Error Detection and Correction Basics Quiz

Chapter 10 - Huwayda El Zain Hassan Abulqassim

1. What is it called when only one bit of data gets flipped during transmission?
a) A burst error
b) A single-bit error
c) A checksum error
d) A block code

2. To find and fix errors, what extra information must be sent with the data?
a) An extra copy of the data
b) A separate email
c) Redundant bits
d) A special password

3. In block coding, what is a "codeword"?
a) The original data before any changes are made.
b) The secret message that is sent.
c) The dataword with extra error-checking bits added to it.
d) The part of the data that is a mistake.

4. How can a receiver tell that an error has happened when using a simple block code?
a) It checks if the received message is in the list of valid codewords.
b) It asks the sender to send the message again.
c) It corrects the error automatically.
d) It measures the distance of the message from the antenna.

5. What is the Hamming distance between two messages?
a) The time it takes to send them.
b) The number of bits that are the same.
c) The number of bits that are different between them.
d) The number of extra bits added to them.

6. A simple parity check adds one extra bit to the data to make the total number of '1's either even or odd. What can it detect?
a) Only single-bit errors.
b) Any number of errors, both odd and even.
c) Only an even number of errors.
d) Any odd number of errors.

7. Which of these methods is best known for being able to correct a single-bit error?
a) Simple parity check
b) Checksum
c) Block coding
d) Hamming code

8. The Cyclic Redundancy Check (CRC) is a method primarily used for:
a) Detecting errors
b) Correcting errors
c) Making data invisible to hackers
d) Measuring the distance between two computers

9. In a Cyclic Redundancy Check (CRC), what does a remainder of zero at the receiver mean?
a) An error has occurred.
b) The data is corrupt.
c) No errors were detected.
d) The receiver's calculation is wrong.

10. What is the main advantage of a checksum?
a) It can correct a large number of errors.
b) It is very complex to implement.
c) It is a very strong form of error detection.
d) It is simple and easy to implement in software.