Time left 1:09:56

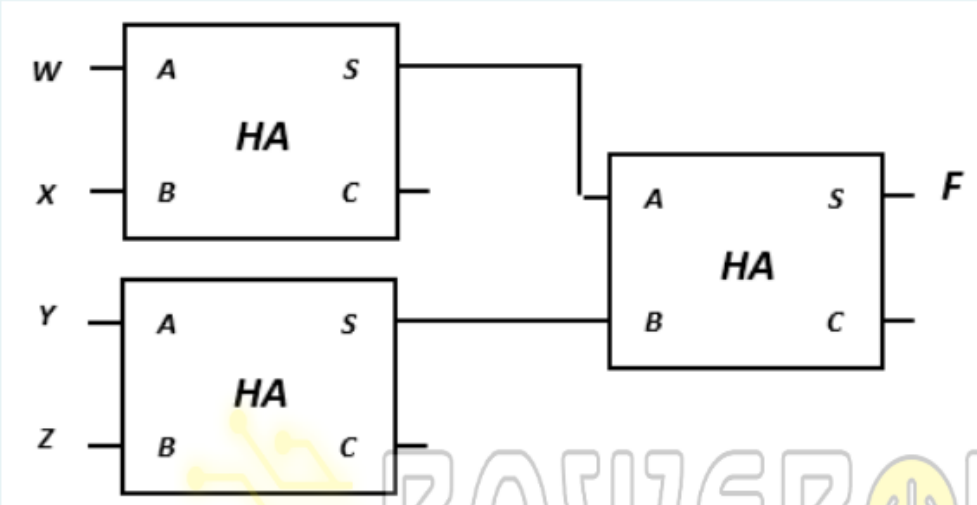
Question 1

Not yet answered

Marked out of 2.00

Flag question

Given the circuit below, the output F can be written with relation to the inputs W, X, Y, and Z as:



POWERUNIT

- W⊕X⊕Y⊕Z
- WXYZ
- None of the other options
- (W⊕X)(Y ⊕Z)
- WX ⊕ YZ

Time left 0:50:34

Question 3

Not yet answered

Marked out of 2.00

Flag question

What is the minimum number of half adders (HA) and 2-input OR gates required in order to build a 12-bit ripple carry adder?

Minimum number of half adders:

Minimum number of 2-input OR gates:

POWERUNIT

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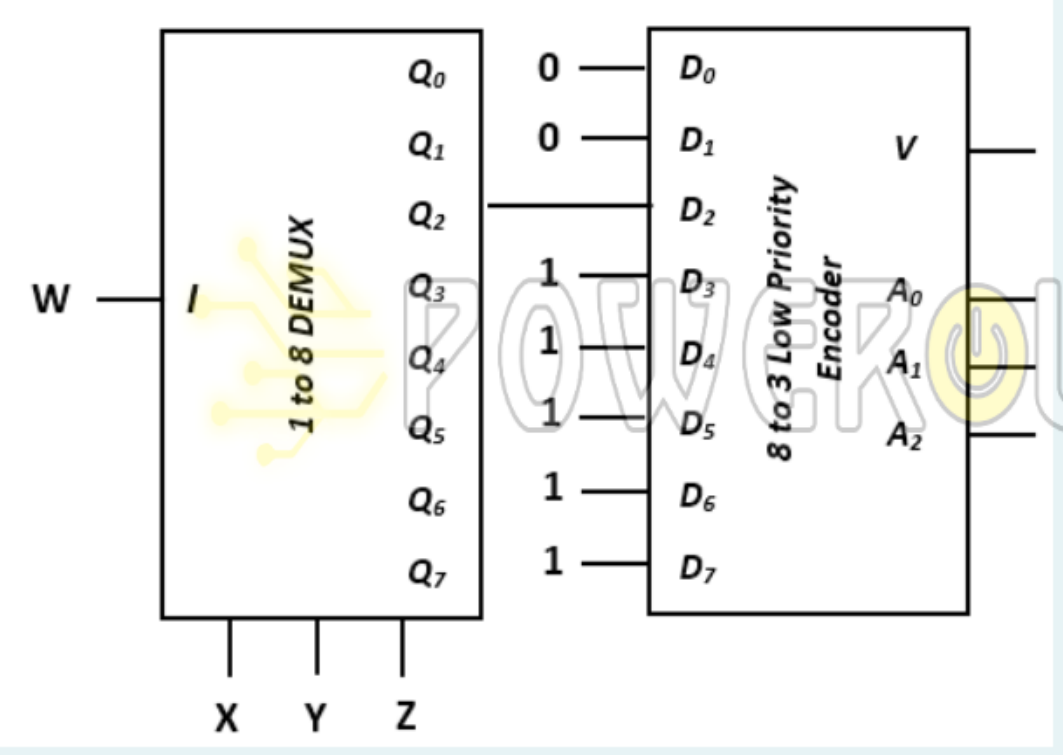
Question **2**

