IN1006 Systems Architecture (PRD1 A 2022/23)

Started on	Thursday, 17 November 2022, 4:48 PM
State	Finished
Completed on	Thursday, 17 November 2022, 4:58 PM
Time taken	10 mins 7 secs
Grade	**10.00** out of 10.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

Which of the following statements is *the most accurate* description for the sum-of-products expression below?

F = A'B'C + A'BC' + AB'C'

Select one:

- a. The truth table has three rows where F = 1 and no more than two zeros must be in the inputs to return one. ✔
- b. The truth table has two rows where F = 1 and C must be zero to return one.
- c. The truth table has three rows where F = 1 and C must be one to return one.
- d. The truth table has four rows where F = 1 and no more than two zeros must be in the inputs to return one.
- e. The truth table has three rows where F =1, and no zeros need to be in the inputs to return one.
- f. Don't know/no answer

Your answer is correct.

The number of OR-ed terms above specifies the number of input cases that lead to a true expression (rows of truth table that give F = 1). Each of the barred variables shows where the input needs to be zero for that input case.

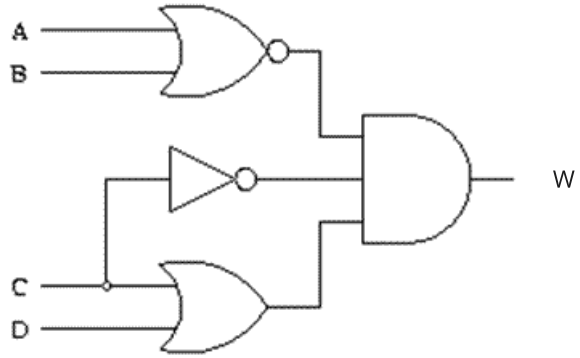
The correct answer is: The truth table has three rows where F = 1 and no more than two zeros must be in the inputs to return one.

Question **2**

Correct

Mark 1.00 out of 1.00

Given the logic circuit (with output W) and table below, which line of the table does ***not*** correspond with the behaviour of the logic circuit?



Row	A	B	C	D	Z
1	0	0	0	0	0
2	0	0	0	1	1
3	0	0	1	0	0
4	0	0	1	1	0
5	0	1	0	0	0
6	0	1	0	1	0
7	0	1	1	0	0
8	0	1	1	1	1
9	1	0	0	0	0
10	1	0	0	1	0
11	1	0	1	0	0
12	1	0	1	1	0
13	1	1	0	0	0
14	1	1	0	1	0
15	1	1	1	0	0
16	1	1	1	1	0

Select one:

- a. Row 5
- b. Row 12
- c. Don't know/no answer
- d. Row 3
- e. Row 1
- f. Row 8 ✔
- g. Row 7
- h. Row 15
- i. Row 10

Row 8 is in error as all inputs to the AND gate must be one for W to be one, and this only occurs when the conditions in row two are met.

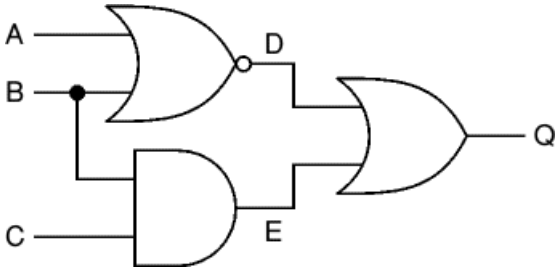
The correct answer is: Row 8

Question **3**

Correct

Mark 1.00 out of 1.00

Which of the following is the correct Boolean expression for the logic circuit below (with output Q).



Select one:

- a. Q = (AB)' + (B+C)
- b. Q = (A+B) + (BC)
- c. Q = (A+B)' + (BC) ✔
- d. Don't know/no answer
- e. Q = (A+B)'(BC)

Output Q is OR of a NOR-gate (D) with inputs A, B and an AND-gate (E) with inputs B, C. This gives the expression:
Q = (A+B)' + (BC)

The correct answer is: Q = (A+B)' + (BC)

Question **4**

Correct

Mark 1.00 out of 1.00

What is the effect of a bitwise-NAND operation on the following two 12-bit words: 1000 1010 1101, 0110 1110 0101 ?

Select one:

- a. 0001 0001 0010
- b. Don't know/no answer
- c. 1111 0101 1010 ✔
- d. 1110 0100 1000
- e. 1110 1110 1101
- f. 0000 1100 0101

The NAND operation is applied to each of the pairs of bits at the same position in each word, moving from left to right.

The correct answer is: 1111 0101 1010

Question **5**

Correct

Mark 1.00 out of 1.00

What is the effect of a bitwise-NAND operation on the following two 12-bit words: 1000 1010 1101, 0110 1110 0101 ?

Select one:

- a. Don't know/no answer
- b. 0000 1100 0101
- c. 0001 0001 0010
- d. 1110 0100 1000
- e. 1110 1110 1101
- f. 1111 0101 1010 ✔

Your answer is correct.

The NAND operation is applied to each of the pairs of bits at the same position in each word, moving from left to right.

The correct answer is: 1111 0101 1010

Question **6**

Correct

Mark 1.00 out of 1.00

Which of the following statements is *the most accurate* description for the sum-of-products expression below?

