VERIFICATION OF XOR GATE

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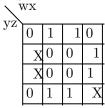
1

Contents

- 1 PROBLEM
- 2 COMPONENTS
- 3 INTRODUCTION
- 4 TRUTH TABLE
- 5 ARDUINO CONNECTIONS
- 6 CODE

1 PROBLEM

(GATE CS-2002) Q.12 Minimum sum of product expression for f(w,x,y,z) shown in Karnaugh-map below is



- (A) xz + y'z
- (B) xz' + zx'
- (C) x'y + zx'
- (D) Noneoftheabove

2 COMPONENTS

Component	Value	Quantity
Arduino	UNO	1
Bread board	-	1
IC	-	-
Jumper wires	M-M	20
LED	-	-
Resistor	150ohms	1

3 INTRODUCTION

the problem involves simplifying a Boolean function

1 using a Karnaugh map. We need to identify groups of adjacent 1s in the map and use them to create the

1 simplest sum of product (SOP) expression that repre-

1 sents the function. The goal is to choose the correct expression from the provided options that accurately

 $_{1}$ represents the function's simplified form

₁ 4 TRUTH TABLE

The Truth Table for the above identities is ass follows:

yz						
yz	0	1	1	0		
	X	0	0	1		
	X	0	0	1		
	0	1	1	X		

by solving above k-map we get the equation (xz'+x'z)

5 ARDUINO CONNECTIONS

1)Connection at breadboard 1) The connections taken from Arduino as Input and Output is as follows: 2)

Input	a	b	f
Arduino	3	4	6

Table 1

The input **a,b** here are connected to Arduino D3,D4 pins.

- 3) The output \mathbf{f} here are connected to Arduino D6 pins.
- 4) The values for these inputs are conncted either to GND or 5V according to the truth table.
- 5)attaching LED' cathod to GND

6 CODE

The arduino code can be downloaded from the below link.

https://github.com/madhu-addanki/FWC/tree/main/ide