

Universiteit van Stellenbosch

Toegepaste Wiskunde 314

Tutoriaal-toets 9b: Oplossings

- (1) 1 se inverse is 1
 2 se inverse is 6
 3 se inverse is 4
 5 se inverse is 9
 7 se inverse is 8
 10 se inverse is 10.

- (2) Die lys van kodewoorde van C_1 is

00000
 11110
 00111
 11001

Minimum afstand $d(C_1) = 3$.

Die lys van kodewoorde van C_2 is

0000000 = $0x + 0y + 0z$
 0010111 = $0x + 0y + 1z$
 0101011 = $0x + 1y + 0z$
 0111100 = $0x + 1y + 1z$
 1001101 = $1x + 0y + 0z$
 1011010 = $1x + 0y + 1z$
 1100110 = $1x + 1y + 0z$
 1110001 = $1x + 1y + 1z$

Minimum afstand $d(C_2) = 4$.

- (3) Die lys van kodewoorde is

0000 = $0x + 0y$
 1011 = $1x + 0y$
 2022 = $2x + 0y$
 0112 = $0x + 1y$
 0221 = $0x + 2y$
 1120 = $1x + 1y$
 2210 = $2x + 2y$
 1202 = $1x + 2y$
 2101 = $2x + 1y$.

$d(C) = \text{minimum nie-nul gewig} = 3$. Aangesien $9[1+2.4] = 3^4$, word Hamming se grens bevredig; so C is 'n perfekte kode.