دوائر رقمية
12:2
الثلاثاء 8/6/2021
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Faculty of Computers & Information, Assiut University
1st Level
Final Exam
Duration: 2 hours

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* الإسم الرباعي (بالعربي فقط)

رانيا مصطفى عبدالجواد على

2

* رقم الجلوس

162020220

3

المستوي *

- الاول
- الثاني
- الثالث
- رابعة 2013
- رابعة 2014
- رابعة 2015
- رابعة 2016
- رابعة 2017

4

البرنامج *

- عام
- بايو
- هندسة

5

رقم المعمل *

- ج.
- د.

- اب
- اد
- اهـ
- أ٢
- ب٢
- ج٢
- د٢
- هـ٢
- أ٣
- ب٣
- ج٣
- د٣
- هـ٣
- أ٤
- ب٤

6

* رقم الكمبيوتر

19

7

* الكود (قد تمت مراجعة بيانات الطالب ورقم الجلوس)

V7UgZp3

8

Given the numbers (1000100)2 , (1000003)8 , (1000002)10 , (1000001)16:
(4 Points)

- They all have the same value
- (1000100)2 is the biggest
- (100000210 is the smallest
- None of the previous

9

Negative numbers cannot be represented in:
(4 Points)

- Sign Magnitude
- I's Complement
- 2's Complement
- None of the previous

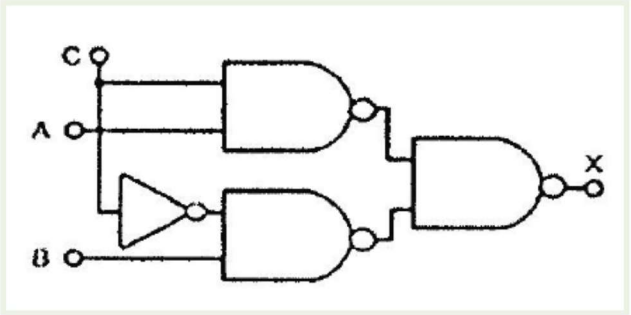
10

When two or more product terms are summed by Boolean addition, the resulting expression is
(4 Points)

- POS

- SOP
- SOP or POS
- SOP and POS

11



What type of a combinational circuit illustrated in the figure below:
(4 Points)

- (a) Full Adder
- Encoder
- DeMultiplexer
- Non of the previous

12

The terminal (highest valid) count for a BCD counter is
(4 Points)

- 1010
- 1001
- 1100
- 1000

13

2- The four-variable K-map has _____ cells
(4 Points)

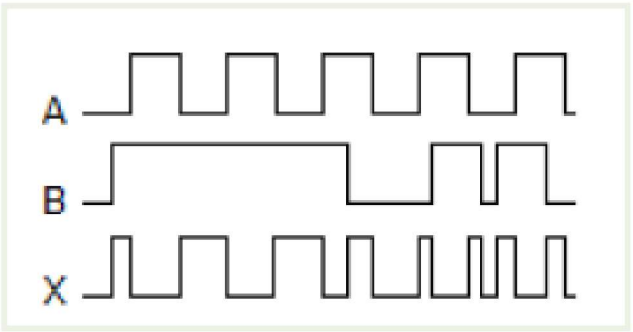
- 4
- 8
- 16
- 2

14

The number of full and half adders are required to add 16-bit number is
(4 Points)

- 8 half adders, 8 full adders
- 16 half adders, 0 full adders
- 4 half adders, 12 full adders
- None of the previous

15



The following waveform pattern of the relation between the input A, B, and the output X is for
(4 Points)

- NAND
- OR
- XOR
- NOT

16

Simplifying the following expression will give
F = A.C.E + A·C·D' + A·C·E' + A·B·D'·E + B·C'·E
(4 Points)

- A.C + B'.C'.E + A.C.D'
- A.C + B.C'.E
- A.C.E + A·C·D'
- None of the previous

17

The Boolean function (A + BC) is a reduced form of
(4 Points)

