1.

(a) what are the Responsibilities of data link layer? 2

(b) State the difference between fast ethernet and gigabit ethernet. and what is Ethernet? (6)

(c) Define the flow control. Discuss the categories of flow control. (6)

Answer to the question no-1(a)

specific responsibilities of data link layer include the following.

i) Framing.

ii) physical addressing.

iii) Flow control

iv) Error control.

v) Access control.

Ans. to the question - 1 (b)

Difference between fast Ether net and Gigabit Ethernet

Fast Ethernet	Gigabit Ethernet.
1. Upgade the data rate to 100 Mbs.	1. Upgrade the data rate to 1 Gbps.
2. Make it compatable with stand ether.	2. Make it compatible with stand on Fast Ether.

3. Fast Ethernet Simple Configure.	3. While Gigabit Ethernet is more complicated then fast Ethernet.
4. the covenage limit of fast Ethernet is up to 10 km.	4. While the covenage limit of gigabit Ethernet is up to 70 km.

Ethernet: Ethernet is the multiple access network, meaning that a set of nodes send and receive frames over a shared link. Ethernet is a technology that connected wired local area. net works. and enables the devices to communicated with each other through a protocal.

Ans. to the question-1 (c)

Flow control: Flow control refers to a set of procedures used to restict the amount of data. The sender can send before waiting for acknowledgment.

Catagories of control flow:

There are two methods have been developed to control flow of data across communication link.

(i) Stop and wait - send one from at a time.

(ii) sliding window - send several frames at a times.

Stop and wait:

This flow control mechanism forces the senden after transmitting a data frame to stope and wait untill acknowledgement of data frame sent is received.

Sliding window:

In this flow control mechranism, both senden and reaever are agree on the num ben of data fransfen frames after which the acknowledgement should be sent. As we learn stop and waiting flow control machanism wastes reacounes. This protocal tries to make use of underlying resources as much as possible.

2. 4

(a) Define ARQ. what is selective reject ARQ?

(b) Mention the function of Go-Back-N ARQ? - 6

(c) Mention the advantage and disadvantage of stop and wait flow control - 4

Ans. to the question no - 2(a)

Error control in the data link layer is based on Automatic repeat request (ARQ) which means retransmission of data, in 3 cases.

i). Damaged frame.

ii) Lost frame.

iii) lost acknowledgement.

ARQ is an error control strategy use in two in communication system. It is a group of error control system protocal to achive reliable data transmission over an unreliable source on service.

Selective ARQ:

In selective reject ARQ only the specific damage or lost frame is retransmitted. If a frame is corrupted in a transit a NAK is return and the frame is resent out of sequen

Ans. to the question-no-2 (b)

It is the populer maehanism for continious transmission ennon control. In this method if our method, if our fname is lost on damaged, all fnames sent since the last fname acknowledgement are retransmitted.

Stop and wait ARQ mechanism does not utilize the resource at their best. when the acknowledgement is received, the senden sits idle and does nothing. In Go-Back-N ARQ method both senden and receiven maintanes windows.

The sending window size enable the senden to senden multiple frames without receving the acknowledgement of the previous one. the receiving window enables the receiver to receive multiple frames and acknowledgement them.

Ans. to the question no - 2 (c)

Disadvantage of stop and wait protocal are

(i). It works fine only for noiseless channels.

ii) It works on assumption that there is no delay in the net work which is mostly in applicable.

iii) It considers queying delay to be, 0.

which is not to be true in case of internate.

iv) Transmission of packet using the protocal is very low.

v) It is not useful for wide area network.

Advantage of stop and wait protocal:

(i) the senden nodes sends a data packet to the receiven node.

(ii) then wait for the feedback of the transmit packet.

(iii) As soon as the receiven node receeives the data packet it start processing it.

3. (a) what is error detection and error correction? – 4

(b) what are the different types of error detection. – 5

(c) How does error detection codes work? – 5

Ans. to the question no – 3 (a)

Error detection: Errored in the received frames are detected by means of parity check and cyclic Redundancy check. In both case few extra bits are sent along with actual data to confirm that bits received at one same as they were sent.

Error connection:

In this digital world. error connection can be done in two way.

① Back work error connection.

