

# VIRTUAL UNIVERSITY OF PAKISTAN

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**TEAM HADI(VU LAHORE)**

## MID TERM PAST PAPER

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WARNING: Team HADI is not responsible for any mistake or wrong answer. All students reading and using this document may check and confirm the answers at their own.



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Best of luck!



Question No : 1 of 26

Marks: 1 (Budgeted Time 1 Min)

Consider the binary number "100101", its 2's complement will be \_\_\_\_\_

Answer ( Please select your correct option )

100110

011011

correct

100111

011010

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Question No : 2 of 26

Marks: 1 (Budgeted Time 1 Min)

The values that exceed the specified range can not be correctly represented and are considered as \_\_\_\_\_

Answer ( Please select your correct option )

Overflow

correct

Carry

Parity

Sign value

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Question No : 3 of 26

Marks: 1 (Budgeted Time 1 Min)

According to Demorgan's theorem:

$$\overline{A + B + C} = \underline{\hspace{2cm}}$$

Answer ( Please select your correct option )

A.B.C

$A + \overline{B.C}$

$\overline{A} \overline{B} \overline{C}$

correct

$\overline{A.B} + C$

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Question No : 4 of 26

Marks: 1 (Budgeted Time 1 Min)

If two numbers in BCD representation generate an invalid BCD number then the binary \_\_\_\_\_ is added to the result

Answer ( Please select your correct option )

1001

0110

1111

1100

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Question No : 5 of 26

Marks: 1 (Budgeted Time 1 Min)

The output of an AND gate is one when \_\_\_\_\_

Answer ( Please select your correct option )

All of the inputs are one

correct



Any of the input is one

Any of the input is zero

All the inputs are zero

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Question No : 6 of 26

Marks: 1 (Budgeted Time 1 Min)

A standard SOP form has \_\_\_\_\_ terms that have all the variables in the domain of the expression.

Answer ( Please select your correct option )

- Sum
- Product
- Max
- Composite

correct



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Question No : 7 of 26

Marks: 1 (Budgeted Time 1 Min)

A comparator circuit has multiple inputs and \_\_\_\_\_ outputs

Answer ( Please select your correct option )

2

3

correct

4

7

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Question No : 8 of 26

Marks: 1 (Budgeted Time 1 Min)

An alternate method of implementing Comparators which allows the Comparators to be easily cascaded without the need for extra logic gates is \_\_\_\_\_

Answer ( Please select your correct option )

- Using a single comparator
- Using Iterative Circuit based Comparators
- Connecting comparators in vertical hierarchy
- Extra logic gates are always required.

correct



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Question No : 9 of 26

Marks: 1 (Budgeted Time 1 Min)

The active high and active low inputs of 3-to-8 Decoder are as follows:

Answer ( Please select your correct option )

One active-high and the remaining two are active-low.

correct



Two active-high and the remaining one is active-low.

All active high

All active low

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Question No : 10 of 26

Marks: 1 (Budgeted Time 1 Min)

OLMC consists of a \_\_\_\_\_

Answer ( Please select your correct option )

Encoder

Decoder

Logic Gate

Flip-Flop

correct

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Question No : 11 of 26

Marks: 1 (Budgeted Time 1 Min)

The Quad Multiplexer has \_\_\_\_\_ inputs

Answer ( Please select your correct option )

4

8

12

16

correct



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Question No : 12 of 26

Marks: 1 (Budgeted Time 1 Min)

The carry propagation can be expressed as \_\_\_\_\_.

Answer ( Please select your correct option )

$C_p = AB$

$C_p = A + B$

$C_p = A \oplus B$

$C_p = A + \bar{B}$

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Question No : 13 of 26

Marks: 1 (Budgeted Time 1 Min)

In the binary number "1100.111", the first bit at the right of decimal point has the weight

Answer ( Please select your correct option )

$\frac{1}{2}$  (1 divided by 2)

$\frac{1}{4}$  (1 divided by 4)

0

1

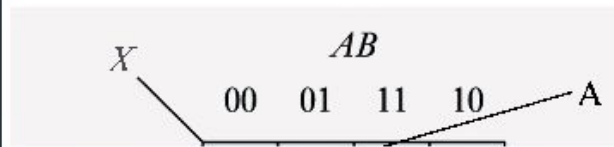
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Question No : 14 of 26

Marks: 1 (Budgeted Time 1 Min)

In the following Karnaugh map, which group has "legal grouping" ?



Answer ( Please select your correct option )

A

B

C

D

correct

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Question No : 15 of 26

Marks: 1 (Budgeted Time 1 Min)

In CMOS 5 Volt series, Input voltage for Logic high signal ( $V_{IH}$ ) is in the range of \_\_\_\_\_ volts.

Answer ( Please select your correct option )

3.5 to 5

correct ←

4.5 to 5

0 to 5

0 to 3.5

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Question No : 16 of 26

Marks: 1 (Budgeted Time 1 Min)

Programmable Array Logic (PAL) has \_\_\_\_\_ input(s) and \_\_\_\_\_ output(s).