- AB + BC
- (A + B)(A + C)
- A'B + AB'C
- (A + C)B

18

All logic operations can be obtained by means of
(4 Points)

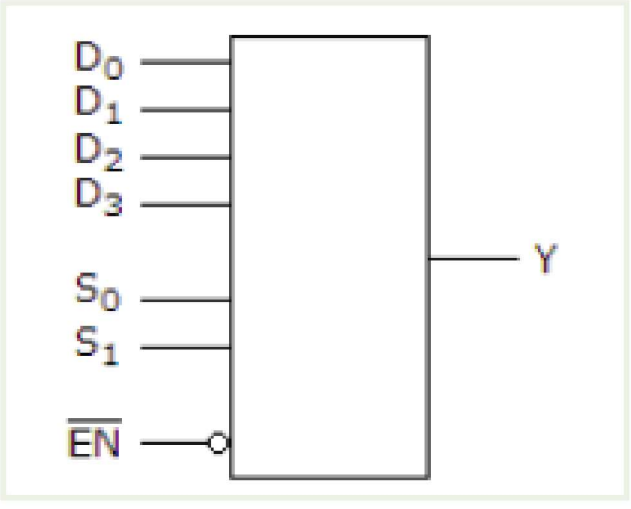
- AND and NAND operations
- OR and NOR operations
- OR and NOT operations
- None of the previous

19

If P is a logical or Boolean variable such that P can take values ‘0’ or ‘1’, then P + P is equal to
(4 Points)

- 0
- 2P
- 1
- P

20



For the device shown here, let all D inputs be LOW, both S inputs be HIGH, and the Enable input be LOW. What is the status of the Y output?
(4 Points)

- (●) LOW
- ( ) HIGH
- ( ) Don't care
- ( ) Cannot be determined

21

The time interval between the application of an input pulse to a logic gate and the occurrence of the resultant output pulse is called
(4 Points)

- ( ) rise time
- ( ) turn-on time
- ( ) time delay
- (●) propagation delay

22

_____ operation is equivalent to addition operation.
(4 Points)

- ( ) NAND
- (●) OR
- ( ) AND

- XOR

23

De Morgan's second theorem states that the complement of a sum of variables is equal to the _____ of the complements of the variables
(4 Points)

- complement
- complement sum
- product
- sum

24

A(A + B) = ?
(4 Points)

- 0
- 1
- A
- 1+AB

25

A movement of data from right (least significant bit) to left (most significant bit) is what type of shift:
(4 Points)

- Right

- Lift
- Parallel
- Finite state machine

26

To minimize a Boolean expression using K-maps, it has to be in _____ form
(4 Points)

- binary
- decimal
- octal
- SOP

27

In any digital circuit unused input combinations under normal operating conditions are known as
(4 Points)

- careless inputs
- useful inputs
- don’t cares
- useless inputs

28

The minimum number of 2-1 multiplexers required to realize a 4-1 multiplexer is:
(4 Points)

- 1
- 2
- 3
- 4

29

What is the minimum number of two-input NAND gates used to perform the function of two input OR gate ?
(4 Points)

- 1
- 2
- 3
- 4

30

The complement of the following function in the simplest form is:
F = AB'+C + (A' + B) C'+ (AB' + C) (A + B')C
(4 Points)

- 1
- AB' + C + A' + B

- [ ] AB + BC
- [x] None of the previous

31

The Boolean function (A + BC) is a reduced form of
(4 Points)

- [ ] AB + BC
- [x] (A + B)(A + C)
- [ ] A'B + AB'C
- [ ] (A + C)B

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One of the essential characteristic of K-map is that the input variable sequences are always arranged in ---------sequence:
(4 Points)

- [ ] Excess-3 code
- [ ] BCD code
- [ ] 2421 code
- [x] Gray code