Computer Science & Information Technology

Computer Network

DPP: 1

Error Control

Q1 Consider ASCII character "B" is transmitted by transmitter, but ASCII character "A" is received by receiver. Identify type of error.
(A) No any error
(B) Single bit error
(C) Burst Error
(D) ata insufficient

Q2 Consider ASCII character "F" is transmitted by transmitter, but ASCII character "H" is received by receiver. Count the number of corrupted bits?

Q3 Let suppose, even parity is used in one bit parity error detection technique. If transmitter find total 91 one's in data (excluding parity) then what should be parity bit value set by transmitter?
(A) 0
(B) 1
(C) either 0 or 1
(D) Data insufficient

Q4 If degree of generator polynomial is n then what should be length of divisor (in bits)?
(A) n (B) n+1
(C) n–1 (D) 2n

Q5 Consider generator polynomial function G(X) is x^3 +x +1, if received block at receiver and is 11011011010 then find the receiver conclusion.
(A) No any error detected
(B) Error detected
(C) Unable to detect error
(D) Insufficient data

Q6 Consider 2D parity scheme for error detection, let suppose size of data block matrix (including parity bits) is 4×5. Calcuate total number of parity bits in the data block.

Q7 Consider even parity in hamming code and first parity is placed at least significant bit position, the data bits 1011 is encoded as:
(A) 1010111 (B) 1011101
(C) 1010101 (D) 1011110

Q8 To correct upto 5 bits error minimum hamming distance should be_____.

Answer Key

Q1	(C)
Q2	3
Q3	(B)
Q4	(B)
Q5	(B)
Q6	8
Q7	(C)
Q8	11

Hints & Solutions

Q1 Text Solution:

Transmitted data (B) = 66 = 01000010

Received data (A) = 65 = 01000001

2 bit error so, burst error.

Q2 Text Solution:

Transmitted data F = 70 = 01000110

Received data H = 72 = 01001000

corrupted bits = 3

Q3 Text Solution:

In even parity: transmitter made number of one's even in the block (including parity.)

91 one's means which are odd so parity bit will be 1 to make even parity.

Q4 Text Solution:

if degree is n then Divisor = n +1 bits

Q5 Text Solution:

Error Detected

Q6 Text Solution:

Number of rows = 4

Number of column = 5

Total number of parity bits = 4+5 – 1

= 8

Q7 Text Solution:

$\frac{1}{d_4}\ \frac{0}{d_3}\ \frac{1}{d_2}\ \frac{0}{c_4}\ \frac{1}{d_1}\ \frac{0}{c_2}\ \frac{1}{c_1}$

Q8 Text Solution:

Hamming distance = d

then

receiver can correct upto $\left\lfloor \frac{d-1}{2} \right\rfloor$ bits error.