1   A 44/46 TDM system use the structure of a 30/32 system. The GLBR is 4 MHz with 8 bits per slot/   (6)

Calculate the Multi Frame duration, Frame duration,

3   The following data containing Hamming bits in the standard positions was received:
    0 1 0 0 1 0 1 1 1 0 0 1
3.1 If any, determine the error position and in that case, give the corrected data.
3.2 Determine the original character transmitted.   (4)

4   Use ODD parity, 01 as start bits and 10 as stop bits. Code the word **Gold** for RS232 transmission.   (6)

5   The RS232 code $59B65B739459_H$ contains 2 start bits and 1 stop bit.   (6)
    Determine the start bits, stop bit, type of parity used and the word transmitted.

TOTAL: **/30/**

0100 0001	A	0110 0001	a	0100 0010	B	0110 0010	b	0100 0011	C	0110 0011	c	0100 0100	D	0110 0100	d
0100 0101	E	0110 0101	e	0100 0110	F	0110 0110	f	0100 0111	G	0110 0111	g	0100 1000	H	0110 1000	h
0100 1001	I	0110 1001	i	0100 1010	J	0110 1010	j	0100 1011	K	0110 1011	k	0100 1100	L	0110 1100	l
0100 1101	M	0110 1101	m	0100 1110	N	0110 1110	n	0100 1111	O	0110 1111	o	0101 0000	P	0111 0000	p
0101 0001	Q	0111 0001	q	0101 0010	R	0111 0010	r	0101 0011	S	0111 0011	s	0101 0100	T	0111 0100	t
0101 0101	U	0111 0101	u	0101 0110	V	0111 0110	v	0101 0111	W	0111 0111	w	0101 1000	X	0111 1000	x

Digital Communication II – EADOM2B – Test 3 Memorandum

1 Number of channels = 10 x 7 x 14 x 3 = 2940   Bandwidth = 2940 x 3,75 = 11,025 Mhz
   Comments: Separation to small (only 3,75 – 3,4 = 0,35kHz)
   Less than 10% cable bandwidth tolerance (6)

2

Char	Count	P(x)	Diagram				Code	n	nP(x)
W	51	0,17		0,40 WTF			11	2	0,34
X	48	0,16	0,31 XK	0,60 XKQS	1,00		110	3	0.48
K	45	0,15					010	3	0,45
Q	45	0,15	0,29 QS				100	3	0,45
S	42	0,14					000	3	0,42
T	36	0,12	0,23 TF				101	3	0,36
F	33	0,11					001	3	0,33
	300	1,00							2,83

2.1 Determine the Huffman code for each character and the Huffman average for the coding system.
2.2 Calculate the compression ratio of the code. = 3/2,83 = 1,06 (8)
3 The following data containing Hamming bits in the standard positions was received:
   0 1 0 0 1 0 1 1 1 0 0 1

				H				H		H	H
12	11	10	9	8	7	6	5	4	3	2	1
0	1	0	0	1	0	1	1	1	0	0	1
0	1	0	0	1	0	1	0	1	0	0	1

11	1011
6	0110
5	0101
H	1101
E	0101=5

   Data 0100 0100 = D
3.1 If any, determine the error position and in that case, give the corrected data.
3.2 Determine the original character transmitted. (4)
4   G   o   l   d
     0100 0111   0110 1111   0110 1100   0110 0100
   01 1110 0010 1 10 01 1111 0110 1 10 01 0011 0110 1 10 01 0010 0110 0 10
   0111 1000 1011 0011 1110 1101 1001 0011 0110 1100 1001 0011 0010 (6)
     7   8   B   3   E   D   9   3   6   C   9   3   2
     Gold = 78B3ED936C932$_H$
5 Group size = 8+1+2+1 = 12 (6)
     5   9   B   6   5   B   7   3   9   4   5   9
   0101 1001 101**1**, **01**10 0101 101**1**, **01**11 0011 100**1**, **01**00 0101 100**1**
        5   **5**   **5**   **3**
   0110 0110   **0110 1001**   **0111 0011**   **0110 1000**
        f   **i**   **s**   **h**
   start bits = 01, stop bit = 1, type of parity = ODD and the word = fish

                                                               TOTAL: /30/