

QUIZZZ

CSE335_CA1_22232
30 Questions

NAME : _____

CLASS : _____

DATE : _____

1. Simplify the Boolean function $f(A,B,C,D)=\Sigma(1, 3, 7, 11, 15) + d(0, 2, 5)$

☐ A $A'BCD+CD$

☐ B $A'D+C'D'$

☐ C $A'D+ACD$

☒ D $A'D+CD$

2. Simplify the given Boolean function.
 $f(A,B,C,D)=\pi M(4,5,6,7,8,12). d(1,2,3,9,11,14)$

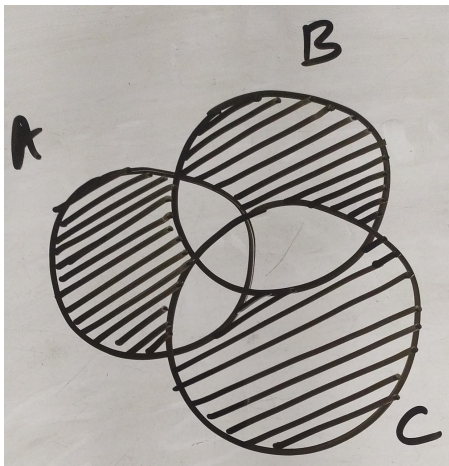
☐ A $(A'+B+C+D)(A+B')$

☒ B $(A'+C+D)(A+B'+C)$

☐ C $(A'+C+D)(A+B'+D)$

☐ D $(A'+C+D)(A+B')$

3.



The Boolean expression for the shaded area in the Venn diagram shown is

☐ A $A+B'+C$

☒ B $AB'C'+A'BC'+A'B'C$

☐ C $AB+A'B'C$

☐ D $AB+A'BC$

4. For a 3-variable Boolean function given that $f(A,B,C) = \pi M(0, 1, 2, 3, 4, 5, 6, 7)$. The minimized Boolean function is

☐ A $AB'C$

☒ B 0

☐ C 1

☐ D $(A+B+C)$

5.

A	B	Y
0	0	1
0	1	0
1	0	1
1	1	0

Simplify the function Y, which is given in the truth table.

☐ A

A'

☒ B

B'

☐ C

A'B+AB'

☐ D

A'B'+AB

6. Simplify the expression $Y(A, Y) = \pi M(1, 3)$.

☐ A

A'B'+AB

☐ B

A'

☒ C

B'

☐ D

A'+B'

7.

A	B	C	Y
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	0

Simplify the function Y, which is given in the truth table

☒ A

A'B+B'C

☐ B

AB'+B'C

☐ C

AB'+BC'

☐ D

AB+BC

8. A logic circuit have three inputs A, B and C and output Y. Y is '1' for the following combinations
- i. B and C are true
 - ii. A and C are false
 - iii. A, B and C are true
 - iv. A, B and C are false.
- Then the minimized expression for Y is

- ☐ A $ABC + A'C'$ ☒ B $BC + A'C'$
- ☐ C $AC + A'C'$ ☐ D $A'BC + AC$

9. Simplify a four variable logic function using K-map $f(A, B, C, D) = \sum m(0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14)$. How many AND and OR gates will be required to realize the minimized $f(A, B, C, D)$?

- ☒ A 2 AND, 1 OR gates ☐ B 2 AND, 3 OR gates
- ☐ C 3 AND, 1 OR gates ☐ D 2 AND, 2 OR gates

10.

	B'C'	B'C	BC'	BC
A'	1	0	1	0
A	1	1	1	0

For the given k-Map, find Prime Implicants and Essential Prime Implicants

- ☐ A $PI = 2, EPI = 2$ ☐ B $PI = 3, EPI = 2$
- ☒ C $PI = 4, EPI = 2$ ☐ D $PI = 3, EPI = 3$

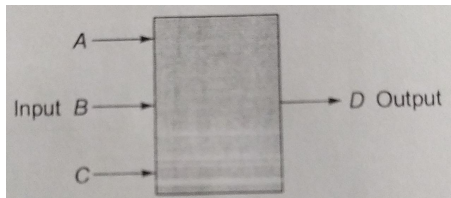
11. For the given Boolean function $f(X, Y, Z) = \sum m(2, 3, 4, 5)$ the minimal expression is

