out of 1.00

What is the redundant term for the following logical expression?

$$F(A,B,C) = AB + A'C + BC$$

- ☐ a. AB
- ☐ b. A'C
- ☐ c. BC
- ☒ d. None of the Mentioned

Question **3**

Complete

Mark 1.00 out of 1.00

Choose the correct option for Binary Subtraction for A-B.

$$A = 11011$$

$$B = 10110$$

- ☐ a. 10101
- ☒ b. 00101
- ☐ c. 11111
- ☐ d. 10111

Question 4

Complete

Mark 1.00 out of 1.00

Simplify the function for the given truth table.

A	B	X
0	0	1
0	1	0
1	0	1
1	1	0

- ☒ a. $X=B'$
- ☐ b. $X=A'$
- ☐ c. $X=A\oplus B$
- ☐ d. $X=A+B$

Question 5

Complete

Mark 1.00 out of 1.00

The carry lookahead logic is used to ____.

- ☐ a. Avoid the overflow
- ☐ b. Reduce the error in calculation
- ☐ c. Reduce the complexity of the digital circuit
- ☒ d. Reduce the carry propagation time

Question **6**

Complete

Mark 1.00 out of 1.00

The Boolean function of the half adder is ____.

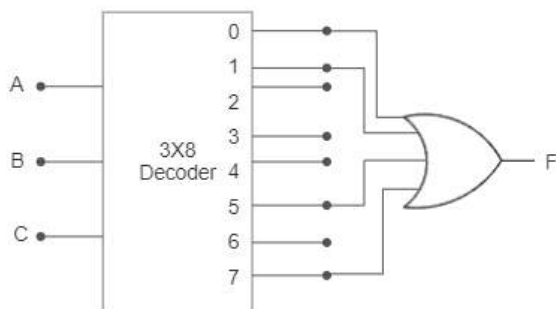
- ☐ a. $S=x'y+xy'$; $C=x'y'$
- ☒ b. $S=x'y+xy'$; $C=xy$
- ☐ c. $S=x'y+xy'$; $C=x+y$
- ☐ d. $S=x'y'$; $C=x'+y'$

Question **7**

Complete

Mark 1.00 out of 1.00

The following digital circuit is comprised of a 3X8 decoder and an OR gate. The simplified Boolean function shall be ____.



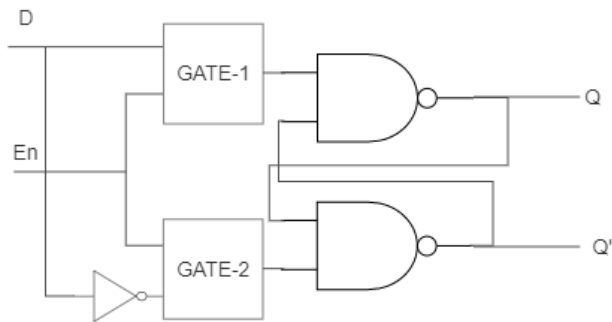
- ☒ a. $A'B'+AC$
- ☐ b. $A'B'$
- ☐ c. AC
- ☐ d. $AB+AC$

Question 8

Complete

Mark 1.00 out of 1.00

The logic circuit of D flip flop is given below. Which gate shall be connected as Gate-1 and Gate-2 respectively?



- ☐ a. NOR and NOR
- ☒ b. NAND and NAND
- ☐ c. NOR AND NAND
- ☐ d. NAND and NOR

Question 9

Complete

Mark 0.00 out of 1.00

The other canonical form of the function $F(A, B, C, D) = \Sigma(1, 3, 5, 6, 8, 10, 12, 14)$ is _____.

- ☒ a. $F(A, B, C, D) = \Pi(1, 3, 5, 6, 8, 11, 13, 15, 16)$
- ☐ b. $F(A, B, C, D) = \Pi(0, 2, 4, 7, 9, 11, 13, 15, 16)$
- ☐ c. $F(A, B, C, D) = \Pi(1, 3, 5, 6, 8, 10, 12, 14)$
- ☐ d. $F(A, B, C, D) = \Pi(0, 2, 4, 7, 9, 10, 12, 14)$

Question **10**

Complete

Mark 0.00 out of 1.00

A binary adder is a digital circuit that produces the arithmetic sum of ____.