Not yet answered

Marked out of 3.00

Flag question

Given the following combinational logic circuit, write the Boolean equation of A_1 as a sum of minterms. Your minterms must be entered in ascending order so that your answer is graded correctly (*i.e.* $A_1 = m_{10} + m_{20} + m_{30}$) and not $A_1 = m_{30} + m_{10} + m_{20}$). Also, if you need less than three terms to express A_1, choose (None) at the end (*i.e.* A_1 = m_{10} + None + None or $A_1 = m_{10} + m_{20}$ + None).



A_1 = [ ] + [ ] + [ ]

Time left 0:39:47

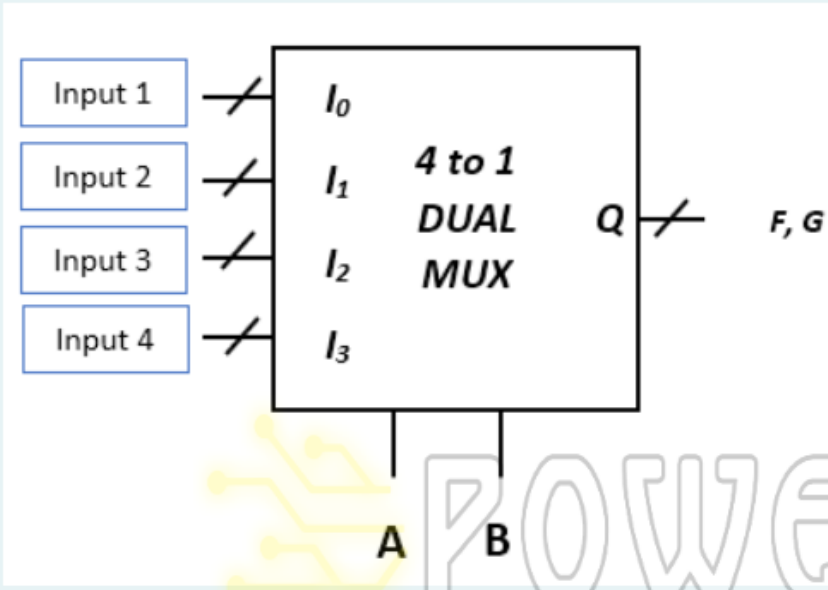
Question **4**

Not yet answered

Marked out of 2.00

Flag question

Given that F(A, B, C) = $\sum(0, 1, 5, 6)$ and G(A, B, C) = $\sum(3, 4, 6, 7)$, and that we want to implement these two functions using the circuit below, choose the correct inputs:



POWERUNIT

Input 1 = ⬍

Input 2 = ⬍

Input 3 = ⬍

Input 4 = ⬍

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Question 5

Not yet answered

Marked out of 5.00

Flag question

A logic system monitors and controls a certain farm. The system has three sensors: sensor A for soil humidity (1: soil humid, 0: soil dry), sensor B for temperature (1: temperature hot, 0: temperature normal), and sensor C for frost indication (1: Frost, 0: no frost).

The system activates a pump to water the farm when the soil is dry, but not when it is hot. The alarm is activated if the conditions are either frosty or hot but not both.

Given the specification above, analyze, then identify the inputs and outputs of the system, then formulate a truth table that defines the required relationships between the inputs and outputs.

