

GATE:IN-40-2023

EE23BTECH11025 - Anantha Krishnan

I. QUESTION

The Simplified form of the boolean function $F(W, X, Y, Z) = \Sigma(4, 5, 10, 11, 12, 13, 14, 15)$ with the minimum number of terms and smallest number of literals in each term is

- (A) $WX + \overline{W}X\overline{Y} + W\overline{X}Y$
- (B) $WX + WY + X\overline{Y}$
- (C) $X\overline{Y} + WY$
- (D) $\overline{X}Y + \overline{W}.\overline{Y}$

II. SOLUTION

It is evident from the kmap that the smallest literal term will be

WX \ YZ	YZ			
	00	01	11	10
00	0	0	0	0
01	1	1	0	0
11	1	1	1	1
10	0	0	1	1

$$F(W, X, Y, Z) = X\overline{Y} + WY \quad (1)$$

Therefore option (C) is correct.

Code for implementation through AVR-GCC onto arduino-uno.

<https://github.com/Gandubs/Digital-Design/blob/master/Assignments/in'23-40/codes/main.c>