SECR1013-00 DIGITAL LOGIC VIRTUAL EXAM HALL

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Question 1
Not yet answered
Marked out of 1.50
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Get the SOP and don't care notation from the following truth table.

A	B	C	D	T
0	0	0	0	0
0	0	0	1	1
0	0	1	0	0
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	X
0	1	1	1	0
1	0	0	0	X
1	0	0	1	X
1	0	1	0	X
1	0	1	1	X
1	1	0	0	X
1	1	0	1	1
1	1	1	0	0
1	1	1	1	1

Select one:
- $T = \sum_{ABCD}(1,4,12,13,15) + d(3,4,5,6,7,9)$
- $T = \sum_{ABCD}(1,4,5,13,15) + d(6,8,9,10,11,12)$
- $T = \prod_{ABCD}(0,2,3,7,14) + d(6,8,9,10,11,12)$
- $T = \prod_{ABCD}(1,4,5,13,15) + d(3,4,5,6,7,9)$

Question 2
Not yet answered
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Which of the following functions should be used to convert the input signal of a keypad to binary bit sequence?

Select one:
- Encoder
- Binary Adder
- Multiplexer
- Comparator

Question 3
Not yet answered
Marked out of 1.50
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Edit question

Which of the following is a TRUE statement about the encoder function?

Select one:
- An encoder should have only one active output at a time.
- AND gate is used to produced active-low encoder.
- 3-bit input binary encoder is called 3 to 1 decoder.
- A BCD encoder should have 4 outputs.

Question 4
Not yet answered
Marked out of 2.00
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Which functions are the most common functions required for a digital logic circuit to determine whether the car park is full or not?

Select one:
- Adder (Correct answer but bonus marks for this question)
- Demultiplexer (Wrong answer but bonus marks for this question)
- Comparator. (Correct answer but bonus marks for this question)
- Parity Generator (Wrong answer but bonus marks for this question)

Question 5
Not yet answered
Marked out of 2.00
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Get the simplified logic expression of $P = \sum_{XYZ}(2,5,7) + d(0,4)$

- $P = (X + Z)(\bar{X} + \bar{Z})$
- $P = XZ + \bar{X}\bar{Z}$
- $P = XZ + X\bar{Z}$
- $P = (X + Z)(X + \bar{Z})$

Question 6
Not yet answered
Marked out of 1.50
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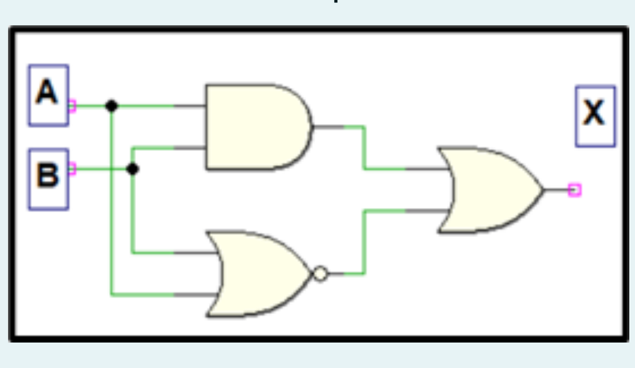
Get the Boolean expression for the following logic circuit.



- $X = (\overline{A+B})\oplus(AB)$
- $X = (\overline{A+B}) + (AB)$
- $X = (A + B) + (AB)$
- $X = (\bar{A} + B)\oplus(\bar{A}B)$

