**Square calculator**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| SL | A | B | C | F5 | F4 | F3 | F2 | F1 | F0 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 3 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 4 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 5 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| 6 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 7 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |

For F5 we get the Kmap ,

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC  A | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 0 | 0 | 1 | 1 |

SOP, F(A,B,C)=AB, and cost =1+2=3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC  A | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 0 | 0 | 1 | 1 |

POS, F(A,B,C)=(A)(B) where cost=1+2=3

Now the most simplified is F(A,B,C)=AB.

For F4 we get the Kmap ,

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC  A | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 1 | 1 | 1 | 0 |

SOP, F(A,B,C)=AB’ + AC, and cost =3+2+2+2=9

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC  A | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 1 | 1 | 1 | 0 |

POS, F(A,B,C)=(A)(B’+C) where cost=2+2+2=6

Now the most simplified is F(A,B,C)=(A)(B’+C)

For F3 we get the Kmap ,

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC  A | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 1 | 0 |
| 01 | 0 | 1 | 0 | 0 |

SOP, F(A,B,C)=A’BC + AB’C, and cost =3+3+3+2=11

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC  A | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 1 | 0 |
| 01 | 0 | 1 | 0 | 0 |

POS, F(A, B, C) = (A + B)(C)(A' + B') where cost=3+2+2+3=10

Now the most simplified is F(A, B, C) = (A + B)(C)(A' + B')

For F2 we get the Kmap ,

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC  A | 00 | 01 | 1 | 10 |
| 00 | 0 | 0 | 0 | 1 |
| 01 | 0 | 0 | 0 | 1 |

SOP, F(A,B,C)=BC’, and cost =1+2=3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC  A | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 1 |
| 01 | 0 | 0 | 0 | 1 |

POS, F(A, B, C) =(B)(C’) where cost=1+2=3

Now the most simplified is F(A,B,C)=BC’For F1 we get the Kmap ,

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC  A | 00 | 01 | 1 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 0 | 0 | 0 | 0 |

SOP, F(A,B,C)=0, and cost =0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC  A | 00 | 01 | 11 | 10 |
| 00 | 0 | 0 | 0 | 0 |
| 01 | 0 | 0 | 0 | 0 |

POS, F(A, B, C) = 0 where cost= 0

Now the most simplified is F(A, B, C) = 0

For F0 we get the Kmap ,

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC  A | 00 | 01 | 1 | 10 |
| 00 | 0 | 1 | 1 | 0 |
| 01 | 0 | 1 | 1 | 0 |

SOP, F(A,B,C)=C, and cost = 0

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| BC  A | 00 | 01 | 11 | 10 |
| 00 | 0 | 1 | 1 | 0 |
| 01 | 0 | 1 | 1 | 0 |



POS, F(A, B, C) = C where cost=0

Now the most simplified is F(A, B, C) = C