- ☐ a. Any two numbers
- ☒ b. **Two binary bits only**
- ☐ c. None of the Mentioned
- ☐ d. Two binary numbers

Question **11**

Complete

Mark 1.00 out of 1.00

Choose the correct option for Hexadecimal Addition A+B

$$A = (5689)_{16}$$

$$B = (4574)_{16}$$

- ☐ a. $(9CFD)_{16}$
- ☒ b. $(9BFD)_{16}$
- ☐ c. $(9DFD)_{16}$
- ☐ d. $(9AFD)_{16}$

Question **12**

Complete

Mark 1.00 out of 1.00

The set of two Boolean function $F1 = x \oplus y$; $F2 = x'y$ represents ____.

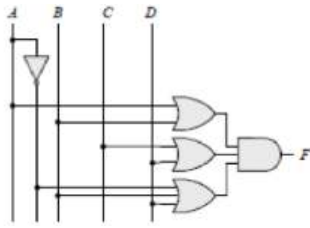
- ☒ a. **Half Subtractor**
- ☐ b. **Half Adder**
- ☐ c. **Full Adder**
- ☐ d. **Full Subtractor**

Question 13

Complete

Mark 1.00 out of 1.00

The Boolean function of the following digital logic circuit can be determined to be _____.



- ☐ a. $(A' + B)(C + D)(A' + B + D)$
- ☐ b. $(A + B)(C + D)(A' + B + D')$
- ☐ c. $(A' + B)(C' + D)(A' + B + D)$
- ☒ d. $(A + B)(C + D)(A' + B + D)$

Question 14

Complete

Mark 0.00 out of 1.00

The following set of K- Map represents _____.

yz \ x	00	01	11	10
0		1		1
1	1		1	

yz \ x	00	01	11	10
0		1	1	1
1			1	

- ☐ a. Full Subtractors
- ☐ b. Binary Multiplier
- ☐ c. Binary Adder Subtractor
- ☒ d. Full adder

Question **15**

Complete

Mark 1.00 out of 1.00

The SOP form of the Boolean function $F=A+B'C$ shall be _____.

- ☐ a. $F=\Pi(0, 2, 3)$
- ☒ b. $F=\Sigma(1, 4, 5, 6, 7)$
- ☐ c. $F=\Pi(1, 3, 5, 6, 7)$
- ☐ d. $F=\Sigma(0, 2, 3)$

Question **16**

Complete

Mark 1.00 out of 1.00

Which of the following is correct for these three statements?

- I. A decoder has multiple inputs and multiple outputs.
- II. A multiplexer has one input and one output always.
- III. A multiplexer is a combinational circuit.

- ☒ a. I & III are true.
- ☐ b. I & II are false.
- ☐ c. II & III are false.
- ☐ d. I & II are true.

Question **17**

Complete

Mark 0.00 out of 1.00

The characteristics equation of a JK flip flop is given by _____.

- ☒ a. $Q(t+1)=J'Q(t)+K'Q(t)$
- ☐ b. $Q(t+1)=J'Q(t)+KQ'(t)$
- ☐ c. $Q(t+1)=JQ'(t)+K'Q(t)$
- ☐ d. $Q(t+1)=JQ(t)+KQ'(t)$

Question **18**

Complete

Mark 1.00 out of 1.00

How many AND gates can be utilized for the function $Z = AB + C + BC$?

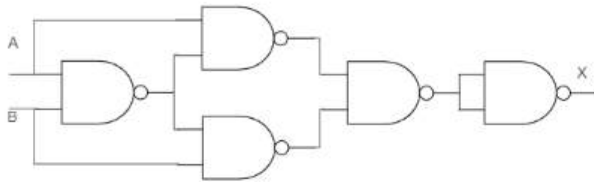
- ☐ a. 3
- ☐ b. 4
- ☒ c. 2
- ☐ d. None of the Mentioend

Question **19**

Complete

Mark 0.00 out of 1.00

The following circuit represents a ____ gate.



- ☐ a. **OR**
- ☐ b. **NOR**
- ☒ c. **EX-OR**
- ☐ d. **Ex-NOR**

Question **20**

Complete

Mark 1.00 out of 1.00

The Boolean function of a full adder is given by ____

- ☐ a. $S(x, y, z) = \Sigma(1, 2, 5, 7)$; $C(x, y, z) = \Sigma(3, 4, 6, 7)$
- ☐ b. $S(x, y, z) = \Sigma(1, 3, 4, 7)$; $C(x, y, z) = \Sigma(2, 5, 6, 7)$
- ☐ c. $S(x, y, z) = \Sigma(1, 3, 4, 7)$; $C(x, y, z) = \Sigma(2, 5, 6, 7)$
- ☒ d. $S(x, y, z) = \Sigma(1, 2, 4, 7)$; $C(x, y, z) = \Sigma(3, 5, 6, 7)$

Question **21**

Complete

Mark 0.00 out of 1.00

A 2:1 multiplexer is used to realize the NOR gate. What shall be a combination of different inputs?

