Problem 5.14

(a) The Nyquist rate for $s_1(t)$ and $s_2(t)$ is 160 Hz. Therefore, the factor $\frac{2400}{2^R}$ must be greater than 160, and the maximum R is 3.

(b) With $R = 3$, we may use the following signal format displayed in Fig. 1 to multiplex the signals $s_1(t)$ and $s_2(t)$ into a new signal, and then multiplex $s_3(t)$ and $s_4(t)$ and $s_5(t)$ including markers for synchronization.

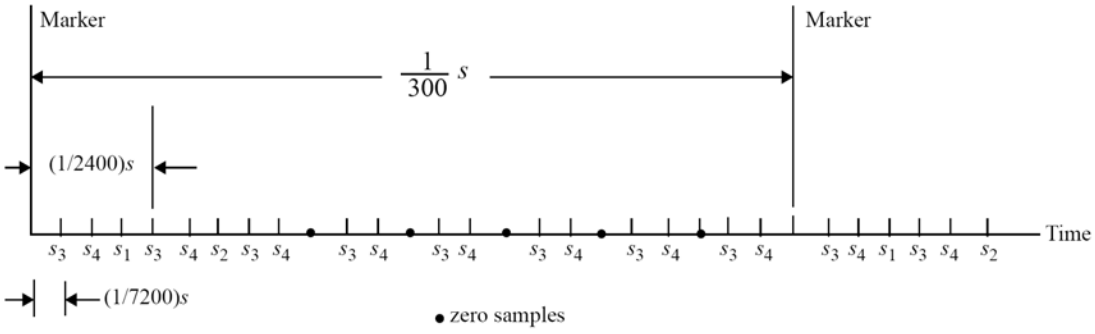

Figure 1

Based on the signal format shown in Fig. 1, we may develop the multiplexing system shown in Fig. 2.

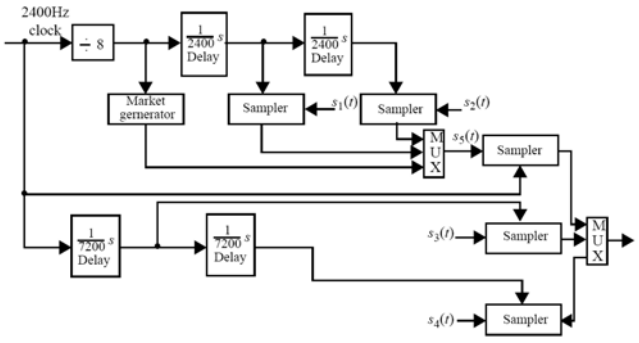

Figure 2

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