2.

$$x(t) = Y_1 \sin 2\pi t + Y_2 \sin 6\pi t$$

$$MSE = 10^{-6}$$

$$E(Y_1) = 0 \qquad var(Y_1) = 4$$

$$E(Y_2) = 0 \qquad var(Y_2) = 1$$

entropy

$$H(X) = -\sum_{K=1}^{n} P_K \log P_K \quad \text{bits/s}$$

$$H(X) = E(I(X))$$ ← information

* $MSE = 10^{-6} = \frac{\Delta^2}{12}$

$$\Delta = 0.0035$$

$$m = 1/\Delta = 288.67 \text{ (bits/unit length)}$$

$$\log_2^M = 8.2$$

$$\lceil \log_2^M \rceil = 9$$

∴ No. of bits = 9

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