Question 7
Not yet answered
Marked out of 2.00
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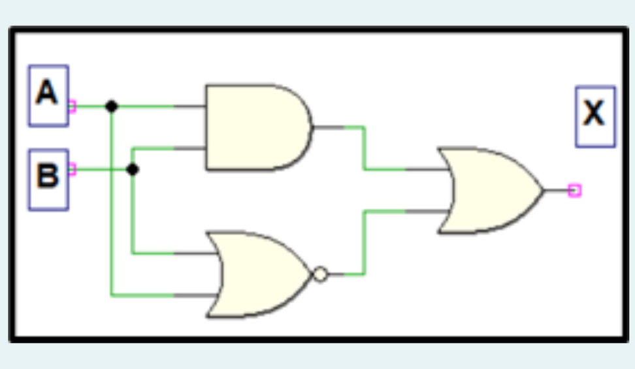
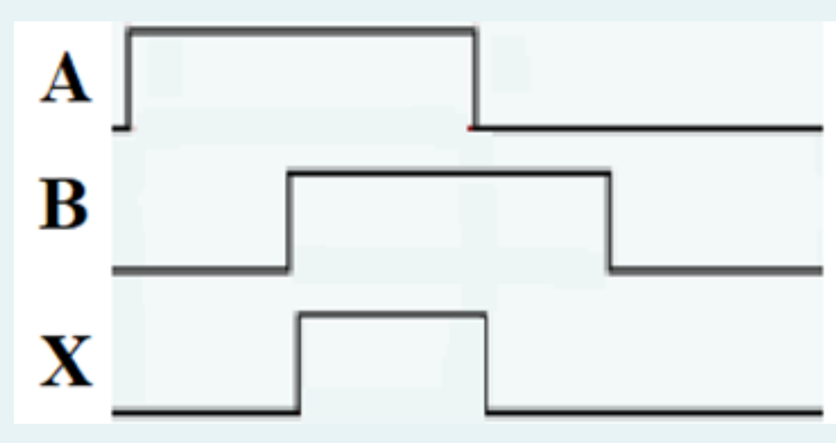
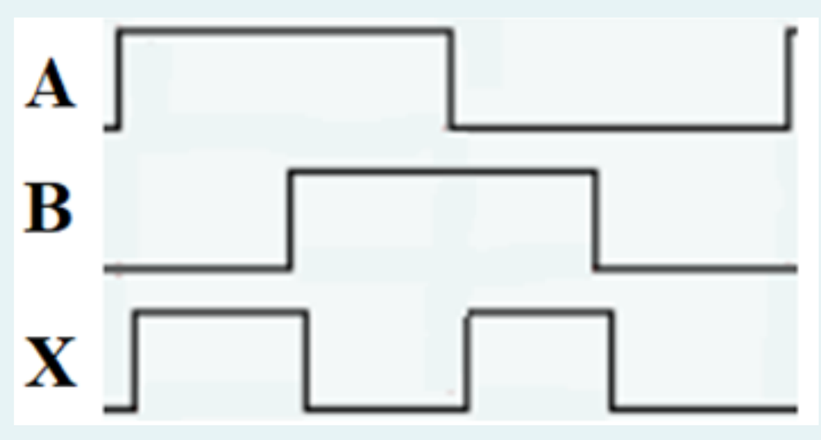
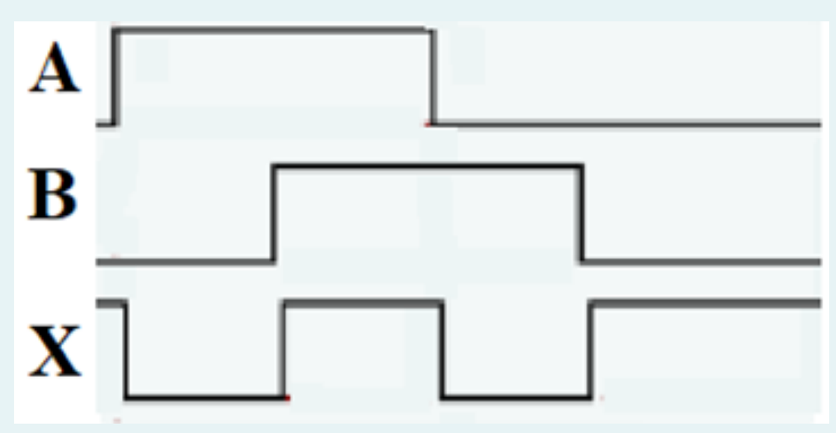
Determine the timing diagram of the following logic circuit.