② Forwork error connection.

Back work error connection: when the receiver detects an errors in the data received, it requests back the sender to retransmit the data unit.

Forword data Error connection: when the receiver detects an error in the data received, it requests back the sender to it executs error-connecting code, which help it to auto-received and to

Ans. to the question no. 3 (b)

Error can be classified into two types.

* Single-Bit error.
* Burst error.

Single bit error: The only one bit of a given data unit is changed from 1 to 0 from 0 - 1. Single bit error does not appear more likely in serial data transmission. Single-Bit error mainly occurs in parallel data transmission.

Burst error: Two one more bit are changed from 0 to 1 or from 1 to 0 is known as Burst error.

Ans. to the question - 3(c)

For both error detection and error correction the sender needs to send some additional bits along with the data bits. The receiver performs necessary checks based upon the redundent bits. If it finds that the data is free from errors it removes the redundant bits before passing the message to the upper layer. To avoid this we use error-detecting codes which are additional data added to a given digital message to help us detect if any error has occur during

transmission of message. Basic approach used for ennon detection is the use of redundeney bits, where additional bits are added to facilited detection of ennon.

1. Simple ennon panity check.

4.

(a) what is the forward error connection in computer network and how does work it? ✗

(b) write down the advantage and disadvantage of checksum technique in Error Detection code. – 5

(c) what are the techniques for error detection are. – 2

Ans. to the question no 4(a)

Forword Error connection (FEC) is a techniq
e use to minimize errors in data transmiss
ion over communication channels. In real
time multimedia transmission, re transmissio
n of corrupted and lost packets in-
not useful because it create an unaccept
able delay in reproducing. one need to
wait until the lost or corrupted pac
ket is recent. There must be some techni
que which could correct errors with
needing reverse channel to request re-
transmission of data. these are as

1. Using hamming distance:

For error correction, the minimum hamming distance required to correct errors is

$d_{min} = 2t + 1$.

2. Using XOR:

The XOR property is used as follow

$P = P_1 \oplus P_2 \oplus P_3 \oplus P_4 \oplus \cdots P_N$

Ans. to the question no 4(b)

Advantage: The checksum detects all the errors involving an odd number of bits as well as the error involving an even number of bits.

Disadvantage: The main problem is that the errors goes undetected if one or more bits of a submit is damaged and the corresponding bit or bits of a submit one damage and the opposite value in second submit are damage. This is because the sum of those colums remains unchange

Ans. to the question no - 4 (e)

Basic approach used for error detection is the use of redundancy bits, where additional bits are added to facilited detection of error.

Popular techinque for error detection are

1. Simple parity check
2. Two dimensional parity check
3. Checksum.
4. Cyclic redundancy check.

5. (a) what is an IP address? How a host determines its IP address? 5

(b) what is the difference between a host name and IP address. - 4

c) what are the various special IP address? How to determine the class of an IP address. - 5.

Ans to the question no - 5(a)

IP address is an network layer protocol for a host in a TCP/IP network.

IP address stands for internet protocol.

There are two versions of IP that currently co exist in the global Internet.

Host determines its IP address: A host determines its IP address during the boot-up process either from a configanation file stored in the local hand disk of the system or using a network protocol like RARP, DHCP, BOOTP from the servers in the network.

Ans. to the question no-5 (b)

The main difference between IP adress and hostname is that IP address is a numerical label assigned to each device connected to a computer network

that uses the internet protocal for communication while host name is a label assigned to a network that send the user to a specific website or web-page

A computer network is a collection of computer and other networking device such as routers, switches, and hubs to exchange data and resource among multiple user.

Ans. to the question no- 8 (c)

the various special IP address are shown below in the table.

IP address	Description.
0.0.0.0	Local host
127.xxx.xxx.xxx	Local loopback address. The value of the last 3 byte are ignore.
255.255.255.255	Limited Broadcast address. Datagram with this address will be received and process

Determine the class of an IP address:

The class of an IP address can be determine from the first four bits of the first byte of the IP address.

6. (a) what is routing in network layer?

(b) write down routing algorithm.

(c) what is the unicast Routing protocols.

