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1. C 2. D 3. B 4. D 5. B

6. 解: $X_{补} = 00.1010$
 $Y_{补} = 00.1101$
 $(-Y)_{补} = 11.0011$

$$\begin{array}{r}
 00.1010 \\
 + 11.0011 \\
 \hline
 11.1101 \\
 11.1010 \\
 + 00.1101 \\
 \hline
 00.0111 \\
 00.1110 \\
 + 11.0011 \\
 \hline
 00.0001 \\
 00.0010 \\
 + 11.0011 \\
 \hline
 11.0101 \\
 10.1010 \\
 + 00.1101 \\
 \hline
 11.0111
 \end{array}$$

余数: $\begin{array}{r} + 00.1101 \\ \hline 00.0100 \end{array}$

故: $X/Y = 0.1100 + 0.0100 \times 2^{-4}$

7. (1) $2^r \geq k+r+1$

(2) (a) $\begin{array}{c} P_1 \ P_2 \ D_1 \ P_3 \ D_2 \ D_3 \ P_4 \\ 0 \ 1 \ 1 \ 1 \ 0 \ 0 \end{array}$

(b) 不能

若 $D_1=0, D_3=1$, 此时海明码为:

$$\begin{array}{c} P_1 \ P_2 \ D_1 \ P_3 \ D_2 \ D_3 \ P_4 \\ 0 \ 1 \ 0 \ 1 \ 1 \ 0 \end{array}$$

$$S_1 = P_1 \oplus D_1 \oplus D_2 = 1$$

$$S_2 = P_2 \oplus D_1 \oplus D_3 = 0$$

$$S_3 = P_3 \oplus D_2 \oplus D_3 = 1$$

$$S_4 = P_1 \oplus P_2 \oplus P_3 \oplus D_1 \oplus D_2 \oplus P_3 \oplus P_4 = 0$$

此时, 全出错位为 D_2, P_4 ,

那么纠正后的结果为:

$$0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 1$$

不难验证, 此码的校验结果 $S_4 S_3 S_2 S_1 = 0000$

此时 $D_3 D_2 D_1 = 100 \neq 011$

故, 不能纠正.