



# Atividade de EEA-25

## Atividade 4

Alunos

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## 1 Exercício 1

A)  $(C + D)(A + \overline{D}) = CA + C\overline{D} + DA + D\overline{D} = AC + AD + C\overline{D}$

B)  $A(\overline{AD} + C) = \overline{AD} + AC$

C)  $(A + C)(CD + AC) = ACD + AC + CD + AC = AC + CD + ACD$

## 2 Exercício 2

Por simplicidade, considere E = expressão que deseja-se analisar.

A)  $E = ABC + \overline{A}\overline{B}C + AB\overline{C}$

A	B	C	ABC	$\overline{A}\overline{B}C$	$AB\overline{C}$	E
0	0	0	0	0	0	0
0	0	1	0	1	0	1
0	1	0	0	0	0	0
0	1	1	0	1	0	1
1	0	0	0	0	0	0
1	0	1	0	1	0	1
1	1	0	0	0	1	1
1	1	1	1	0	0	1

B)  $E = \overline{X}Y\overline{Z} + \overline{X}Y\overline{Z} + X\overline{Y}Z + \overline{X}YZ + XY\overline{Z}$

X	Y	Z	$\overline{X}Y\overline{Z}$	$\overline{X}Y\overline{Z}$	$X\overline{Y}Z$	$\overline{X}YZ$	$XY\overline{Z}$	E
0	0	0	1	0	0	0	0	1
0	0	1	1	0	0	0	0	1
0	1	0	1	1	0	0	0	1
0	1	1	1	0	0	1	0	1
1	0	0	1	0	0	0	0	1
1	0	1	1	0	1	0	0	1
1	1	0	1	0	0	0	1	1
1	1	1	0	0	0	0	0	0

## 3 Exercício 3

A)  $E = (A + B)(A + C)(A + B + C)$

A	B	C	A + B	A + C	A + B + C	E
0	0	0	0	0	0	0
0	0	1	0	1	1	0
0	1	0	1	0	1	0
0	1	1	1	1	1	1
1	0	0	1	1	1	1
1	0	1	1	1	1	1
1	1	0	1	1	1	1
1	1	1	1	1	1	1

B)  $E = (A + \overline{B})(A + \overline{B} + \overline{C})(B + C + \overline{D})(\overline{A} + B + \overline{C} + D)$

A	B	C	D	$A + \overline{B}$	$A + \overline{B} + \overline{C}$	$B + C + \overline{D}$	$\overline{A} + B + \overline{C} + D$	E
0	0	0	0	1	1	1	1	1
0	0	0	1	1	1	0	1	0
0	0	1	0	1	1	1	1	1
0	0	1	1	1	1	1	1	1
0	1	0	0	0	1	1	1	0
0	1	0	1	0	1	1	1	0
0	1	1	0	0	0	1	1	0
0	1	1	1	0	0	1	1	0
1	0	0	0	1	1	1	1	1
1	0	0	1	1	1	0	1	0
1	0	1	0	1	1	1	0	0
1	0	1	1	1	1	1	1	1
1	1	0	0	1	1	1	1	1
1	1	0	1	1	1	1	1	1
1	1	1	0	1	1	1	1	1
1	1	1	1	1	1	1	1	1

## 4 Exercício 4

A)  $E = \overline{A} \overline{B} \overline{C} + A\overline{B}C + \overline{A}BC + ABC\overline{C}$

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

$E = \overline{A \oplus B \oplus C}$

B)  $E = AC[\overline{B} + B(B + \overline{C})]$

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

$E = AC$

$$C) E = DE\overline{F} + \overline{D}E\overline{F} + \overline{D}\overline{E}F$$

DE/F	00	01	11	10
0	1	1	1	0
1	0	0	0	0

$$E = E\overline{F} + \overline{D}\overline{E}F$$

## 5 Exercício 5

```

module decoder_7seg_4din
( output wire [6:0] F, input wire [3:0] ABCD );
    always @* begin
        case (ABCD)
            4'b0000: F = 7'b0000001; // Display '0'
            4'b0001: F = 7'b0100111; // Display '1'
            4'b0010: F = 7'b0010010; // Display '2'
            4'b0011: F = 7'b0010000; // Display '3'
            4'b0100: F = 7'b0100100; // Display '4'
            4'b0101: F = 7'b0001000; // Display '5'
            4'b0110: F = 7'b0000000; // Display '6'
            4'b0111: F = 7'b0100111; // Display '7'
            4'b1000: F = 7'b0000000; // Display '8'
            4'b1001: F = 7'b0000100; // Display '9'
            4'b1010: F = 7'b0000010; // Display 'A'
            4'b1011: F = 7'b0001100; // Display 'b'
            4'b1100: F = 7'b0011101; // Display 'C'
            4'b1101: F = 7'b0000101; // Display 'd'
            4'b1110: F = 7'b0011000; // Display 'E'
            4'b1111: F = 7'b0011010; // Display 'F'
            default: F = 7'b1111111; // Display nothing
        endcase
    end
endmodule

```