- ☐ a. $I_0=B; I_1=0; S=A$
- ☐ b. $I_0=B; I_1=1; S=A$
- ☒ c. $I_0=B'; I_1=1; S=A$
- ☐ d. $I_0=B'; I_1=0; S=A$

Question **22**

Complete

Mark 1.00 out of 1.00

1. A 4:1 multiplexer has the following inputs and select lines. What shall be the output Boolean function "F"? $I_0=A; I_1=A'; I_2=1; I_3=0; S_0=C; S_1=B$

- ☐ a. $F(A, B, C)=\Sigma(1, 2, 4, 5)$
- ☒ b. $F(A, B, C)=\Sigma(1, 2, 4, 6)$
- ☐ c. $F(A, B, C)=\Sigma(0, 2, 4, 6)$
- ☐ d. $F(A, B, C)=\Sigma(1, 2, 4, 7)$

Question **23**

Complete

Mark 0.00 out of 1.00

For a 3-input and 1-output digital circuit, the output is true, only when the minimum of two inputs are set to 1. The Boolean function for the output is given by _____.

- ☐ a. $F=A'BC+AB'C+ABC'$
- ☐ b. $F=A'BC+AB'C'+ABC'$
- ☒ c. $F=A'B'C+AB'C+ABC'$
- ☐ d. $F=A'B'C+A'BC'+AB'C'$

Question **24**

Complete

Mark 1.00 out of 1.00

The given hexadecimal number (BAD)₁₆ is equivalent to _____

- ☒ a. (2989)₁₀
- ☐ b. (2009)₁₀
- ☐ c. (3989)₁₀
- ☐ d. (2489)₁₀

Question **25**

Complete

Mark 1.00 out of 1.00

How many inputs are required for a truth table of 32 entries?

- ☒ a. 5
- ☐ b. 4
- ☐ c. 6
- ☐ d. 3

Question **26**

Complete

Mark 0.00 out of 1.00

The characteristics equation of a T flip flop is _____.

- ☐ a. $Q(n+1) = T \oplus Qn$
- ☐ b. $Q(n+1) = TQn + TQ'n$
- ☐ c. $Q(n+1) = T'Qn + TQn$
- ☒ d. None of the Mentioned

Question **27**

Complete

Mark 0.00 out of 1.00

The complement of the function $F(A, B, C, D) = \prod(2, 5, 7, 8, 9, 11, 12, 14)$ is _____.

- ☐ a. $F'(A, B, C, D) = \prod(2, 5, 7, 8, 9, 11, 12, 14)$
- ☒ b. $F'(A, B, C, D) = \Sigma(1, 3, 6, 7, 8, 11, 12, 14)$
- ☐ c. $F'(A, B, C, D) = \Sigma(2, 5, 7, 8, 9, 11, 12, 14)$
- ☐ d. $F'(A, B, C, D) = \prod(1, 3, 6, 7, 8, 11, 12, 14)$

Question **28**

Complete

Mark 1.00 out of 1.00

The SOP form of the Boolean function $F = A + B'C$ shall be _____.

- ☐ a. $F = \prod(0, 2, 3)$
- ☐ b. $F = \Sigma(0, 2, 3)$
- ☐ c. $F = \prod(1, 3, 5, 6, 7)$
- ☒ d. $F = \Sigma(1, 4, 5, 6, 7)$

Question **29**

Not answered

Marked out of 1.00

Choose the correct option for the binary Addition $A+B$.

$A = 110110$

$B = 101101$

- ☐ a. 100011
- ☐ b. 100111
- ☐ c. 000000
- ☐ d. 110011

Question **30**

Not answered

Marked out of 1.00

For Full Adder and Half Subtractor, the number of NAND Gates are?

- ☐ a. 9 and 9
- ☐ b. 10 and 8
- ☐ c. 8 and 5
- ☐ d. 9 and 5

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Started on Tuesday, 7 December 2021, 2:00 PM

State Finished

Completed on Tuesday, 7 December 2021, 2:59 PM

Time taken 59 mins

Marks 33.00/40.00

Grade 8.25 out of 10.00 (83%)

Question **1**

Complete

Mark 1.00 out of 1.00

Which of the following is correct for a gated D-type flip-flop?