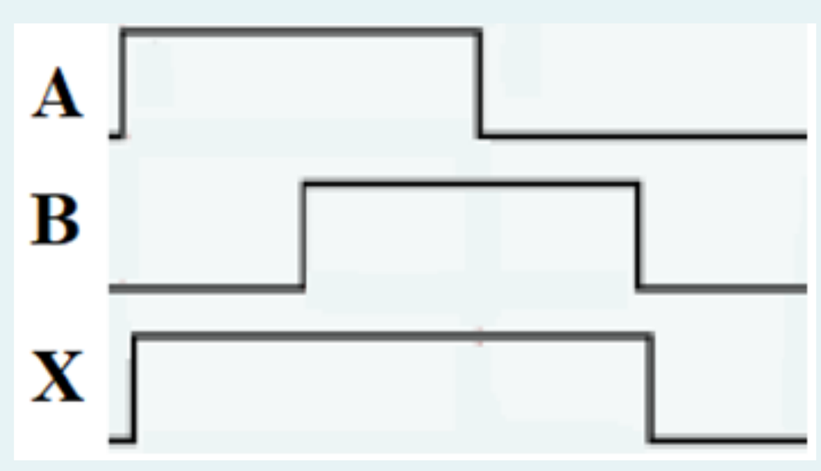


Select one:









Question 8
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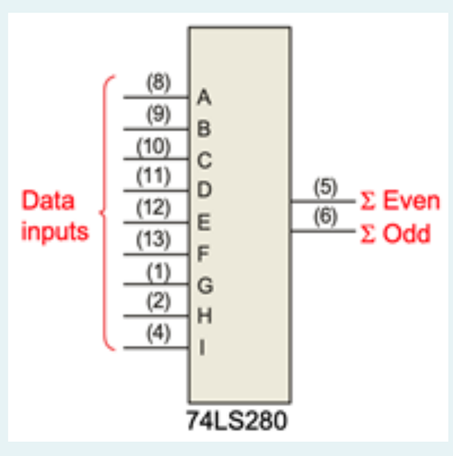
A system is using 74LS280 as its parity generator module as shown below.



If the system is using **even** parity system, how should the system generate the parity bit?

Select one:
- Take the bit value of Pin 6 as the parity bit.
- Take the bit value of Pin 4 as the parity bit.
- Take the bit value of Pin 5 as the parity bit.
- Take the bit value of Pin 2 as the parity bit.

Question 9
Not yet answered
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The following steps are used in designing combinational logic circuit EXCEPT:

Select one:
- Understand the problem to be solved
- Using K-Map to get the simplified Boolean expression
- Draw the circuit using memory elements such as flip-flops
- Convert the problem statement to truth table

Question 10
Not yet answered
Marked out of 1.50
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Assuming 3-bit input binary numbers $A = A_2A_1A_0$ and $B = B_2B_1B_0$, where A_2 and B_2 are MSB. Which bit is NOT the results of a 3-bit parallel adder?

- $CarryOut_0$
- Sum_2
- $CarryOut_2$
- Sum_0

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Question 11
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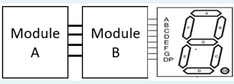
Given a schematic diagram as the following. What are Module A and Module B?



- Module A is a 4 bit binary Encoder, Module B is a 8 bit binary encoder.
- Module A is a BCD to 7-segment decoder, Module B is a Binary encoder
- Module A is a Multiplexer, Module B is a Demultiplexer
- Module A is a BCD Encoder, Module B is a BCD to 7-segment decoder

Question 12
Not yet answered
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What is a DECODER?

- Decoder is a module that capable to stream several inputs streams into a single transmission line.
- Decoder is a module that encrypt a stream of data into an unrecognized information and random-like sequence.
- Decoder is a module that convert a codeword from a coding scheme to another codeword of another coding scheme.
- Decoder is a module that capable to recognize certain codewords of a coding scheme and activate a corresponding output.

Question 13
Not yet answered
Marked out of 1.50
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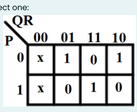
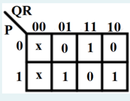
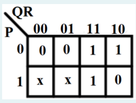
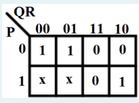
Choose the CORRECT K-Map in mapping the expression of $Z = PQR + \bar{P}\bar{Q}R + \bar{P}Q\bar{R}$

Select one:









Question 14
Not yet answered
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Given $X = A + B$, get its standard SOP expression.

