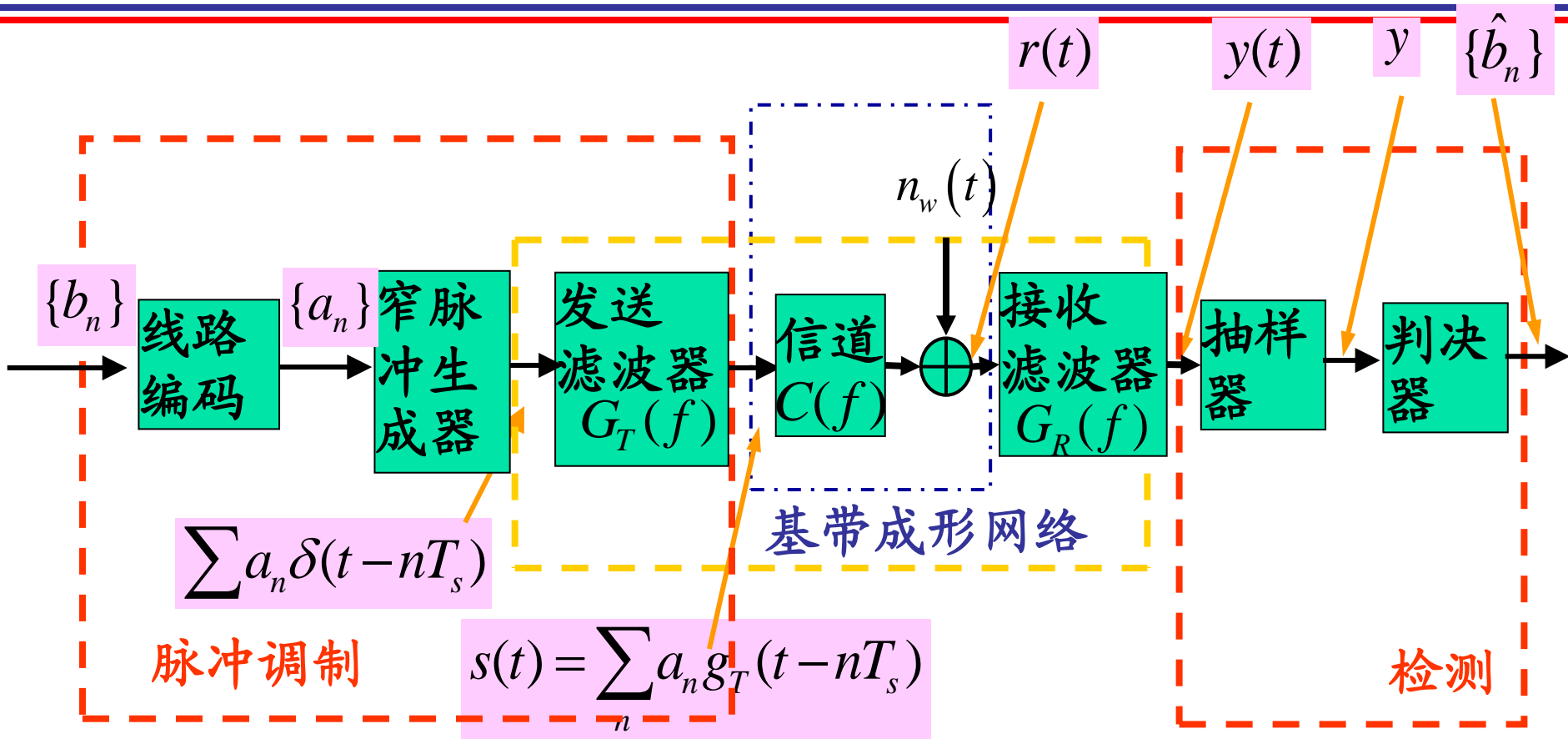


13-理想带限信道最佳接收

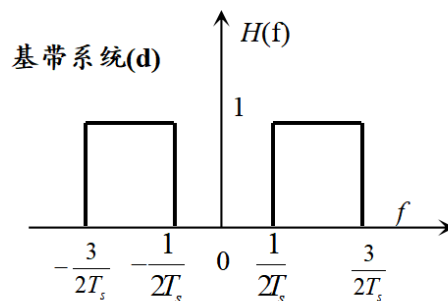
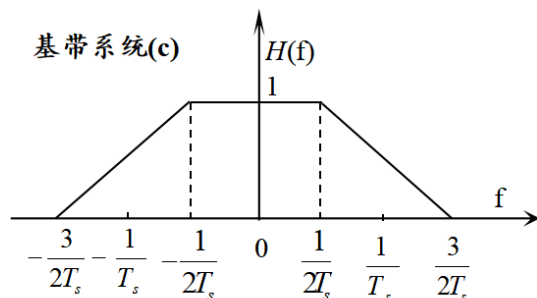
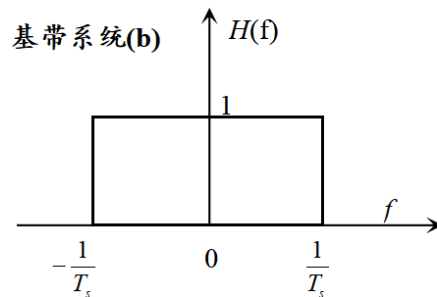
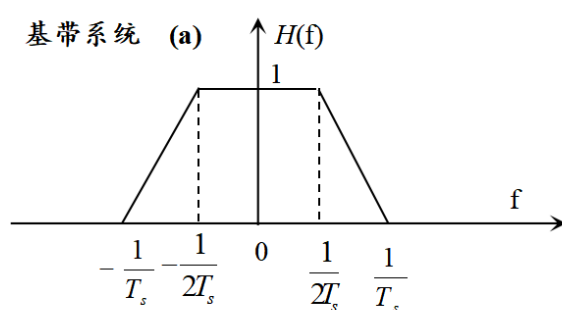
码间干扰分析模型



$$g(t) = g_T(t) * c(t) \xleftrightarrow{F.T.} G(f) = G_T(f) C(f)$$

