Problem 6.10

The raised cosine pulse bandwidth $B_T = 2B_0 - f_1$, where $B_0 = 1/2T_b$. For this channel, $B_T = 75$ kHz. For the given bit duration, $B_0 = 50$ kHz. Then,

$$f_1 = 2B_0 - B_T$$
$$= 25 \text{ kHz}$$
$$\alpha = 1 - f_1/B_T$$
$$= 0.5$$

The design parameters of the required raised-cosine pulse spectrum are $f_1 = 25$ kHz and $\alpha = 0.5$.