F = A'BC + ABC' + AB'C'

Select one:

- a. The truth table has two rows where F = 1 and no zeros need to be in the inputs to return one.
- b. The truth table has three rows where F = 1 and B must be one to return one.
- c. The truth table has four rows where F = 1 and no zeros need to be in the inputs to return one.
- d. The truth table has three rows where F = 1 and at least one zero must be in the inputs to return one. ✔
- e. Don't know/no answer.
- f. The truth table has three rows where F = 1 and no zeros need to be in the inputs to return one.

Your answer is correct.

The number of OR-ed terms above specifies the number of input cases that lead to a true expression (rows of truth table that give F = 1). Each of the inverted variables shows where the input needs to be zero for that input case.

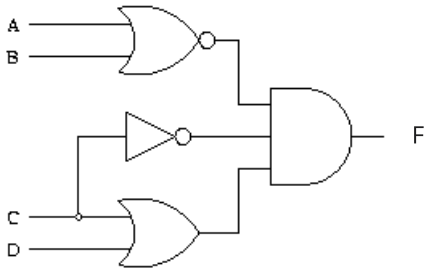
The correct answer is: The truth table has three rows where F = 1 and at least one zero must be in the inputs to return one.

Question **7**

Correct

Mark 1.00 out of 1.00

Which of the following is the correct Boolean expression for the logic circuit below (with output F).



Select one:

- a. F= (A+B)'C'(C+D)'
- b. F= A+B'C'(C+D)
- c. Don't know/no answer
- d. F= (A+B)'C(C+D)
- e. F= (A+B)'C'(C+D) ✔

The output is one if all three of its inputs are one (AND). The first of these is NOR of inputs A, B. The second NOT C and there third C OR D. This gives the expression: F= (A+B)'C'(C+D)

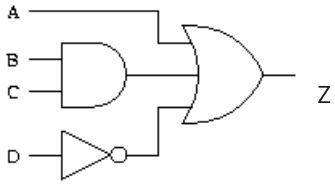
The correct answer is: F= (A+B)'C'(C+D)

Question **8**

Correct

Mark 1.00 out of 1.00

Which of the following is the correct Boolean expression for the logic circuit below (with output Z).



Select one:

- a. Z= A + (BC) + D
- b. Z = A + (B•C) + D' ✔
- c. Don't know/no answer
- d. Z = A + (B+C)D'
- e. Z = A' + (BC) + D'

Input D feeds directly into a NOT gate so is inverted to D'. Inputs B and C are AND-ed together. Then all are OR-ed together with A to give the expression:

$$Z = A + (BC) + D'.$$

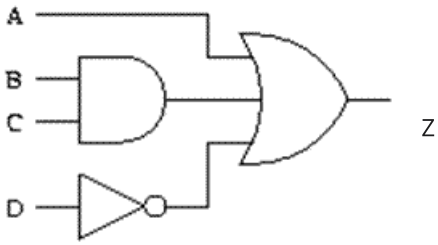
The correct answer is: Z = A + (B•C) + D'

Question **9**

Correct

Mark 1.00 out of 1.00

Given the logic circuit and table below, which line of the table does ***not*** correspond with the behaviour of the logic circuit (with output Z)?



Row	A	B	C	D	Z
1	0	0	0	0	1
2	0	0	0	1	0
3	0	0	1	0	1
4	0	0	1	1	0
5	0	1	0	0	1
6	0	1	0	1	0
7	0	1	1	0	1
8	0	1	1	1	1
9	1	0	0	0	1
10	1	0	0	1	1
11	1	0	1	0	1
12	1	0	1	1	1
13	1	1	0	0	1
14	1	1	0	1	1
15	1	1	1	0	0
16	1	1	1	1	1

Select one:

- a. Row 13
- b. Row 1
- c. Row 3
- d. Row 6
- e. Row 15 ✔
- f. Row 7
- g. Row 11
- h. Row 10
- i. Don't know/no answer

Row 15 is in error as since A is an input to the final OR-gate and Z should be one when A is one.

The correct answer is: Row 15

Question **10**

Correct

Mark 1.00 out of 1.00

Which of the following statements is *the most accurate* description for the sum-of-products expression below?

$$F = A'BC + ABC' + AB'C'$$

Select one:

- a. Don't know/no answer.
- b. The truth table has three rows where F = 1 and no zeros need to be in the inputs to return one.
- c. The truth table has three rows where F = 1 and at least one zero must be in the inputs to return one. ✔
- d. The truth table has four rows where F = 1 and no zeros need to be in the inputs to return one.
- e. The truth table has two rows where F = 1 and no zeros need to be in the inputs to return one.
- f. The truth table has three rows where F = 1 and B must be one to return one.

The number of OR-ed terms above specifies the number of input cases that lead to a true expression (rows of truth table that give F = 1). Each of the inverted variables shows where the input needs to be zero for that input case.

The correct answer is: The truth table has three rows where F = 1 and at least one zero must be in the inputs to return one.

◄ Quiz 2 _ Weekly Assessed Quiz 2022

Jump to...

Quiz 4 _ Weekly Assessed Quiz 2022 ►

Quiz navigation

1 2 3 4 5 6 7 8 9 10

Show one page at a time

Finish review