Ans to the question no 6 (a)

Routing in network layer. The role of the network layer is thus deceptively simple to move packet from a sending host to a receiver host to do so. two important network layer function can be identified. Forwanding when the packet arrives at a router's input link. the router must be move

Ans to the question. 5 (b)

The nounting algorithm are follow.

Flooding: Flooding is smplest method packet - bonwarding when a packet received, the nouter send it to the all interfaces except the one on which it was received. This creates too much burden on the network and lost all duplicate packet wandering in the network.

Time to live (TTL) can be used to avoid infinite looping of packet. There exist another approach for looping which is called selective flooding to reduce the overhead

On the network

Shortest path: Routing decesion in network one mostly taken on the basis of cost between source and destiniton. Hop count plays major role here. Shortest path teehnig which use various algorithm to decide a path with minimum number of hops.

Common shortest path algorithm one.

(i). Dijkstra algorithm.

(ii) Bellman fond Algorithm

(iii) Floyed warshall Algorithm.

Ans. to the question - 6 (c)

There are two kinds of routing protocol available to route unicast packet.

① Distance vector Routing protocol.

Distance vector is simplest routing protocol which takes routing decision on the number of hops between source and destination. A route with less number of hope considered as the best number.

Every router advertise its set best routes to the other number.

Link State Rounting protoeat.

Link state protoeol is slightly compliceated protoeol than distance vector. It takes inb account the states of link of all nou-ter in a network. This technique helps noutes build a common grap of the entine netw ork. All nouter then calculate their best path for nounting purposes.

7.

(a) what is the role of network layer in internetworking?

(b) what is protocals are used in the application layer?

(c) what is [illegible] on TCP/IP? what is the example of network.

Ans. to the question no 7 (a)

Internetworking. The is the role of the netwo rk layer that it provides the logical connec-ti on between different types of networks.

Fragmantnation. The fragmantation is a

is a proeeess of breaking the packet into the smallest individual data units that travel through different network. In network layer a router is used to forword the packet.

Ans to the questin no. 7 (b)

Application layer - Application layer protocal like HTTP, and FTP are used. Transport layer Data is transmitted in form of datagram using the transmission. Control protocol

Tcp is responsible for breaking up data at the client side and then reassembling it on the server side.

(i) TELNET: TELNET stand for the TELecommunication network. It help in terminal emulation.

(ii) FTP: FTP stands for file transfer protocol. It is the protocol that let us transfer file.

(iii) TFTP: The trivial transfer protocol is the stripped-down, stock version of FTP, but is the protocol of choice

(iv) LPD: It stands for line printer demon it is design for printer sharing.

Ans. to the question. 7(c)

MCQs on TCP/IP and UDP in computer network set-1 December 21, 2014 This set of MCQs on TCP/IP and UDP includes the

IP: The internet protocal is the address system of the internet and has the core function of delivering packets of information from a source device to a target device.

TCP: the TCP protocal can be through as the puzzle assembler on the other side who puts the pieaces together on the right order.

A network is a set of device connected to each other using a physical transmission medium. Example. A computer network is a group of computers connected with each other to communicate and share information and resources like hardware, data and software across each other.

8. (a) what does Internetworking means?
& (b) what is the responsibility of data link layer?
(c) what are some reason that the industry uses a layered model.

Ans. to the question no - 8 (a)

Internetworking is the process or technique of connecting different network by using intermediary devices such as router or gateway devices. Internetworking

ensure data communication among network owned and operated by different entities using a common data communication and internet routing protocal

The internet is the largest pool of network. geographically located through the world but those network are interconnected using the same protocal Stack TCP/IP.

Ans. to the question: 8(b)

The data link layer provides the functionality and procedual means for connectionless mode among network entities, and for connection mode entities it provides the establishment, maintanence and release of data link layer connection among translated message from the network layer into bits for the physical layer, and it enable the network and protocol characteristics including physical address, error notification, network topology and sequence frames. Data link provides the deliver

Ans. to the question 8 (c)

Here Some reason why the instrusty use a layera model.

(i) It encourage industy standardization by defination what function occure at each level.

(ii) It allows vendors to modify or improve component at only one layer versus rewriting the whole protocol stack.

(iii) It help interoperability by defining standards for the operation at each level

(iv) It helps with troubleshooting.