Select one:

- $X = \bar{A}\bar{B} + \bar{A}B + A\bar{B}$
- $X = AB + A\bar{B} + \bar{A}B$
- $X = A\bar{B} + \bar{A}B$
- $X = \bar{A}\bar{B} + AB$

Question 15
Not yet answered
Marked out of 1.50
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Choose the FALSE statement(s) about a DECODER function.

Select one or more:

- A decoder should have only one active output at a time.
- AND gate is used to produce an active low decoder
- 3-bit input binary decoder is called 3 to 1 decoder
- A BCD decoder have 4-bit input and 16 possible outputs.

Question 16
Not yet answered
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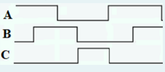
Based on the following timing diagram, get the Boolean expression of output C with its inputs of A and B.



Select one:

- $\bar{A} + B$
- $A + B$
- $\overline{A + B}$
- $A + \bar{B}$

Question 17
Not yet answered
Marked out of 1.00
Flag question
Edit question

Which gate is used for inequality comparison?

Select one:

- XOR
- NAND
- NOR
- XNOR

Question 18
Not yet answered
Marked out of 1.00
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POS expression is implemented by which type of logic?

- AND-OR-Invert logic
- AND-OR logic
- NAND-NOR-Invert logic
- NAND-NOR logic

Question 19
Not yet answered
Marked out of 1.50
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Select logic gates that will produce LOW output when all of its inputs are HIGH.

Select one or more:

- NAND
- XOR
- AND
- NOR

Question 20
Not yet answered
Marked out of 1.00
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How many **data select** bits is required for a multiplexed transmission with 4 different bit streams?

Select one:

- 3 bits
- 2 bits
- 4 bits
- 8 bits

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TEST 2 PART B QUESTION [15 marks] (hidden) ▶

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Question 21
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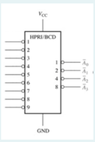
Assume that input pins 3 and 7 are active, what is the output of the module?



- 1010
- 0101
- 0011
- 1000

Question 22
Not yet answered
Marked out of 2.00
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Refer to the following standard SOP and POS expressions.

$$P = ABC + \bar{A}BC + \bar{A}B\bar{C}$$
$$Q = (A + B + C)(\bar{A} + B + C)(\bar{A} + B + \bar{C})$$

What is the binary representation of the third product term? Choose...

What is the binary representation of variable A in the second sum term? Choose...

Question 23
Not yet answered
Marked out of 1.00
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Edit question

Which function should be used to detect the presence of a specified combination of bits on its inputs?

- Multiplexer
- Encoder
- Decoder
- Parity Checker

Question 24
Not yet answered
Marked out of 1.50
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Edit question

Choose the binary representations that do NOT exist in the expression,
$X = \bar{A}BCD + \bar{A}B\bar{C}\bar{D} + ABC\bar{D}$

Select one or more:

- 1000
- 0111
- 1110
- 1101
- 0010

Question 25
Not yet answered
Marked out of 1.50
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Edit question

Which of the following statement(s) is/are **false**?

Select one or more:

- If pin 5 and pin 7 are actives at the same, priority encoder will recognize pin 5 only.
- Look-Ahead-Carry Adder is slower than Ripple-Carry Adder.
- BCD to 7-segment decoder is also a type of code converter.
- BCD encoder can produce 16 codes only.

Question 26
Not yet answered
Marked out of 1.00
Flag question
Edit question

Two binary values A = 101_2 and B = 010_2 will be added using a parallel adder. How many full adders is required to construct the parallel adder?

- 1
- 3
- 2
- 4

Question 27
Not yet answered
Marked out of 1.50
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Edit question

Identify the TRUE statement(s) of *don't care, X*

Select one or more:

- Can act as 1 or 0 to make the group bigger.
- Help to produce simpler expression.
- A representation of false condition.
- Help to maintain the output of 1 for POS.

Question 28
Not yet answered
Marked out of 1.00
Flag question
Edit question

Determine the expression of distributive law.