- ☐ a. The output complement follows the input when enabled
- ☒ b. The Q output is either SET or RESET as soon as the D input goes HIGH or LOW
- ☐ c. Only one of the inputs can be HIGH at a time
- ☐ d. The output toggles if one of the inputs is held HIGH

Question **2**

Complete

Mark 1.00 out of 1.00

How many flip-flops will be complemented in a 10-bit binary counter to reach the next count after 1001100111

- ☐ a. 2
- ☒ b. 4
- ☐ c. 6
- ☐ d. 0

Question **3**

Complete

Mark 1.00 out of 1.00

Mod-6 and mod-12 counters are most commonly used in:

- ☐ a. **power consumption meters**
- ☐ b. **frequency counters**
- ☐ c. **multiplexed displays**
- ☒ d. **digital clocks**

Question **4**

Complete

Mark 1.00 out of 1.00

The outputs of combinational circuit depend on ____.

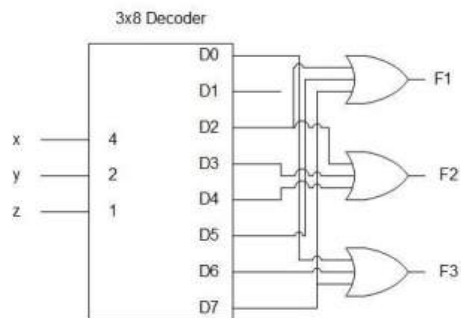
- ☐ a. previous values of inputs
- ☒ b. current values of inputs
- ☐ c. previous values of output
- ☐ d. current values of outputs

Question 5

Complete

Mark 1.00 out of 1.00

For the combinational circuit given below, what shall be the function F_3 ?



- ☐ a. $F_3 = xy'z' + x'y$
- ☐ b. $F_3 = x'y'z + xy$
- ☐ c. $F_3 = x'yz + xy'$
- ☒ d. $F_3 = x'y'z' + xy$

Question 6

Complete

Mark 1.00 out of 1.00

A multiplexer is ____ circuit and a decoder is ____ circuit.

- ☐ a. Sequential, sequential
- ☐ b. Sequential, combinational
- ☐ c. Combinational, sequential
- ☒ d. Combinational, combinational

Question **7**

Complete

Mark 0.00 out of 1.00

The common bus is constructed with multiplexers for a digital computer having 16 registers of 32 bits each. The number of multiplexers used shall be _____ each having size of _____ and each having _____ number of selection inputs?

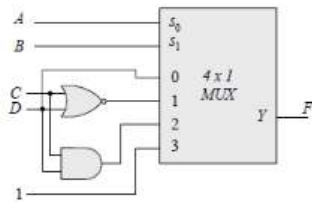
- ☐ a. 32, 16x1, 4
- ☒ b. 32, 32x1, 5
- ☐ c. 32, 8x1, 3
- ☐ d. NONE OF THESE

Question **8**

Complete

Mark 1.00 out of 1.00

What shall be output Boolean function "F" for the circuit given below?



- ☐ a. $F(A, B, C, D) = (0, 3, 4, 10, 11, 12, 13, 14)$
- ☒ b. $F(A, B, C, D) = (1, 3, 4, 11, 12, 13, 14, 15)$
- ☐ c. $F(A, B, C, D) = (1, 2, 5, 10, 11, 12, 13, 14)$
- ☐ d. $F(A, B, C, D) = (2, 4, 5, 11, 12, 13, 14, 15)$

Question **9**

Complete

Mark 1.00 out of 1.00

What are the applications of Flip-Flop ?

- ☐ a. **counting circuits**
- ☒ b. **All of these**
- ☐ c. **data storage**
- ☐ d. **frequency division**

Question **10**

Complete

Mark 1.00 out of 1.00

The number of flip-flops required in a modulo N counter is

- ☐ a. $\log_2(N) + 1$
- ☒ b. $\log_2(N)$
- ☐ c. $\log_2(N-1)$
- ☐ d. $N \log_2(N)$

Question **11**

Complete

Mark 0.00 out of 1.00

For the flip flop as universal. Choose the correct option?

- ☐ a. S-R FF is universal
- ☒ b. J-K FF is universal
- ☐ c. D FF is universal
- ☐ d. All of the mentioned

Question **12**

Complete

Mark 1.00 out of 1.00

The content of a 4-bit register is initially 1101. The register is shifted six times to the right with the serial input being 101101. What is the content of the register after each shift?