POWEROUNIT

Pump	Alarm
0	1
0	1
0	1
0	1
1	0
1	0
1	0
1	0

Solve for the equation of the pump in optimized PoS form and implement it using NAND only implementation.

5.00

Flag question

The system activates a pump to water the farm when the soil is dry, but not when it is hot. The alarm is activated if the conditions are either frosty or hot but not both.

Given the specification above, analyze, then identify the inputs and outputs of the system, then formulate a truth table that defines the required relationships between the inputs and outputs.

Pump	Alarm
0	1
0	1
0	1
0	1
1	0
1	0
1	0
1	0

POWERUNIT

Solve for the equation of the pump in optimized PoS form and implement it using NAND only implementation. What is the minimum number of NAND gates needed for this implementation?

Time left 0:17:46

Question 6

Not yet answered

Marked out of 2.00

Flag question

Suppose we want to design a circuit that compares two 6-bit numbers and outputs 1 if the two numbers are equal. Which of the following statements is true regarding the circuit design?

- The circuit can be designed using six XOR gates and one 6-input OR gate
- The circuit can be designed using six XNOR gates and one 6-input AND gate
- The circuit can be designed using six XNOR gates and one 6-input OR gate
- The circuit can be implemented using an even function implementation
- The circuit can be designed using six XOR gates and one 6-input AND gate
- The circuit can be implemented using an odd function implementation

POWEROUNIT

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Question 8

Not yet answered

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Flag question

Which of the following can be used to implement a 16-to-1 MUX?

- 1-to-16 DMUX, 16 2-input AND gates, one 16-input OR gate.
- 16 tri-state buffers.
- Four 4-to-1 MUXes.
- 4-to-16 decoder, four 2-input AND gate, one 4-input OR gate.
- Two 8-to-1 MUxes.

Clear my choice

POWERUNIT

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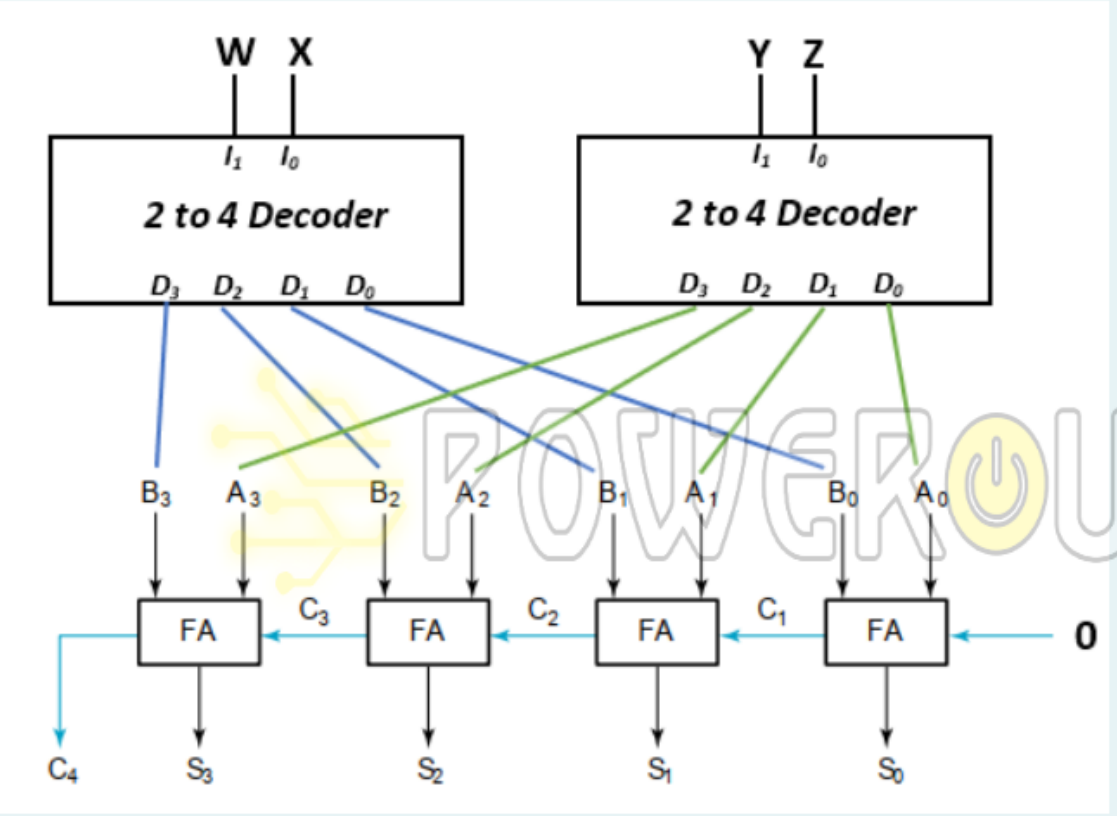
Question 10