- ☐ A $X'YZ' + X'YZ + XY$ ☐ B $X'Y + XY'Z' + XY'Z$
- ☐ C $X'YZ' + XY'Z' + X'YZ + XY'Z$ ☒ D $X'Y + XY'$

12. The Boolean functions can be expressed in canonical SOP (sum of products) and POS (product of sums) form, For the functions, $Y = A + B'C$, which are such two forms

- ☐ A $Y = \sum(1, 2, 5, 6, 7)$ and $Y = \pi(0, 1, 3)$ ☐ B $Y = \sum(1, 2, 6, 7)$ and $Y = \pi(0, 2, 4)$
- ☐ C $Y = \sum(1, 2, 4, 5, 6, 7)$ and $Y = \pi(0, 2, 3, 4)$ ☒ D $Y = \sum(1, 4, 5, 6, 7)$ and $Y = \pi(0, 2, 3)$

13.



For the box shown the output D is true if and only if a majority of the inputs are true.

☐ A

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

☐ B

$$D = A'B'C' + AB + AC + BC$$

☐ C

$$D = A'B'C + AB'C' + A'BC' + ABC$$

☒ D

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

14.

Map

	\overline{C}	C
$\overline{A}\overline{B}$	0	1
$\overline{A}B$	1	0
$A\overline{B}$	0	1
AB	1	0

The minimized Boolean function represented in K-map is

☐ A

$$(A'B + AB')C'$$

☐ B

$$(AB + A'B')C'$$

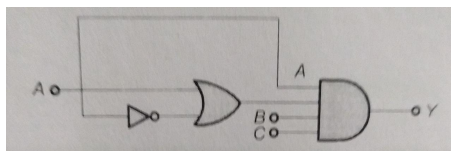
☐ C

$$A'B'C'$$

☒ D

$$A \oplus B \oplus C$$

15.



The Boolean expression for the output Y in the logic circuit is

☐ A

$$AB'C$$

☐ B

$$A'B'C'$$

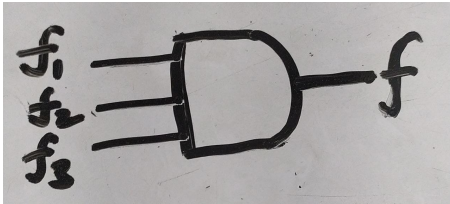
☒ C

$$ABC$$

☐ D

$$A'BC$$

16.



Consider the logical function given below.

$$f_1(A, B, C) = \Sigma(2, 3, 4)$$

$$f_2(A, B, C) = \pi(0, 1, 3, 6, 7)$$

If f is logic zero, then maximum number of possible minterms in function f_3 are?

☐ A

4

☐ B

7

☐ C

5

☒ D

6

17. Consider the following:

Any combinational circuit can be built using.

☒ A

Multiplexers

☒ B

NAND gates

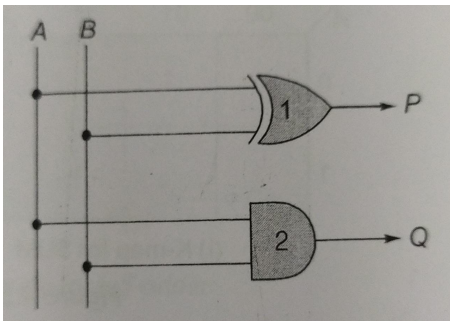
☐ C

Ex-OR gates

☒ D

NOR gates

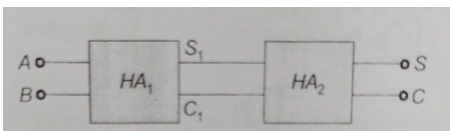
18.



The half-adder circuit is given in the figure, has inputs $AB = 11$. The logic level of P and Q outputs will be

☐ A $P = 1, Q = 0$ ☐ B $P = 1, Q = 1$ ☐ C $P = 0, Q = 0$ ☒ D $P = 0, Q = 1$

19.