- ☒ a. 1011
- ☐ b. 0011
- ☐ c. 1101
- ☐ d. 1001

Question **16**

Complete

Mark 1.00 out of 1.00

A basic S-R flip-flop can be constructed by cross-coupling of which basic logic gates?

- ☒ a. **NOR or NAND gates**
- ☐ b. **AND or OR gates**
- ☐ c. **XOR or XNOR gates**
- ☐ d. **AND or NOR gates**

Question **17**

Complete

Mark 1.00 out of 1.00

A decoder generates _____ of inputs.

- ☒ a. **minterms**
- ☐ b. **addresses**
- ☐ c. **None**
- ☐ d. **maxterms**

Question **18**

Complete

Mark 1.00 out of 1.00

What is the preset condition for a ring shift counter?

- ☐ a. **All FFs set to 1**
- ☐ b. **A single 0, the rest 1**
- ☐ c. **All FFs cleared to 0**
- ☒ d. **A single 1, the rest 0**

Question **19**

Complete

Mark 1.00 out of 1.00

The propagation delay is measured between __ % points on input and output waveforms and is usually specified for all types of input including synchronous and asynchronous inputs

- ☐ a. 49
- ☐ b. 20
- ☐ c. 30
- ☒ d. 50

Question **20**

Complete

Mark 1.00 out of 1.00

Master slave flip flop is also referred to as?

- ☐ a. Edge-Level triggered flip flop
- ☐ b. Edge triggered flip flop
- ☒ c. Pulse triggered flip flop
- ☐ d. Level triggered flip flop

Question **21**

Complete

Mark 0.00 out of 1.00

The number of DEMUX required to implement the 1x64 DEMUX using the 1x4 DEMUX?

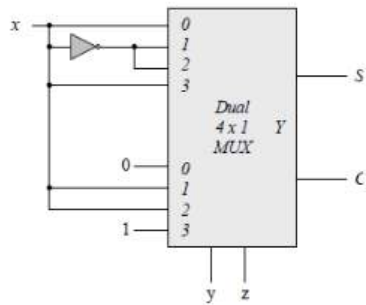
- ☒ a. 16
- ☐ b. 17
- ☐ c. 21
- ☐ d. 15

Question **22**

Complete

Mark 1.00 out of 1.00

The circuit given below is _____.



- ☐ a. An encoder
- ☐ b. A half Adder
- ☒ c. A full adder
- ☐ d. A Decoder

Question **23**

Complete

Mark 1.00 out of 1.00

Which of the following is the Universal Flip-flop?

- ☐ a. D Flip-flop
- ☐ b. Master slave flip-flop
- ☒ c. J-K flip-flop
- ☐ d. S-R flip-flop

Question **24**

Complete

Mark 1.00 out of 1.00

Sequential circuit contains

- ☐ a. **No memory element**
- ☒ b. **At Least one memory element**
- ☐ c. **All inputs applied simultaneously**
- ☐ d. **None of the above**

Question **25**

Complete

Mark 1.00 out of 1.00

What happens to the parallel output word in an asynchronous binary down counter whenever a clock pulse occurs?

- ☐ a. **The output word decreases by 2.**
- ☐ b. **The output word increases by 2.**
- ☐ c. **The output word increases by 1.**
- ☒ d. **The output word decreases by 1.**

Question **26**

Complete

Mark 1.00 out of 1.00

A JK flip-flop can be converted to a D flip-flop with a _____ gate between the J and K inputs.

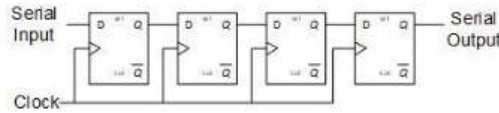
- ☐ a. NOR
- ☐ b. OR
- ☒ c. NOT
- ☐ d. AND

Question **27**

Complete

Mark 1.00 out of 1.00

A ring counter is a shift register as given below with the serial output connected to the serial input. Starting from an initial state of 1000, list the sequence of states of the four flip-flops after each shift.



