Topics Covered: Error corrections and detection techniques

Question 1: Discuss the two-dimensional parity check and the types of errors it can and cannot detect.

Question 2 Explain and discuss how we check the redundancy for error correction?

Question 3. How the data communication between sender and the receiver will take place where the error detection method is checking sum and the data is:

← 10101001   00111001 →

Question 4: Explain the concept of hamming code of Error Correction? How it calculates, the redundancy?

Question 5: A and B are the only two stations on Ethernet. Each has a steady queue of frames to send. Both A and B attempts to transmit a frame, collide and A wins first back off race. At the end of this successful transmission by A, both A and B attempt to transmit and collide. The probability that A wins the second back off race is what ?

1. **0.5**

2. **0.625**

3. **0.75**

4. **1.0**

Question 6: A bit stream 1101011011 is transmitted using the standard CRC method. The generator polynomial is x^4+x+1. What is the actual bit string transmitted?

Question 7: Find the minimum Hamming distance of the coding scheme in Table

A code for error detection

Datawords	Codewords
00	000
01	011
10	101
11	110

Question 8: We can find the hamming distance by using XOR operation. For example,

Hamming distance between two numbers (10101010 and 10101101) is –

1 0 1 0 1 0 1 0
1 0 1 0 1 1 0 1

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0 0 0 0 0 1 1 1

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The no of 1's gives the hamming distance.

In above example what will be the drawback of hamming code?

Question 9: Assume that –
(a) data is 10110.
(b) code generator is 1101. (Code generator can also be mentioned in polynomial : x^3+x^2+1)
Calculate the CRC bits?

Question 10: Determine the position of redundant bit:

7	6	5	4	3	2	1
1	0	1	r4	0	r2	r1