



1. $f(A,B,C,D,E) = \Sigma m(0,2,4,6,9,11,13,15,17,19,21,23)$ ^{SEP}
2. $f(A,B,C,D,E) = \Sigma m(2,3,6,10,11,13,14,15,16,18,20,22,26,27,29,31)$
3. $f(A,B,C,D,E) = \Sigma m(1,5,8,10,11,13,15,17,21,26,27,29,31)$

1. $\begin{array}{l} 0:00000 \\ 2:00010 \\ 4:00100 \\ \hline 6:00110 \\ 9:01001 \\ 17:10001 \\ \hline 11:01011 \\ 13:01101 \\ 19:10011 \\ 21:10101 \\ \hline 15:01111 \\ 23:10111 \end{array}$

$\begin{array}{l} 0,2:2 \\ 0,4:4 \\ \hline 2,6:2 \\ 4,6:4 \\ \hline 9,11:2 \\ 9,13:4 \\ \hline 17,19:2 \\ 17,21:4 \\ \hline 11,15:4 \\ 13,15:2 \\ 19,23:4 \\ 21,23:2 \end{array}$

$\begin{array}{l} 0,2,4,6:2,4 \text{ PI0} \\ 9,11,13,15:2,4 \text{ PI1} \\ 17,19,21,23:2,4 \text{ PI2} \end{array}$

| | 0 | 2 | 4 | 6 | 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 |
|-----|---|---|---|---|---|----|----|----|----|----|----|----|
| PI0 | x | x | x | x | | | | | | | | |
| PI1 | | | | | x | x | x | x | | | | |
| PI2 | | | | | | | | | x | x | x | x |

All PI are essential!

$$f1 = P0 + P1 + P2$$

| AB/CDE | 000 | 001 | 011 | 010 | 110 | 111 | 101 | 100 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|
| 00 | x | | | x | x | | | x |
| 01 | | x | x | | | x | x | |
| 10 | | x | x | | | x | x | |
| 11 | | | | | | | | |

1. $f(A,B,C,D,E) = \Sigma m(0,2,4,6,9,11,13,15,17,19,21,23)$ ^{SEP}
2. $f(A,B,C,D,E) = \Sigma m(2,3,6,10,11,13,14,15,16,18,20,22,26,27,29,31)$
3. $f(A,B,C,D,E) = \Sigma m(1,5,8,10,11,13,15,17,21,26,27,29,31)$

$\begin{array}{l} 0:00000 \\ 2:00010 \\ 16:10000 \\ \hline 3:00011 \\ 6:00110 \\ 10:01010 \\ 18:10010 \\ 20:10100 \\ \hline 11:01011 \end{array}$

$\begin{array}{l} 0,2:2 \\ 0,16:16 \\ \hline 2,3:1 \\ 2,6:4 \\ 2,10:8 \\ 2,18:16 \\ 16,18:2 \\ 16,20:4 \\ \hline 11:8 \end{array}$

$\begin{array}{l} 0,2,16,18:2,16 \text{ P0} \\ 2,6,10,14:4,8 \text{ P1} \\ 2,10,18,26:16,8 \text{ P2} \\ 16,18,20,22:4,2 \text{ P3} \\ 2,3,10,11:8,1 \text{ P4} \\ 2,6,18,22:4,16 \text{ P5} \\ \hline 10,11,14,15:8,1 \text{ P6} \\ 11,21,22,11:1,1 \text{ P7} \end{array}$

| | 0 | 2 | 3 | 6 | 10 | 11 | 13 | 14 | 15 | 16 | 18 | 20 | 22 | 26 | 27 | 29 | 31 |
|----|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|
| P0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| P1 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| P2 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| P3 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| P4 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| P5 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| P6 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| P7 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| P8 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |
| P9 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . |

$$f2 = P0 + P4 + P9 + P3 + P1 + P7$$

| AB/CDE | 000 | 001 | 011 | 010 | 110 | 111 | 101 | 100 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|
| 00 | | | x | x | x | | | |
| 01 | | | x | x | x | x | x | |
| 10 | x | | x | x | x | | | x |
| 11 | | | x | x | | x | x | |