- ☐ a. 1000-0100-0101-0010
- ☒ b. 1000-0100-0010-0001
- ☐ c. 1000-1010-1011-1101
- ☐ d. 1000-1001-1010-1100

Question **28**

Complete

Mark 1.00 out of 1.00

CMOS IC number of Dual J -K flip-flop

- ☐ a. 4025
- ☒ b. 4027
- ☐ c. **4013**
- ☐ d. 4026

Question **29**

Complete

Mark 1.00 out of 1.00

The adder-subtractor circuit has the input mode $M = 1$ and data inputs $A = 1100$ and $B = 1000$. What shall be the values of outputs S_3 , S_2 , S_1 , S_0 , and C_4

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

Question **30**

Complete

Mark 1.00 out of 1.00

Arithmetic logic unit (ALU) is a _____ logic that performs arithmetic and logic operations.

- ☐ a. Sequential
- ☒ b. Combinational
- ☐ c. None of these
- ☐ d. Binary

Question **31**

Complete

Mark 1.00 out of 1.00

For an encoder the input lines are 0 0 0 0 1 0 0 0. What shall be output?

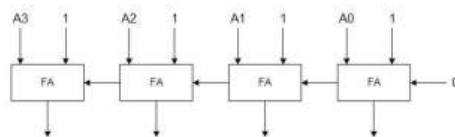
- ☐ a. 110
- ☐ b. 111
- ☐ c. 001
- ☒ d. 100

Question **32**

Complete

Mark 0.00 out of 1.00

The following combinational circuit is used as _____.



- ☐ a. Incrementer
- ☐ b. Either incrementer or decrementer
- ☐ c. Decrementer
- ☒ d. Neither incrementer nor decrementer

Question **33**

Complete

Mark 1.00 out of 1.00

What is meant by parallel-loading the register?

- ☐ a. **Momentarily disabling the synchronous SET and RESET inputs**
- ☐ b. **Shifting the data in all flip-flops simultaneously**
- ☒ c. **Loading data in all four flip-flops at the same time**
- ☐ d. **Loading data in two of the flip-flops**

Question **34**

Complete

Mark 1.00 out of 1.00

CMOS IC number of Dual D-type flip-flop

- ☐ a. **4029**
- ☐ b. **4027**
- ☐ c. **4028**
- ☒ d. **4013**

Question **35**

Complete

Mark 0.00 out of 1.00

The asynchronous input can be used to set the flip-flop to the _____

- ☐ a. **either 1 or 0 state**
- ☒ b. **1 state**
- ☐ c. **forbidden State**
- ☐ d. **0 state**

Question **36**

Complete

Mark 1.00 out of 1.00

How many types of triggering takes place in a flip flops?

- ☒ a. 3
- ☐ b. 5
- ☐ c. 1
- ☐ d. 2

Question **37**

Complete

Mark 0.00 out of 1.00

The function of a 4-bit binary adder is to add ____.

- ☒ a. Two 4 bit numbers
- ☐ b. Two binary numbers
- ☐ c. Either (a) or (b)
- ☐ d. Neither (a) nor (b)

Question **38**

Complete

Mark 0.00 out of 1.00

When we apply the negative edge-triggered clock to the ripple counter. Choose the correct option.

- ☐ a. Random Counter
- ☒ b. Up and Down counter
- ☐ c. Down Counter
- ☐ d. UP counter

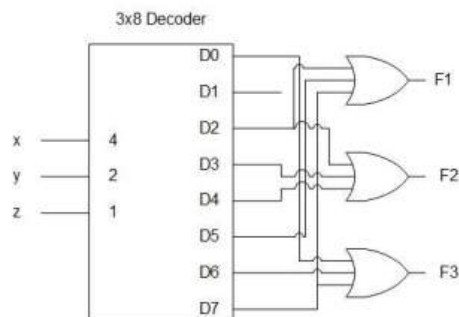
Question **39**

Complete

Mark 1.00 out of 1.00

For the combinational circuit given below, what shall be the function F_1 ?

$$F_3 = x'y'z' + xy(z + z') = x'y'z' + xyz + xyz' = \Sigma(0, 6, 7)$$



- ☒ a. $F_1 = xz + x'y'z'$
- ☐ b. $F_1 = xz + xyz$
- ☐ c. $F_1 = x'z' + x'y'z'$
- ☐ d. $F_1 = xz + x'y'z'$

Question **40**

Complete

Mark 1.00 out of 1.00

A comparison between ring and johnson counters indicates that:

- ☐ a. a ring counter has an inverted feedback path
- ☐ b. a ring counter has fewer flip-flops but requires more decoding circuitry
- ☒ c. a johnson counter has an inverted feedback path
- ☐ d. a johnson counter has more flip-flops but less decoding circuitry

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