MC questions for Unit 8

Question 1

An error code uses the codewords 0000, 0011, 1100 and 1111. (They encode 00, 01, 10 and 11, respectively.) How many errors can always be detected? Use Hamming distance.

- 0
- 1
- 2
- 3

Question 2

What is the minimum Hamming distance of a single-bit parity code?

- 1
- 2
- 3
- 4

Question 3

Compute the parity bit to add to the bit string 1001011 to detect single bit errors. Assume even parity is used.

- 4
- 1
- 0
- 10010110

Question 4

Consider the 7 bit Hamming code. Let the 7 bits of a codeword be represented by A B C D E F G. Which positions are the DATA bits?

- A B D
- C E F G
- E F G
- A B C D

Question 5

Consider the (10,1) repetition code. The data bits can always be successfully decoded if the number of error bits is no more than _____.

- 10
- 9
- 5
- 4

Question 6

Suppose the (10,1) repetition code is used for simultaneous error correction and detection. If the decoder corrects only single-bit and double-bit errors, how many bits error (at most) can the decoder detect?

- 6
- 7
- 8
- 9

Question 7

At the CRC generator, _____ added to the data unit before the division process.

- [x] 0’s
- [ ] 1’s
- [ ] a polynomial is
- [ ] a CRC remainder is

Question 8

At the CRC checker, _____ means that the data unit is damaged.

- [ ] a string of 0’s
- [ ] a string of 1’s
- [ ] a string of alternating 1’s and 0’s
- [x] a non-zero remainder

Question 9

In CRC, the divisor is _____ the remainder.

- [ ] the same size as
- [ ] one bit less than
- [x] one bit more than
- [ ] two bits more than

Question 10

Suppose the CRC checker finds the remainder equal to zero. Which of the following statement cannot be true?

- No bit is corrupted.
- One or more bits are corrupted.
- The decoder detects no error.
- None of the above

Question 11

Consider the CRC code with generator polynomial $x^{16} + x^{12} + x^5 + 1$. Is it guaranteed that the decoder can detect any single-bit errors?

- Yes.
- No.

Question 12

Consider the CRC code with generator polynomial $x^{16} + x^{12} + x^5 + 1$. Is it guaranteed that the decoder can detect any burst error of length 16?

- Yes.
- No.