Answer ( Please select your correct option )

Single, multiple

Multiple, single

Single, single

Multiple, multiple



correct

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Question No : 17 of 26

Marks: 1 (Budgeted Time 1 Min)

An equivalent ABEL notation of Boolean expression  $A+B$  is \_\_\_\_\_

Answer ( Please select your correct option )

A & B

A | B

A # B

A \$ B



correct

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Question No : 18 of 26

Marks: 1 (Budgeted Time 1 Min)

Which circuit has the following Sum and CarryOut expressions?

$$\text{Sum} = A \oplus B \oplus C$$

$$\text{CarryOut} = C(A \oplus B) + AB$$

Answer ( Please select your correct option )

Half Adder

Full Adder

3-bit parallel adder

MSI adder circuit



correct

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Question No : 19 of 26

Marks: 1 (Budgeted Time 1 Min)

From the truth table below, determine the standard SOP expression.

Inputs	Output
A B C	X
0 0 0	0
0 0 1	1
0 1 0	0

Answer ( Please select your correct option )

$\overline{A}\overline{B}C + \overline{A}BC + A\overline{B}C$

$ABC + \overline{A}\overline{B}C + \overline{A}BC$

correct



$(A + B + \overline{C})(A + \overline{B} + \overline{C})(\overline{A} + \overline{B} + C)$

$(\overline{A} + \overline{B} + C)(\overline{A} + B + C) + (A + B + \overline{C})$

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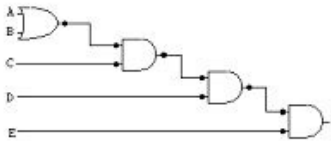
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Question No : 20 of 26

Marks: 1 (Budgeted Time 1 Min)

The Boolean expression for the logic circuit is \_\_\_\_\_



Answer ( Please select your correct option )

AB+CDE

(A+B)CDE

correct

(A+B)+(CDE)

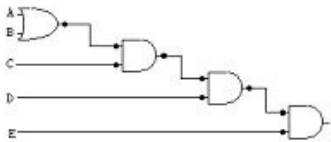
(A+B)(CD+E)

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Question No : 20 of 26

Marks: 1 (Budgeted Time 1 Min)



Answer ( Please select your correct option )

AB+CDE

(A+B)CDE

correct



(A+B)+(CDE)

(A+B)(CD+E)

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Question No : 21 of 26

Marks: 2 (Budgeted Time 4 Min)

How many possible outputs does a decoder of 3 inputs contain?

Answer ( [Please click here to Add Answer](#) )



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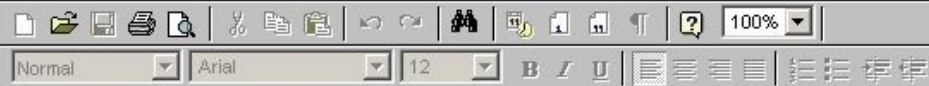


Question No : 23 of 26

Marks: 3 (Budgeted Time 6 Min)

For a two bit comparator circuit, specify all the inputs for which the output  $A = B$  is set to 1.

Answer ( [Please click here to Add Answer](#) )



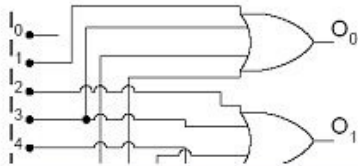
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Question No : 24 of 26

Marks: 3 (Budgeted Time 6 Min)

Identify the following circuit that is which combinational circuit is being represented by this diagram?



Answer ( Please [click here](#) to Add Answer )



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Question No : 25 of 26

Marks: 5 (Budgeted Time 10 Min)

Map the following POS expression on a karnaugh map:

$$(\bar{A} + \bar{B} + C + D)(\bar{A} + B + \bar{C} + \bar{D})(A + B + \bar{C} + D)(\bar{A} + \bar{B} + \bar{C} + \bar{D})(A + B + \bar{C} + \bar{D})$$

Answer ( [Please click here to Add Answer](#) )



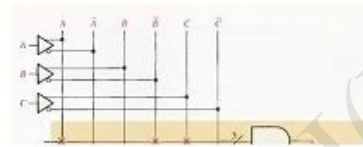
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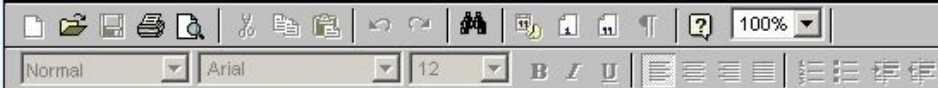
Question No : 26 of 26

Marks: 5 (Budgeted Time 10 Min)

A programmed array is shown in Figure below. The intact fusible link, are indicated by small red Xs. Absence of an X means that the fuse is open. Analyze the figure below and write the output expression.



Answer ( [Please click here to Add Answer](#) )

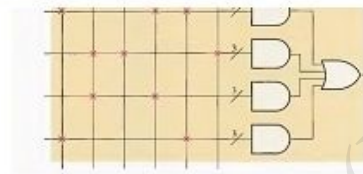


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Answer ( [Please click here to Add Answer](#) )



Normal Arial 12 B I U

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