Select one:

- $\bar{A} + \bar{B} + C = C + \bar{B} + \bar{A}$
- $A\bar{B}C + \bar{A}\bar{B}\bar{C} = \bar{B}(AC + \bar{A}\bar{C})$
- $A\bar{B}C = C\bar{B}A$
- $A + (\bar{B} + C) = (A + \bar{B}) + C$

Question 29
Not yet answered
Marked out of 1.00
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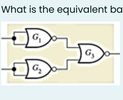
What is the equivalent basic gate for the following universal circuit?



- NOT
- NOR
- AND
- OR

Question 30
Not yet answered
Marked out of 1.00
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Assuming A and B are two binary values. Which of the following is NOT an output of a comparator function?

- A!=B
- A=B
- A>B
- A<B

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TEST 2 PART B QUESTION [15 marks] (hidden) ▶

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Question 31
Not yet answered
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Choose the FALSE statatement(s) about combinational logic common functions.

Select one or more:

- All common functions must be used or included in all digital logic circuit of a complete system.
- Availability of common functions help to reduce circuit design time.
- Specification of common functions are fixed.
- AND and OR are two common combinational logic circuit functions.

Question 32
Not yet answered
Marked out of 1.00
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Edit question

Select the Boolean POS expression that represents the binary expression of 010.

Select one:

- $(\bar{A} + B + \bar{C})$
- $(A + \bar{B} + C)$
- $\bar{A}B\bar{C}$
- ABC

Question 33
Not yet answered
Marked out of 1.00
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Which of the following is known as Data Distributor?

- Code Converter
- Encoder
- Demultiplexer
- Multiplexer

Question 34
Not yet answered
Marked out of 1.00
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Edit question

Given two binary values A = $A_1A_2A_1A_0$ and B = $B_3B_2B_1B_0$. $A_{0\ and}$ B_0 are LSB. Which of the following is a TRUE statement for a binary comparator function?

Select one:

- The comparator begins the comparison by comparing A_3 and B_3.
- The comparator begins the comparison by comparing A_0 and B_0.
- The comparator will have 4 possible outputs.
- The comparator will have 2 possible outputs.

Question 35
Not yet answered
Marked out of 1.50
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What is the minimum number of groups of 0s can be formed from the following K-Map?

AB \ CD	00	01	11	10
00	0	0	1	x
01	x	0	0	1
11	1	1	0	1
10	0	0	0	x

- 4
- 5
- 6
- 3

Question 36
Not yet answered
Marked out of 2.00
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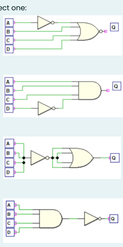
Identify the logic circuit implementation that represents the output expression of $Q = \bar{A} + \bar{B} + \bar{C} + \bar{D}$

Select one:



Question 37
Not yet answered
Marked out of 1.50
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Edit question

Find the truth table for the boolean expression, $X = (\overline{A + B}) \cdot C$

Select one:

A	B	C	X
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	1

Bonus marks because there is no correct answer.

A	B	C	X
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	0

Bonus marks because there is no correct answer.

A	B	C	X
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1

Bonus marks because there is no correct answer.

A	B	C	X
0	0	0	1
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	0

Bonus marks because there is no correct answer.

Question 38
Not yet answered
Marked out of 1.00
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Which of the following statement is FALSE about universal gate?

- Dual symbol for NOR gate is Negative-NAND
- NOR gate is a universal gate
- Dual symbol for NAND gate is Negative-OR
- NAND gate is a universal gate

Question 39
Not yet answered
Marked out of 1.50
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Select the term NOT represented by $\prod_{ABCD}(3,5,8,11,15)$

Select one:

- $\bar{A} + B + C + D$
- $A + B + \bar{C} + \bar{D}$
- $\bar{A} + B + \bar{C} + \bar{D}$
- $A + \bar{B} + C + D$

Question 40
Not yet answered
Marked out of 1.00
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Which of the following logic is implemented when we want output to be active low?

- AND-OR
- NAND-NOR Invert
- NAND-NOR
- AND-OR-Invert

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