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4.3 QUIZ QUESTION 1 (1 point possible)

If each character in a 45 character text message is encoded using an 8-bit ASCII code, how many bits would be required to encode the entire message?

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

Answer: 360

EXPLANATION

Since we have 45 characters, and each character requires 8 bits, the total number of bits required is $45 * 8 = 360$

Hide Answer

You have used 0 of 3 submissions

4.3 QUIZ QUESTION 2 (1 point possible)

Assume the bit sequence from Question 1 is transmitted over a communication channel that follows the following protocol:

- **Bit time:** Bits last for SPB=50 samples and samples are transmitted at a rate of $F_s = 1\text{MHz}$.
- **Block size:** Data is divided into blocks of 320 bits. If the data is too long to fit into one block, data is split into multiple blocks. If there is not enough data to fill a block, zero padding is applied.
- **Framing:** Each block is framed by one start bit and one stop bit. Frames are transmitted sequentially with no time between them.

How many data blocks would be required to transmit this bit sequence?

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

☐

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Answer: 2

EXPLANATION

Since the number of bits in the message (360) is larger than the number of bits in one block (320 bits), but less than the number of bits in two, two blocks are needed.

Hide Answer

You have used 0 of 3 submissions

4.3 QUIZ QUESTION 3 (1 point possible)

How long (in milliseconds) would it take to transmit the 45 character text message using the communication protocol indicated above?

Please key in the numerical value to the nearest integer in the box provided below.

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Answer: 32

EXPLANATION

After adding start and stop bits, each block requires 322 bits. Even though the second block is not full, we still need to transmit the whole block. We use zero padding to fill the extra bits. Thus, we must transmit $322 * 2 = 644$ bits. Each bit takes $50\mu s$, so the total time for transmission is $644 * 50\mu s = 32200\mu s = 32.2ms$ (32 to the nearest integer).

Hide Answer

You have used 0 of 3 submissions



4.3 Quiz Question 1 | 4.3 Asynchronous Serial
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