Two half adders are connected in cascade as shown in the figure. The output S and C are

☐ A $S = A \odot B, C = 0$ ☐ B $S = A \oplus B, C = AB$ ☒ C $S = A + B, C = 0$ ☐ D $S = AB, C = 0$

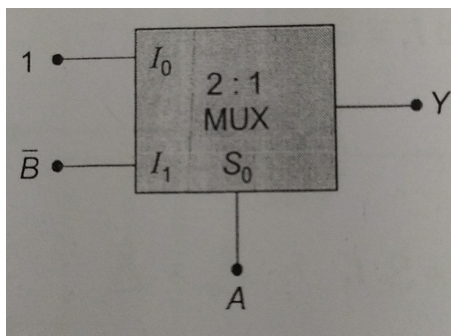
20. Which one of the following statements is not correct?

- ☒ A Two four bit parallel adders can be cascaded to construct 8-bit parallel adder.
- ☐ B Ripple carry adder has addition time independent of the number of bits.
- ☐ C A full adder can be constructed using two half-adders and an OR gate.
- ☐ D Carry look ahead is used to speed up the parallel addition.

21. A floating-point number is assigned the decimal value of -13.50 represented using single precision floating point format. The representation of numbers in hexadecimal notation is:

- ☒ A C1580000
- ☐ B 413C0000
- ☐ C 412C0000
- ☐ D C12C0000

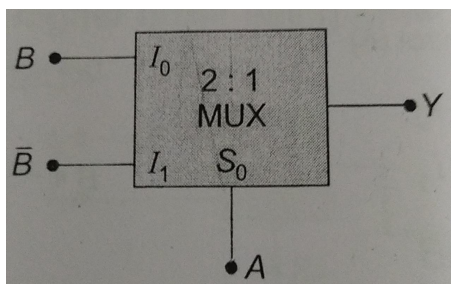
22.



The given diagram represents which logic gate?

- ☐ A EX-NOR
- ☒ B NAND
- ☐ C NOR
- ☐ D EX-OR

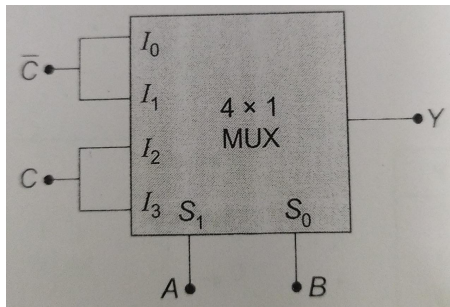
23.



The given diagram represents which logic gate?

- ☐ A NAND
- ☒ B EX-OR
- ☐ C EX-NOR
- ☐ D NOR

24.



For the given 4:1 MUX, the minimized expression is

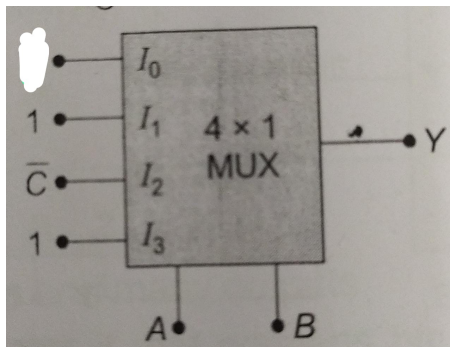
☐ A $Y = A \oplus C$

☒ B $Y = A \odot C$

☐ C $Y = B \oplus C$

☐ D $Y = B \odot C$

25.



To implement $f(A, B, C) = \sum m(0, 1, 4, 6, 7)$ by using the 4:1 MUX as shown in figure. What should be the value passed to I_0 .

☐ A 1

☒ B 0

☐ C C'

☐ D C

26. How many bits can be saved in a Flip-flop?

☐ A 0

☐ B 2

☒ C 1

☐ D 3

27. The minimum number of bits required to represent -31 in 2's complement form

☐ A 5

☒ B 6

☐ C 7

☐ D 4

28. Number of half adders required to add two 8-bit numbers are ____.

☐ A 7

☐ B 8

☐ C 16

☒ D 15

29. Which of the following is functionality complete set?

☐ A

{AND}

☐ B

{AND, OR}

☐ C

All of these

☒ D

{NOT, OR}

30. Hexadecimal representation of -1.5 in IEEE754 single precision format is

☐ A

C1580000

☒ B

bfc00000

☐ C

413C0000

☐ D

C12C0000

Answer Key

1.d	2.b	3.b	4.b
5.b	6.c	7.a	8.b
9.a	10.c	11.d	12.d
13.d	14.d	15.c	16.d
17.	18.d	19.c	20.b
21.a	22.b	23.b	24.b
25.b	26.c	27.b	28.d
29.d	30.b		