$$h(t) = g(t) * g_R(t) \xleftrightarrow{F.T.} H(f) = G_T(f) C(f) G_R(f)$$

若符号传输速率 $r_s=1/T_s$,下图基带传输系统(a)~(d)中哪些能够实现无码间干扰传输?



a

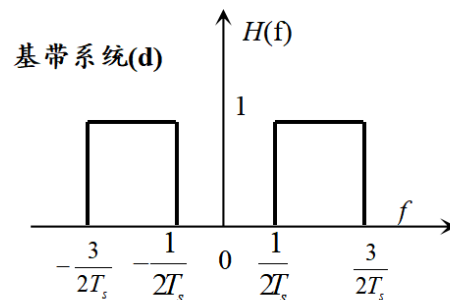
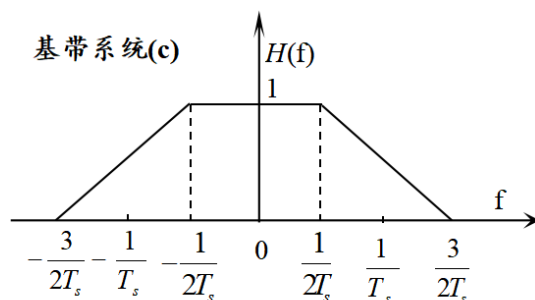
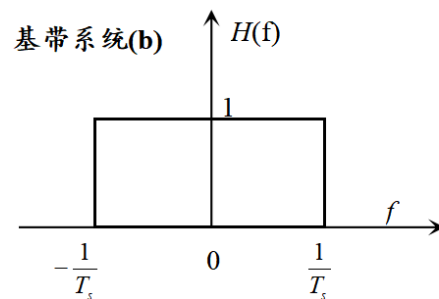
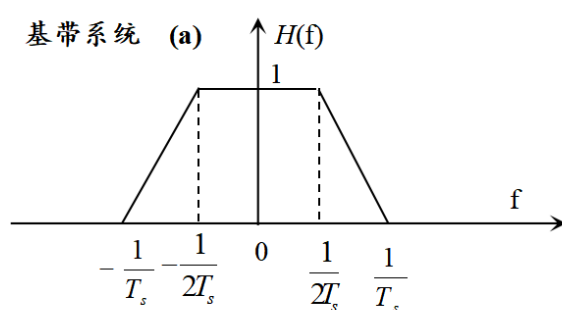
b

c

d

提交

若符号传输速率 $r_s=1/2T_s$,下图基带传输系统(a)~(d)中哪些能够实现无码间干扰传输?

