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Sem. - 4th

Assignment - 2nd

Subject - Computer Network (ACCS- 16403)

Section-A

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Q1. Explain the working of Code Correction?

Ans:- In computing, telecommunication information Theory and Coding Theory. An error correction code, sometime error correction code (ECC) is used for controlling channels. Error correction code are used to detect and correct the error when data is transmitted from sender to the receiver. Error correction can be handled in 2 ways: Backward error correction. Once the error is discovered, the receiver requests the sender to retransmit the entire data unit.

Q2. List various services provided to the network layer?

Ans:- Network layer is the third layer in the OSI model of Computer Networking. Packet forwarding including routing through routers and quality of service management are done by the network layer.

Q3. Differentiate between Token bus and Token Ring.

Ans:- There are many differences between Token bus and Token Ring.

1. Designed for offices

Token Bus
Designed for larger factories

2. Star topology is used as physical topology.

Bus Topology is used as physical topology

Token Ring

3. A Token is passed over the physical ring itself.

4. Defined by IEEE 802.5 standard

5. In Token Ring the max time that a token will take to reach the end station can be calculated.

Token Bus

A virtual ring is formed over which the token is passed.

Defined by IEEE 802.4 standard.

In Token Bus the network the max time that a token will take to reach the end station cannot be calculated.

Q4. Explain the concept of Routing?

Ans:- Routing is the process of selecting a path for traffic in a network or between or across multiple networks. Broadly, routing is performed in many types of networks including circuit switched networks such as the public switched telephone network (PSTN) and computer networks such as Internet. It is a core feature of Internet where routers select path for IP packets to travel from their origin to the destination.

Q5. Define the term CSMA/CA?

Ans:- Carrier sense multiple access/collision avoidance (CSMA/CA) is a protocol for carrier transmission in 802.11 networks. It was developed to minimize the potential of a collision occurring when 2 or more stations send their signals over a data link layer. In this scenario CSMA requires each station to first check the state of the medium before initiating a transmission.

Q6. what is leaky bucket algorithm?

Ans:- The leaky Bucket algorithm is method of temporarily starting a variable number of requests and organizing them into a set rate output of packets in an asynchronous transfer mode (ATM) network. The leaky Bucket is used to implement traffic policing and traffic shaping in ethernet and cellular data networks.

Section-B

Q1. Discuss in detail the concept of framing?

Ans. - Framing are the units of digital transmission particularly in Computer networks and telecommunications. Frames are Computer to the packets of energy called photons in the case of light energy. Frame is continuously used in Time division multiplexing process.

Framing is a point to point connection between two computers or devices consists of a wire in which data is transmitted as a stream of bits however, these bits must be framed into discernible blocks of information. Framing is a function of data link layer. It provides a way for a

Sender to transmit a set of bits that are meaningful to the receiver. Ethernet, Token ring, frame relay, and other data link layer technologies have their own frame structures. Frames have headers that contain information such as error checking codes. At data link layer it extracts the message from the sender and provides it to the receiver by providing the sender's and receiver's addresses. The advantage of using frames is that data is broken up into recoverable chunks that can easily be checked for corruption.

Q2. Explain the Concept of flow control?

Ans:- Flow control is the mechanism that ensures the rate at which a sender is transmitting is in proportion with the receiver's receiving capabilities. It manages the flow of data/packets among two different nodes, especially in cases where the sending device can send data much faster than the receiver can digest.

Networks of any size have many different devices connected and each device has unique data transmission parameters. For instance, a router is built to manage the routing of data whereas a desktop, at the receiving end of data has far less sending/receiving abilities.

These differences in sending/receiving abilities may lead to conflict if the sender starts transmitting data faster than the receiving node's ability. To counteract this problem flow control is used. This manages the flow of data b/w nodes, Xon-Xoff is an example of flow control protocol that syncs the sender with the receiver. It transmits a ~~trans~~ transmit object signal when the receiver no layer has space in its buffer and a transmit on signal when the receiver can resume transmitting data with an asynchronous serial connection.

Q3. Explain in detail the concept of FDM?

Ans:- FDM stands for frequency division multiplexing in which multiple signals are combined for transmission on a single communications line or channel with each signal assigned to a different frequency within the main channel.

In FDM a 2-way communication circuit requires a mux/demux at either end and multiplexing is used when frequencies of lower bandwidth are transmitted through a channel with a higher bandwidth.

To accommodate the successful transmission of multiple signals over a single line FDM separates assigned bands by strips of unused frequencies called guard bands. This prevents overlapping between signal frequencies over a shared medium.

A signal is generated and modulated by a sending device and is carried over the separated bands. The modulated signals are combined using a mux and transmitted over communication channel. At the receiving end, the combined signal goes through a demux to extract the individual signals.