**Homework # 3 21707346 Barış Karapelit**

Implement the function F(A,B,C) =∑(1,3,5,6) with 4 to 1 MUX.

a)Using Truth table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A | B | C | F(A,B,C) |
| M0 | 0 | 0 | 0 | 0 |
| M1 | 0 | 0 | 1 | 1 |
| M2 | 0 | 1 | 0 | 0 |
| M3 | 0 | 1 | 1 | 1 |
| M4 | 1 | 0 | 0 | 0 |
| M5 | 1 | 0 | 1 | 1 |
| M6 | 1 | 1 | 0 | 1 |
| M7 | 1 | 1 | 1 | 0 |

|  |  |  |
| --- | --- | --- |
| A | B | F in font of C |
| 0 | 0 | C |
| 0 | 1 | C |
| 1 | 0 | C |
| 1 | 1 | C’ |

|  |  |  |
| --- | --- | --- |
| A | C | F font of B |
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | B |
| 1 | 1 | B’ |

# C 0

S0

I2

I3 S1

4 to1 MUX

I0

I1

’

S0

I2

I3 S1

4 to1 MUX

I0

I1

C F 1 F C B

C’ B

A B A C

b) Using implement table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A | B | C | F(A,B,C) |
| M0 | 0 | 0 | 0 | 0 |
| M1 | 0 | 0 | 1 | 1 |
| M2 | 0 | 1 | 0 | 0 |
| M3 | 0 | 1 | 1 | 1 |
| M4 | 1 | 0 | 0 | 0 |
| M5 | 1 | 0 | 1 | 1 |
| M6 | 1 | 1 | 0 | 1 |
| M7 | 1 | 1 | 1 | 0 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A’B’ | A’B | AB’ | AB |
|  | I0 | I1 | I2 | I3 |
| C’ | 0 | 2 | 4 | 6 |
| C | 1 | 3 | 5 | 7 |
|  | C | C | C | C’ |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A’C’ | A’C | AC’ | AC |
|  | I0 | I1 | I2 | I3 |
| B’ | 0 | 1 | 4 | 5 |
| B | 2 | 3 | 6 | 7 |
|  | 0 | 1 | B | B’ |

# C 0

S0

I2

I3 S1

4 to1 MUX

I0

I1

’

S0

I2

I3 S1

4 to1 MUX

I0

I1

C F 1 F C B

C’ B

A B A C