Bahria University

Lahore Campus

Department of Computer Sciences

DATA COMMUNICATION AND NETWORKING

ASSIGNMENT # 03

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Program: BS-IT3 **Max Marks: 05**

Q1.

Differentiate the CRC operating framework at transmitter and receiver side.

(1.5 Marks)

At the end of the transmission, the number of zeros in the data-word is increased to the highest power of the provided polynomial, and a binary number is obtained from the given polynomial. The data-word multiplied by the zeros is then divided by the polynomial's binary number.

The remainder of this division is used to replace the zeros in the data-word, which is then transmitted. The received code-word is divided by the binary number obtained from the polynomial at the receiving end. If the remainder is now zero, the information transmitted has been converted otherwise, an error has occurred.

Q2.

Discuss synchronized channel access mechanism within random access methods? Differentiate random access mechanisms based on sensing.

(1.5 Marks)

The slotted aloha employs the synchronized channel access mechanism in random access techniques because it only permits the transmission to deliver information at the beginning of the synchronized time slot. This also shortens the vulnerable period.

Based on sensing, following are the random access methods:

- CSMA/CA (Carrier Sense Multiple Access with Collision Avoidance)
- CSMA/CD (Carrier Sense Multiple Access with Collision Detection)

Q3.

Are there any synchronization issues in channelization? How can one address them? Differentiate error detection schemes based on arithmetic operations.

(2 Marks)

Yes, synchronization concerns exist with the TDMA channelization technology.

To overcome these issues, synchronization bits are introduced at the start of each slot.

Error detection techniques:

The error detection technique may be separated into the following elements depending on arithmetic operations.
According to addition →→ Checksum
According to division →→ CRC (Cyclic Redundancy Check)