Suppose the gate delay for an **AND** gate is 0.3ns, for an **OR** gate is 0.2ns, and for an **inverter** is 0.1ns, what is the total delay between the time the inputs appear at the first level gates, and the output appears at the last gate if the circuit is described as $(x+y)'(y+z)'$

Total Delay is [↕] **ns.**

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Question **4**

Not yet
answered

Marked out of
2.00

⚑ Flag
question

Given the four variable function $F(wxyz) = \prod_m(3, 7, 12, 15)$, the product of maxterm expression consists of the following maxterms:

☐ (w + x + y + z')

☐ (w + x' + y + z')

☐ (w + x + y + z)

☐ (w' + x' + y + z)

☐ (w' + x + y + z)

☐ (w' + x' + y + z')

☐ (w' + x + y + z')

☐ (w' + x' + y' + z')

☐ (w + x' + y' + z')

☐ (w + x' + y + z)

☐ (w' + x + y' + z')

☐ (w + x + y' + z)

☐ (w + x + y' + z')

☐ (w' + x' + y' + z)

☐ (w' + x + y' + z)

☐ (w + x' + y' + z)

Question 5

Not yet answered

Marked out of 1.00

⚑ Flag question

The following numbers in two different number systems are equal. Find the base number x:

$(313)_x = (513)_7$

x = 12

Hint: the roots of a quadratic equation are $\dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

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Question 11

Not yet answered

Marked out of 2.00

⚑ Flag question

Given the following four variable k-map, answer the questions that follow:

	1		1
1		1	
	1		1
1		1	

The number of prime implicants is 8 ⇕

The number of essential prime implicants is 8 ⇕

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Question 2

Not yet answered

Marked out of 1.00

⚑ Flag question

Which of the following functions can be implemented using a two-level circuit?

(Do not modify/simplify the expression when giving your answer)

Select one or more:

☐ $F(A, B, C) = (A+B+C).(B'+C').A$

☐ $F(A, B, C) = (AB+C).(A'B'+C')$

☐ $F(A, B, C) = B'(A+C) + A(B'+C')$

☐ $F(A, B, C) = A.B'.C' + A'.B'.C' + A.B$

☐ $F(A, B, C) = A.B + B.C'(A'+C')$

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Question **10**

Not yet answered

Marked out of 2.00

⚑ Flag question

What is the **L**, **G**, and **GN** cost of the following circuit? Do not simplify the circuit. Do not manipulate the circuit inputs. Assume inputs inside the parenthesis are connected to the same gate.

$F = x(yz' + wx) + z'$

L = [▲▼]

G = [▲▼]
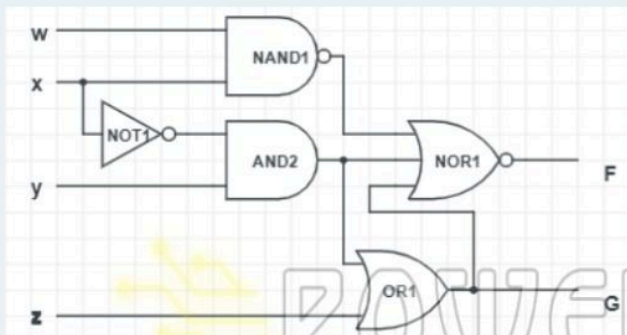
GN = [▲▼]

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Question 7

Not yet answered

Marked out of 1.00

⚑ Flag question

What are the outputs **F** and **G** of the following multi-output circuit if the input pattern wxyz = 0000 :

○ F = 1, G = 1

○ F = 0, G = 1

○ F = 0, G = 0

○ F = 1, G = 0

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Question 6

Not yet answered

Marked out of 1.00

⚐ Flag question

Given that the **fan-in** for the **AND** and **OR** gates is **2**, and a **fan-out** of **3** for all gates, how many AND/OR/NOT gates are needed to implement the function $F = ab'c + bc' + a'b'c'$.

Do not simplify the expression and assume we want to implement it as is.

Number of gates is [⇕]

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Question 15

Not yet answered

Marked out of 1.00

⚑ Flag question

The dual of the function $F = (x'y + w)+z'$ is:

○ $(x'+yw)z'$

○ none of the other options

○ $x'+ywz'$

○ $(x + y')w'z$

○ $(x' + y)wz'$

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Question 14

Not yet answered

Marked out of 1.00

⚑ Flag question

Which of the expressions below is equivalent to the following expression:

$f(x, y, z) = x'y + y'z$

○ $(x+y').(y+z')$

○ $(x+y+z).(x'+y'+z)$

○ $\sum_m(0, 4, 6, 7)$

○ $x'yz + xy'z$

○ $\prod_m(0, 4, 6, 7)$

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Question 13

Not yet answered

Marked out of 1.00

⚑ Flag question

What is the result of converting the decimal fraction 0.7512 to base-7? Assume we truncate when we have five fractional digits in the final answer.

- ○ 0.51544
- ○ 0.50232
- ○ None of the other options
- ○ 0.43013
- ○ 0.41550
- ○ 0.33342

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Question 8

Not yet answered

Marked out of 1.00

⚑ Flag question

Given the special relationship between base-3 and base-9 similar to that between base-2 and base-8/base-16, what is the result of converting the number $(121110)_3$ to base-9?

○ 861

○ 208

○ 785

○ 430

◉ None of the other options

○ 543

Clear my choice

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In a system that encodes the numbers 0-13 using Gray code, what is the code of the number 10?

Select one:

○ 1111

○ 1101

◉ 1010

○ 1000

○ 1110

○ 1100

○ 1001

○ 1011

Clear my choice

Question 16

Not yet answered

Marked out of 1.00

⚐ Flag question

Which of the expressions below is the simplified PoS expression of the function $F(W,X,Y,Z)$ represented by the following K-map?

○ $Z(W+Y)$

○ $Y'.(W'+Z')$

○ $Z(W+X+Y)$

Question 3

Not yet answered

Marked out of 1.00

⚐ Flag question

The minimum number of digits required in order to represent the decimal numbers 0-250 using base 3 is

[▼] .

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