Not yet answered

Marked out of 2.00

Flag question

Choose the values for W, X, Y, and Z such that the following circuit generates a carry at C_1



WX = ⬍

YZ = ⬍

Question 11

Not yet answered

Marked out of 2.00

Flag question

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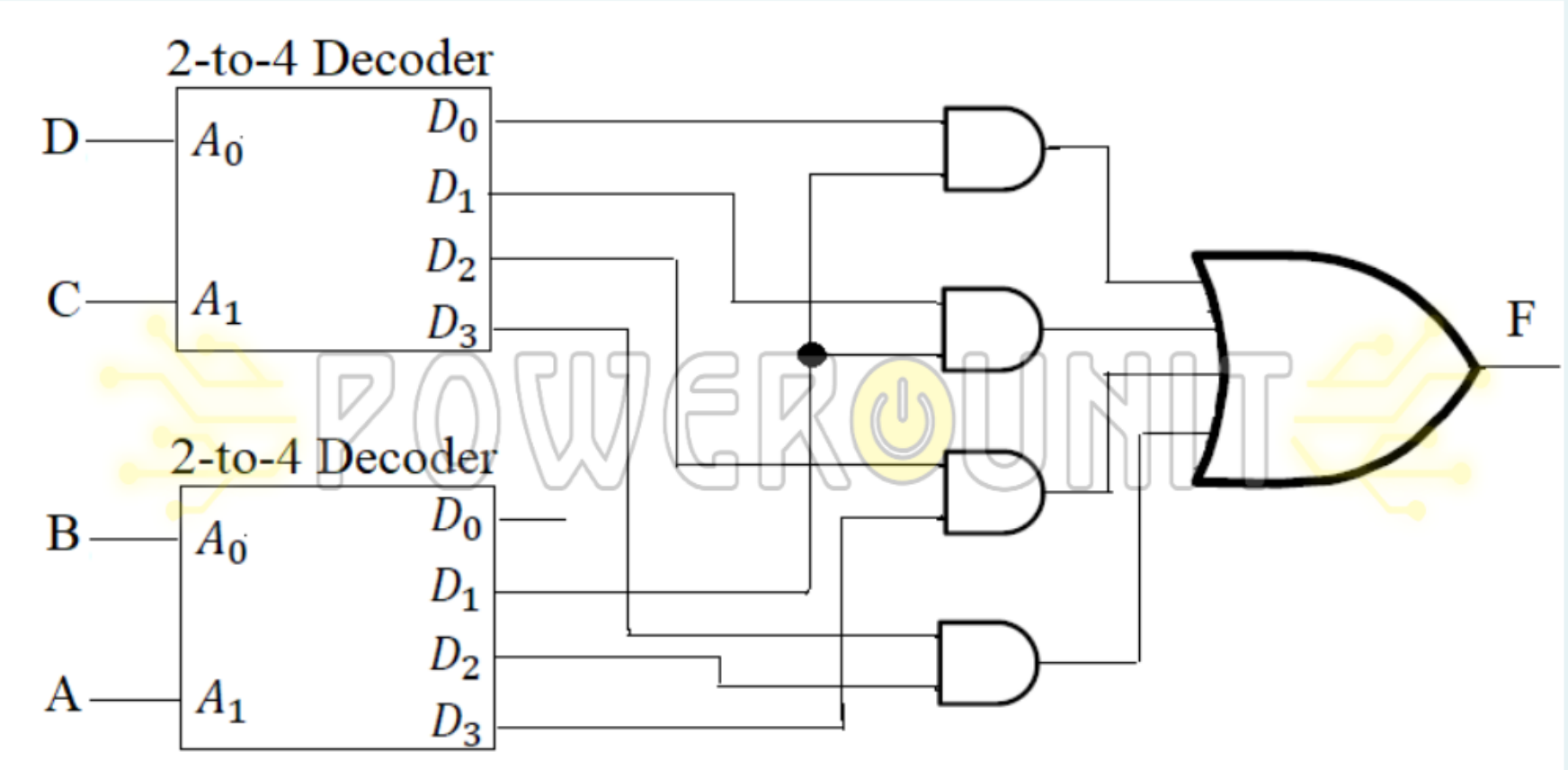
Given the following combinational circuit, select the **minterms** of the function F(A,B,C,D)?



