

## Encoding Scheme & Error Detection/Correction

1. Please write the entire 4-bit Gray code by reflecting and prefixing.

Start	→ Mirror	→ Prefix	→ Mirror	→ Prefix	→ Mirror	→ Prefix
0	0	00	00	000	000	0000
1	<u>1</u>	01	01	001	001	0001
	1	11	11	011	011	0011
	0	10	<u>10</u>	010	010	0010
			10	110	110	0110
			11	111	111	0111
			01	101	101	0101
			00	100	<u>100</u>	0100
					100	1100
					101	1101
					111	1111
					110	1110
					010	1010
					011	1011
					001	1001
					000	1000

1-bit                      2-bit                      3-bit                      4-bit

2. Please Convert the following Gray code word to binary code.

10011010

11101100

3. Convert the following Binary code word to Gray code.

10011010

11010111

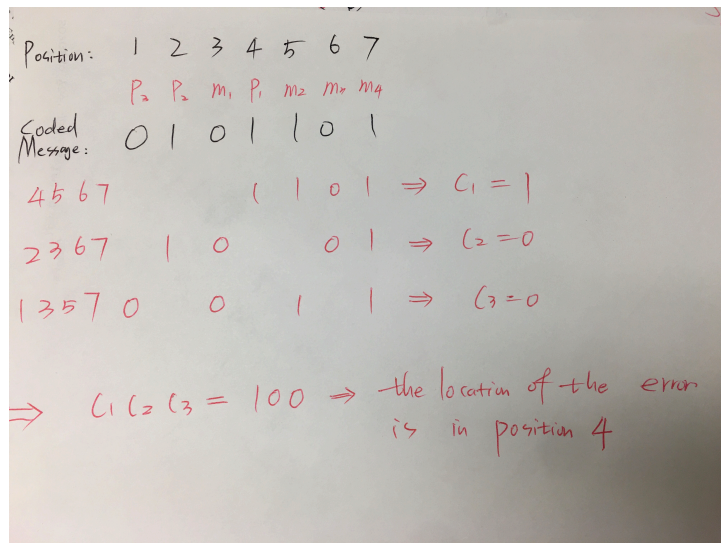
The following hamming code word was received.  
Use it to answer questions 4 - 9.

0 1 0 1 1 0 1

4. Circle the parity bits

0 1 0 1 1 0 1

5. What position number is generated to determine if an error has occurred in transmission?



4567 parity check:  $c_1 = 1$

2367 parity check:  $c_2 = 0$

1357 parity check:  $c_3 = 0$

100

6. Did an error occur in transmission?

Yes. The location of the error is in position 4.

## 7. What was the original correct coded message?

0100101

## 8. What was the original correct message?

0101

## 9. If the message is binary, what is the decimal value?

5

## 10. Encode a decimal 4 using each of the following codes.

- A. Binary Code 0100
- B. BCD Code 0100
- C. Gray Code 0110
- D. Excess-3 Code 0111
- E. 7-bit Hamming Code 1001100

In [ ]: