**BLG231 Digital Circuits HW3**

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|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 4 | 5 | 9 | 12 | 14 | Cost |
|  |  |  |  |  |  |  | 6 |
|  |  |  |  |  |  |  | 6 |
|  |  |  |  |  |  |  | 6 |
|  |  |  |  |  |  |  | 5 |
|  |  |  |  |  |  |  | 6 |
|  |  |  |  |  |  |  | 6 |

All prime implicants:

A

2)

1)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| index | 𝑎 | 𝑏 | 𝑐 | 𝑑 | 𝑓 |
| 0 | 0 | 0 | 0 | 0 | 1 |
| 1 | 0 | 0 | 0 | 1 |  |
| 2 | 0 | 0 | 1 | 0 |  |
| 3 | 0 | 0 | 1 | 1 |  |
| 4 | 0 | 1 | 0 | 0 | 1 |
| 5 | 0 | 1 | 0 | 1 | 1 |
| 6 | 0 | 1 | 1 | 0 | 0 |
| 7 | 0 | 1 | 1 | 1 | 0 |
| 8 | 1 | 0 | 0 | 0 |  |
| 9 | 1 | 0 | 0 | 1 | 1 |
| 10 | 1 | 0 | 1 | 0 |  |
| 11 | 1 | 0 | 1 | 1 | 0 |
| 12 | 1 | 1 | 0 | 0 | 1 |
| 13 | 1 | 1 | 0 | 1 | 0 |
| 14 | 1 | 1 | 1 | 0 | 1 |
| 15 | 1 | 1 | 1 | 1 | 0 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| AB/CD | 00 | 01 | 11 | 10 |
| 00 | 1 |  |  |  |
| 01 | 1 | 1 | 0 | 0 |
| 11 |  | 0 |  | 1 |
| 10 |  | 1 | 0 |  |

and is covered by and their costs are equal to s cost. We can eliminate and .

covers distingushied point.

covers distingushied point.

covers distingushied point.

Total cost is 17.



3)





4)

Don’t care values have values on the table when circuits simulated on Logism.

Most optimum function have the values on the table and that’s why those values are generated.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| index | 𝑎 | 𝑏 | 𝑐 | 𝑑 | 𝑓 |
| 1 | 0 | 0 | 0 | 1 |  |
| 2 | 0 | 0 | 1 | 0 |  |
| 3 | 0 | 0 | 1 | 1 |  |
| 8 | 1 | 0 | 0 | 0 |  |
| 10 | 1 | 0 | 1 | 0 |  |