- [ ] 0
- [ ] 1
- [ ] 2
- [ ] 3
- [ ] 4
- [ ] 5
- [ ] 6

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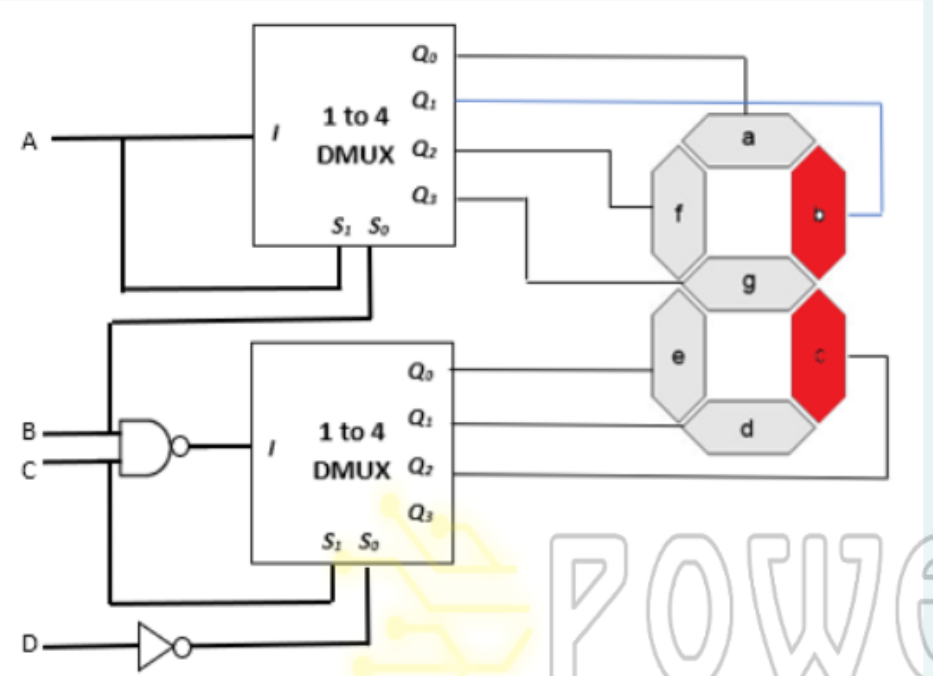
Question 12

Not yet answered

Marked out of 2.00

Flag question

What values for the variables A, B, C, D must be applied at the inputs (in the given order) such that the common anode display is turned on as shown in the circuit below?



POWERUNIT

The answer is

Time left 0:01:19

Question 13

Not yet answered

Marked out of 2.00

Flag question

What is the gate input count with NOTs (GN) of an 11-to-2048 line decoder when implemented using:

1. The straight forward design:

2. Decoder Expansion:

POWERUNIT

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Question 14

Not yet answered

Marked out of 2.00

Flag question

Assume you are limited to four **layers** of XOR gates in designing an even number parity generator, and there is no limit on the number of XOR gates in each layer. What is the maximum number of input bits that the above design can compute the parity for?

The answer is

POWERUNIT

Finish attempt ...