EE/EC/IN **Batch : Hinglish**

Subject : Digital Electronics

DPP - 01

Chapter : Boolean Theorems and GATES

Topic : Boolean Theorems and Basics of Gates (Part-1)

[MCQ] ★☆☆

1. $(A + B)\,(A + C)\,(A + \bar{C})$ is equivalent to

(a) $A + BC$ (b) $A + B\bar{C}$

(c) 0 (d) A

[MCQ]

2. A logical function is given as:

$f(A,B,C) = B\bar{C}[A + B\bar{C}D + \bar{B}CD + \bar{A}B\bar{C} + \bar{A}\bar{B}\bar{C}]$

is equivalent to

(a) $A\bar{B}CD$ (b) $B\bar{C}$

(c) $A\bar{B} + B\bar{C} + CD$ (d) $AB\bar{C}D$

[NAT]

3. If we have 4-variables in a logical function, then number of non-dual logical functions possible_____.

[MCQ] ★★☆

4. A logical function

$f(A, B, C) = (A + B)\,(\bar{B} + C)(A + C)$, then $\bar{f}$ will be equal to

(a) $AB + \bar{B}C$ (b) $\bar{A}\bar{B} + B\bar{C}$

(c) $\bar{A}\bar{B} + \bar{A}\bar{C}$ (d) $AB + AC$

[MCQ] ★★☆

5. Which of the following statement is true?

(a) Dual function f^D is always equals to f.

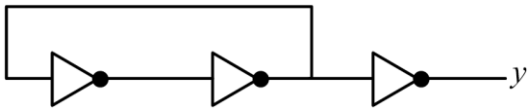
(b) NAND is self dual in nature.

(c) NOT is self dual in nature.

(d) Number of self dual function with 3-variables is 8.

[MCQ] ★☆☆

6. A digital circuit is designed as shown:



This circuit works as

(a) Astable multivibrator as odd number of Not gates are used.

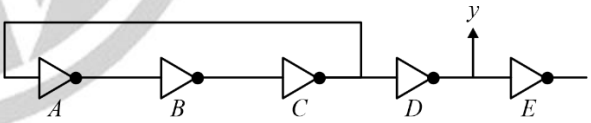
(b) Bistable multivibrator

(c) Monostable multivibrator

(d) None of these

[NAT] ★★★

7. An astable multivibrator circuit is designed as shown:



NOT gates A, B & C are of logic family TTL with delay t_d = 20/3 nsec of each gate and gates D & E are of logic family ECL with delay t'_d =10/3 nsec of each gate, then frequency of the waveform at output y is _____ MHz.

[MCQ] ★★☆

8. Logical function $f(A, B, C, D) = AB + \bar{A}CD + \bar{B}CD$ is equivalent to

(a) $AB + \bar{B}C$

(b) $AB + CD$

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

(d) $AB + \bar{B}C$

[MCQ] ★★☆

9. A logical function is given as:

$f(A, B, C) = \bar{A}\bar{B} + \bar{A}BC + \bar{A}B\bar{C}$

then which of the following statement is true?

(a) $f(A, B, C) = \bar{A}\bar{B} + B\bar{C}$

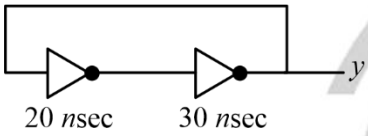
(b) $f(A, B, C) = \bar{A} + \bar{C}$

(c) $f(A, B, C)$ is a self dual function.

(d) None of the above

[MCQ]

10. A logical circuit is designed as shown:



Output y is

(a) A bistable multivibrator's output

(b) A square waveform with f = 10 MHz

(c) A square waveform with f = 25 MHz

(d) None of the above.

[MCQ] ★★★

11. Which of the following is true?

(a) $\overline{\bar{A}B + A\bar{B}} = (\bar{A} + \bar{B})(A + B)$

(b) $\overline{AB\overline{CD}} = \bar{A} + \bar{B} + \bar{C} + \bar{D}$

(c) $\overline{\overline{A\bar{B}}.C} = (A + \bar{C})(\bar{B} + \bar{C})$

(d) None of these

Answer Key

1. **(d)**
2. **(b)**
3. **(65280)**
4. **(b)**
5. **(c)**
6. **(b)**
7. **(25)**
8. **(b)**
9. **(c)**
10. **(a)**
11. **(c)**