04/09/2020 **Computer Architecture and Microprocessors (CSN-221)**

Total Marks: 20 **Tutorial-01** **Duration: 50 Mins**

Q: 01

Two numbers –48 and –23 are added using 2's complement. The 2's complement of the result using 8 bit representation is _____

(a) 10111001 (b) 01000111

(c) 01101010 (d) 11100111

Q:02

Minimum number of two input gates [AND, OR, NOT, NAND, NOR gates can be used] needed to realise one two input XOR gate is _____

(a) 2 (b) 3

(c) 4 (d) 5

Q:03

A Boolean expression f (A, B, C) is represented in its pictorial form as shown below. The function f(A, B, C) is

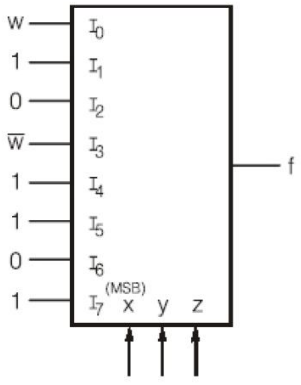
AB \ C	0	1
00	0	1
01	1	1
10	1	0
11	1	1

(a) $\left(\bar{A}C + A\bar{C} + \bar{B}\right)'$ (b) $\left[\bar{B}(\bar{A}+C)(A+\bar{C})\right]'$

(c) $\left[(A+B+C)(\bar{A}+B+\bar{C})\right]'$ (d) $\left(ABC + \bar{A}B\bar{C}\right)'$

Q:04

Find the simplified boolean expression f(x, y, z, w) for the below 8 : 1 MUX



(a) $\bar{x}y + xz + \bar{z}w + \bar{y}w$ (b) $x\bar{y} + \bar{y}w + \bar{x}z + xz$

(c) $\bar{x}y + xz + z\bar{w} + \bar{y}w$ (d) $x\bar{y} + xz + z\bar{w} + \bar{y}w$

Q:05

Match **column-I** with **column-II**

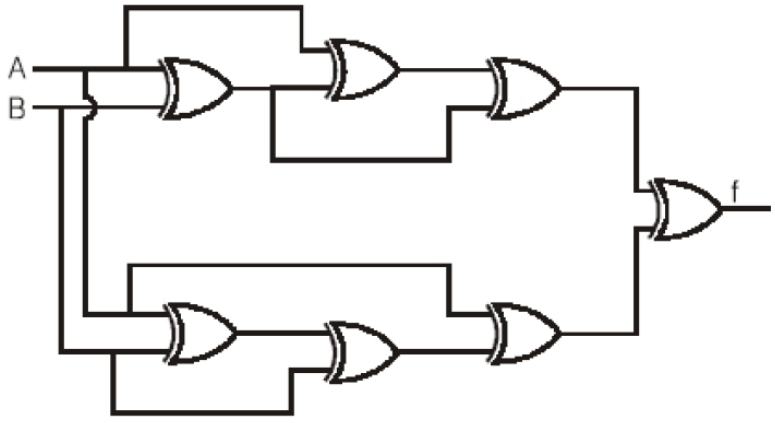
Column-I	Column-II
(a) $(A \oplus B) \oplus (B \oplus C)$	**1.** $(A \odot C)$
(b) $AB \oplus \bar{A}C + BC$	**2.** $(A + B) \odot (A + C)$
(c) $(A \odot B) \odot (B \odot C)$	**3.** $AB \oplus \bar{A}C$
(d) $A + (B \odot C)$	**4.** $(A \oplus C)$
	5. $\bar{A}B \oplus AC$

Codes

	a	b	c	d
(a)	4	3	1	2
(b)	3	4	1	2
(c)	2	3	1	2
(d)	4	3	5	2

Q:06

The output 'f' of the given circuit is _____



(a) 0
(b) 1
(c) A
(d) B

Q:07

Using K-map find out which one of the following is not a prime implicant for the function

$$f(A, B, C, D) = \Sigma m\,(3, 4, 5, 7, 9, 13, 14, 15)$$

(a) DB
(b) $\bar{C}\bar{A}B$
(c) $\bar{C}DA$
(d) DAB

Q:08

Simplify the function F = Σm (1, 2, 3, 4, 5, 8, 9, 10) using K-map to find the total number of literals in the minimal product of sum form.

Q:09

By adding $(36)_7$, $(67)_8$, $(98)_{10}$ and $(34)_5$ these four numbers with different bases, what will be the result in Base 9?

Q:10

Consider the statements given below

1. Two input NOR gate does not obey associative law.
2. Two input NAND gate obeys commutative law.
3. Two input XNOR gate obeys associative law.
4. Two input XOR gate obeys associative law.

Choose the correct option for T = TRUE and F = FALSE.

Codes:

	A	B	C	D
(a)	T	F	T	T
(b)	T	T	T	T
(c)	F	F	F	F
(d)	F	T	T	T