20: 1011
 11: 01011
 13: 01101
 14: 01110
 22: 10110
 26: 11010

 15: 01111
 27: 11011
 29: 11101

 31: 11111

16, 20: 4
 3, 11: 8
 6, 14: 8
 6, 22: 16
 10, 11: 1
 10, 14: 4
 10, 26: 16
 18, 22: 4
 18, 26: 8
 20, 22: 2

 11, 15: 8
 11, 27: 16
 13, 15: 2
 13, 29: 16
 14, 15: 1
 26, 27: 1

 15, 31: 16
 27, 31: 4
 29, 31: 2

10, 11, 14, 15: 8, 1 P6
16, 11, 26, 27: 16, 1 P7

 11, 15, 27, 31: 16, 4 P8
 13, 15, 29, 31: 2, 16 P9

- $f(A, B, C, D, E) = \sum m(0, 2, 4, 6, 9, 11, 13, 15, 17, 19, 21, 23)$
- $f(A, B, C, D, E) = \sum m(2, 3, 6, 10, 11, 13, 14, 15, 16, 18, 20, 22, 26, 27, 29, 31)$
- $f(A, B, C, D, E) = \sum m(1, 5, 8, 10, 11, 13, 15, 17, 21, 26, 27, 29, 31)$

1: 00001
 8: 01000
 5: 00101
 10: 01010
 17: 10001

 11: 01011
 13: 01101
 21: 10101
 26: 11010

 15: 01111
 27: 11011
 29: 11101

 31: 11111

1, 5: 4
 1, 17: 16
 8, 10: 2 P5

 5, 13: 8
 5, 21: 16
 10, 11: 1
 10, 26: 16
 17, 21: 4

 11, 15: 4
 11, 27: 16
 13, 15: 2
 13, 29: 16
 21, 29: 8 P6
 26, 27: 1

1, 5, 17, 21: 4, 16 P0

 10, 11, 26, 27: 16, 1 P1
 5, 13, 21, 29: 8, 16 P2

 11, 15, 27, 31: 4, 16 P3
 13, 15, 29, 31: 2, 16 P4

✓ P0
 ✓ P1
 ✓ P2
 ✓ P3
 ✓ P4
 ✓ P5
 ✓ P6
 1 5 8 10 11 13 15 17 21 26 27 29 31
 f3 = P5 + P0 + P1 + P4

| AB/CDE | 000 | 001 | 011 | 010 | 110 | 111 | 101 | 100 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|
| 00 | | x | | | | | x | |
| 01 | x | | | x | | x | x | |

| | |
|----|------|
| 0 | 0000 |
| 1 | 0001 |
| 2 | 0010 |
| 3 | 0011 |
| 4 | 0100 |
| 5 | 0101 |
| 6 | 0110 |
| 7 | 0111 |
| 8 | 1000 |
| 9 | 1001 |
| 10 | 1010 |
| 11 | 1011 |
| 12 | 1100 |
| 13 | 1101 |
| 14 | 1110 |
| 15 | 1111 |
| 16 | 0000 |
| 17 | 0001 |
| 18 | 0010 |
| 19 | 0011 |
| 20 | 0100 |
| 21 | 0101 |
| 22 | 0110 |
| 23 | 0111 |
| 24 | 1000 |
| 25 | 1001 |
| 26 | 1010 |
| 27 | 1011 |
| 28 | 1100 |
| 29 | 1101 |
| 30 | 1110 |
| 31 | 1111 |

31: 11111

21,29: 8 16
26,27: 1
15,31: 16
27,31: 4
29,31: 2

$TS = P5 + P0 + P1 + P7$

| AB/CDE | 000 | 001 | 011 | 010 | 110 | 111 | 101 | 100 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|
| 00 | | x | | | | | x | |
| 01 | x | | | x | | x | x | |
| 10 | | x | | | | | x | |
| 11 | | | x | x | | x | x | |