4.4 QUIZ QUESTION 1 (1 point possible)

A text string is converted to a discrete time waveform according to the following steps:

1. Each character in the string is converted to an 8-bit ASCII codeword according to the table below, where the MSB is listed first.

0	0011 0000	O	0100 1111	m	0110 1101
1	0011 0001	P	0101 0000	n	0110 1110
2	0011 0010	Q	0101 0001	o	0110 1111
3	0011 0011	R	0101 0010	p	0111 0000
4	0011 0100	S	0101 0011	q	0111 0001
5	0011 0101	T	0101 0100	r	0111 0010
6	0011 0110	U	0101 0101	s	0111 0011
7	0011 0111	V	0101 0110	t	0111 0100
8	0011 1000	W	0101 0111	u	0111 0101
9	0011 1001	X	0101 1000	v	0111 0110
A	0100 0001	Y	0101 1001	w	0111 0111
B	0100 0010	Z	0101 1010	x	0111 1000
C	0100 0011	a	0110 0001	y	0111 1001
D	0100 0100	b	0110 0010	z	0111 1010
E	0100 0101	c	0110 0011	.	0010 1110
F	0100 0110	d	0110 0100	,	0010 0111
G	0100 0111	e	0110 0101	:	0011 1010
H	0100 1000	f	0110 0110	;	0011 1011
I	0100 1001	g	0110 0111	?	0011 1111
J	0100 1010	h	0110 1000	!	0010 0001
K	0100 1011	i	0110 1001	'	0010 1100
L	0100 1100	j	0110 1010	"	0010 0010
M	0100 1101	k	0110 1011	(	0010 1000
N	0100 1110	l	0110 1100	)	0010 1001
				space	0010 0000

2. Each codeword is arranged so that the MSB is transmitted first.
3. The resulting bit stream is divided into 16-bit blocks.
4. Each block is framed with a start bit of '1' and no stop bit.
5. Each bit is represented using two samples.

Suppose we obtain the following bit sequence:

11000011110000001100001111000000000
11001100110000001100001100000000000
11000011111100110000001100110000011

Help

What was the original text string?

Please key in your answer in the box provided below.

Answer: 10Q :)

EXPLANATION

You should reorganize the binary sequence as below:

11 0000111100000011 0000111100000000
11 0011001100000011 0000110000000000
11 0000111111001100 0000110011000011

The first two samples of each row correspond to the start bit and the following 32 samples to the 16 bits in the block (two characters). Removing the start bit and extracting the bits, we obtain

0011 0001 --→ 1
0011 0000 --→ 0
0101 0001 --→ Q
0010 0000 --→ space
0011 1010 --→ :
0010 1001 --→)

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