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2017248007 2班 物联网17-2

6.7. 解：

信码：

1 0 1 1000 000000 1 0 1

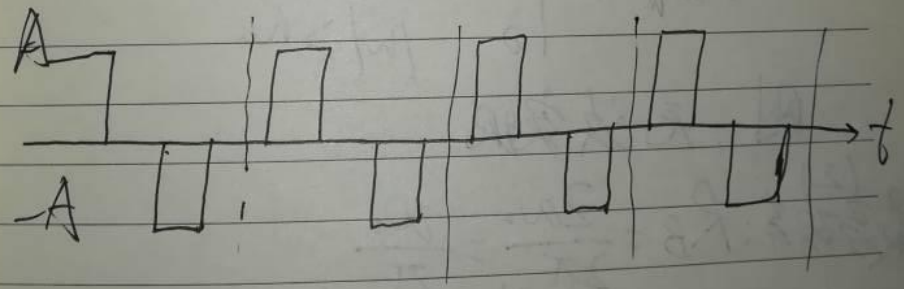
AMI：

+1 0 -1 +1000000000 -1 0 +1

$HDB_3$：

+1 0 -1 +1 0 0 0 V+ B- 0 0 V- 0 +1 0 -1

三者信号：




6-11. 解：

奈奎斯特定则：

$R_B = 1/T_B$ Baud

⇒

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$$\sum_i H\left(w+\frac{2\pi i}{T_B}\right)=C,\ |w|\le\frac{\pi}{T_B}$$

$\Rightarrow R_B=\frac{2}{T_B}$, 则

$$H(w)\Rightarrow \sum_i H\left(w+\frac{4\pi i}{T_B}\right)=C,\ |w|\le\frac{2\pi}{T_B}$$

∴ (a), (b), (d) 不满足,
但 (c) 满足奈氏准则

6-13. 解: 该系统可 $\Leftrightarrow$ 理想矩形低通特

(1) $H_{eq}(w)=\begin{cases}1 & |w|\le w_0\\ 0 & |w|>w_0\end{cases}$

则, 无法实现.

(2) 最高码率: $R_B=\frac{2w_0}{2\pi}=\frac{w_0}{\pi}$

带宽: $B=\frac{(1+\alpha)w_0}{2\pi}$

$\Rightarrow \eta=\frac{R_B}{B}=\frac{2}{1+\alpha}$

6-24. 解:

(1) 矩

(2)

in 峰

out 峰

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(1) 矩阵方程:

$$\begin{bmatrix} x_0 & x_{-1} & x_{-2} \\ x_1 & x_0 & x_{-1} \\ x_2 & x_1 & x_0 \end{bmatrix} \begin{bmatrix} C_{-1} \\ C_0 \\ C_1 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}$$

$x_k$

$$\Rightarrow \begin{cases} C_{-1} + 0.2C_0 = 0 \\ -0.3C_{-1} + C_0 + 0.2C_1 = 1 \\ 0.1C_{-1} - 0.3C_0 + C_1 = 0 \end{cases}$$

$$\Rightarrow \begin{cases} C_{-1} \doteq -0.178 \\ C_0 \doteq 0.890 \\ C_1 \doteq 0.285 \end{cases}$$

(2) $y_k = \sum_{i=N}^{N} C_i x_{k-i} \Rightarrow$

$y_{-1} = 0,\ y_0 = 1,\ y_1 = 0$

$y_{-3} = 0,\ y_{-2} \doteq -0.036,\ y_2 \doteq 0.0036$

$y_3 \doteq 0.029$

$y_k = 0,\quad k = else$

in 峰: $D_x = \frac{1}{x_0} \sum_{\substack{k=-\infty \\ k \neq 0}}^{\infty} |x_k| = 0.6$

out 峰: $D_y = \frac{1}{y_0} \sum_{\substack{k=-\infty \\ k \neq 0}}^{\infty} |y_k| \doteq 0.068$