Problem 6.14

The transmission bandwidth is maintained at the value

$$B_T = 3 \text{ kHz}$$

In using an 8-level PAM system, the signaling rate is raised to

$$\frac{1}{T} = (\log_2 8) \times \left(\frac{1}{T_b}\right),$$

$$= 3 \times 4.5$$

$$T_b$$
 = bit duration

$$= 3 \times 4.5$$

However, the symbol rate is maintained at 4.5×10^3 symbols/s. Hence, as in Problem 6.12,

- (a) The roll-off factor remains at $\alpha = 1/3$.
- (b) The excess bandwidth remains at $f_v = 0.75$ kHz.

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