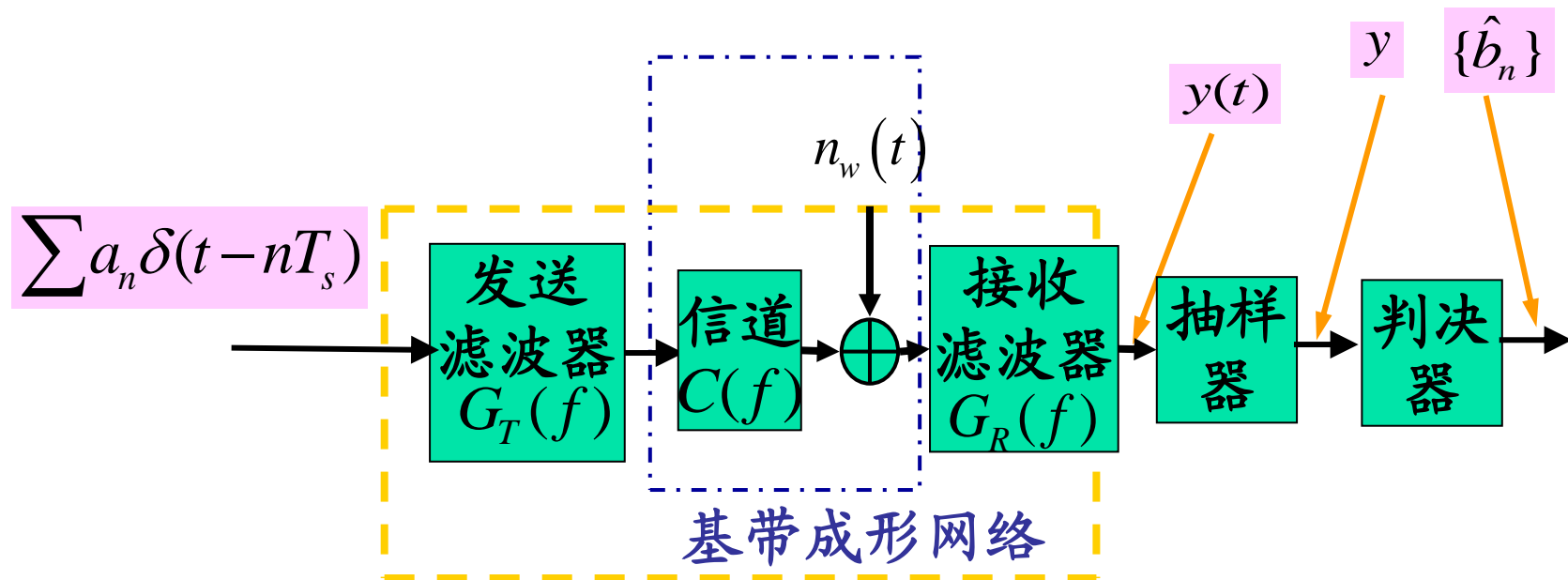

☐ a

☒ b

☒ c

☒ d

1、理想带限AWGN信道下最佳接收



$$H(f) = G_T(f)C(f)G_R(f) = |H_{RC}(f)|e^{-j2\pi ft_0}, |f| \leq B$$

理想带限AWGN信道下最佳接收

- 无码间干扰传输

$$H(f) = G_T(f)C(f)G_R(f) = |H_{RC}(f)| e^{-j2\pi ft_0}, |f| \leq B$$

$$|G_T(f)| \cdot |C(f)| \cdot |G_R(f)| = |H_{RC}(f)|$$

$$t_0 = t_T + t_c + t_R$$

- 理想限带情况下，假定

$$|C(f)| = \text{Rect}\left(\frac{f}{2B}\right)$$

理想带限AWGN信道下最佳接收

■ Matched Filter:

$$G_R(f) = G_T^*(f) e^{-j2\pi f t_0} = |G_R(f)| e^{-j2\pi f t_R}$$

$$H_{RC}(f) = G_T(f) G_R(f) = |G_T(f)|^2 e^{-j2\pi f t_0}$$

$$|G_T(f)| = |G_R(f)| = \sqrt{|H_{RC}(f)|}$$

$$|G_T(f)| = \sqrt{|H_{RC}(f)|} e^{-j2\pi f t_T}$$

双极性:

$$P_b = Q\left(\sqrt{\frac{2E_b}{N_0}}\right)$$

单极性:

$$P_b = Q\left(\sqrt{\frac{E_b}{N_0}}\right)$$