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Assignment - II

Q1) Short notes:—

a) Frame Relay:—

Frame relay is a protocol that defines how frames are routed through a fast packet network based on the address field in the frame.

Frame relay takes advantage of the reliability of data communications networks to minimize the ~~error~~ checking done by the network nodes. This provides a packet-switching protocol similar to, but much faster than, X.25.

b) DHCP (Dynamic Host Configuration Protocol).

Dynamic Host Configuration is a network management protocol used to automate the process of configuration devices on IP network. thus allowing them to use network service such as DNS, NTP, and any communication protocol based on UDP or TCP. A DHCP server dynamically assigns an IP address and other network configuration parameters to each device on a network so they can communicate with other IP networks.

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c) NAT

Nat stands for network address translation. It's a way to map multiple local private addresses to a public one before transferring the information. Organizations that want multiple device to employ a single IP address use NAT, as do most home routers.

d) Congestion control:—

A network is a shared entity used by multiple parties in a collaborative manner. However, a few faulty or unverified network users (data senders) can cause congestive collapse where the quality of service is so degraded that it prevents or limits any useful communication. Congestion control is a mechanism that controls the entry of data packets into the network, enabling a better use of a shared network infrastructure and avoiding congestive collapse. Congestive-Avoidance Algorithm (CAA) are implemented at the TCP layer as the methanism to avoid congestive collapse in a network.

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(Q2) a) i) Stop and wait protocol:—

The sender sends and packet and waits for the acknowledgement of the packet. Once the ACK reaches the senders, it transmits the next packet in a row. If the acknowledgement is not received, it re-transmits the previous packets again.

ii) Go Back N protocol:—

The sender sends N packets which is equal to the window size. Once the entire window is sent, the sender then waits for a comulative acknowledgement to send more packets. On the receiver end, it receives only in-order packets and discards out-of-order packets. As in case of packet loss, the entire window would be re-transmitted.

iii) Selective Repeat:—

The sender sends packets of window size N and the receiver acknowledges all packets whether they were received in order or not. In this case, the receiver maintains a buffer to contain out-of-order packets and sorts them. The senders selectively re-transmits the lost packet and moves the window forward.

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b) i) TDM :—

TDM is the channelization protocol in which bandwidth of channel is divided into various stations on the time basis. There is a time slot given to each station, the station can transmit data during that time slot only.

ii) FDM :—

FDM is a type of channelizaton protocol. In this bandwidth is divided into various frequency bands. Each station is allocated with band to send data and that band is reserved for particular station for all the time. which is

iii) CDM :—

In CDM, all the stations can transmit data simultaneously. It allows each station to transmit data over the entire frequency all the time. Multiple simultaneous transmissions are seperated by unique code sequence. Each user is assigned with a nique code sequence.

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c)

CSMA/CD	CSMA/CA
i) CSMA/CD is effective after a collision	whereas CSMA/CA is effective before a collision.
ii) CSMA/CD is used in wired networks.	whereas CSMA/CA is commonly used in wireless networks.
iii) It only reduces the recovery time	whereas CSMA/C· minimize the possiblity of collision.
iv) CSMA/CD resends the data frame wherever a conflict occurs	Whereas CSMA/CA will first transmit the intent to send the data transmission.

d) Multiplexing and Demultiplexing:—
Gathering data from multiple application processes of the sender, enveloping that data with a header, and sending them as a whole to the intended receiver is called multiplexing.
whereas Delivering received segments at the receiver sider to the correct app layer processes is called demultiplexing.