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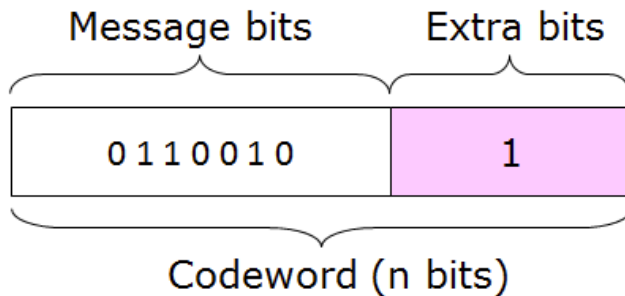
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10.2 QUIZ QUESTION 1 (1/1 point)

Consider a communication system using the block code illustrated below. Suppose we transmit bits using 25 samples per bit at a rate of Fs=1M samples per second. What is the **net bit rate** of our communication system in bits per second?

Please key in the numerical value of your answer in the box provided below.

35000

35000

Answer: 35000

EXPLANATION

The code word contains $n = 8$ bits, but only $k = 7$ are message bits.

code rate=$\frac{k}{n} = \frac{7}{8}$

net bit rate=code rate$\times$gross bit rate=code rate$\times \frac{F_s}{SPB} = \frac{7}{8} \times \frac{10^6}{25} = 35000$

| Final Check | Save | Hide Answer | *You have used 2 of 3 submissions*

10.2 QUIZ QUESTION 2 (1/1 point)

For a (8, 4 ,3) block code, which one of the following statements is **incorrect**?

Please select the correct answer.

○ Each codeword contains 4 message bits.

○ The code rate is 0.5.

◉ We can detect 3 bit errors.   ✔

○ We can detect and correct 1 bit errors.

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EXPLANATION

For a $(n, k, d) = (8, 4, 3)$ block code, each codeword contains $k = 4$ message bits. The code rate = $\frac{k}{n} = \frac{4}{8} = 0.5$. Since the minimum Hamming between codewords is $d = 3$, we can either detect bit errors in at most $d - 1 = 2$ bits of each codeword or detect and correct bit errors in at most $(d - 1)/2 = 1$ bit of each codeword.

| Hide Answer | *You have used 2 of 2 submissions*

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