DCN
Assignment : 02

PAGE NO.
DATE

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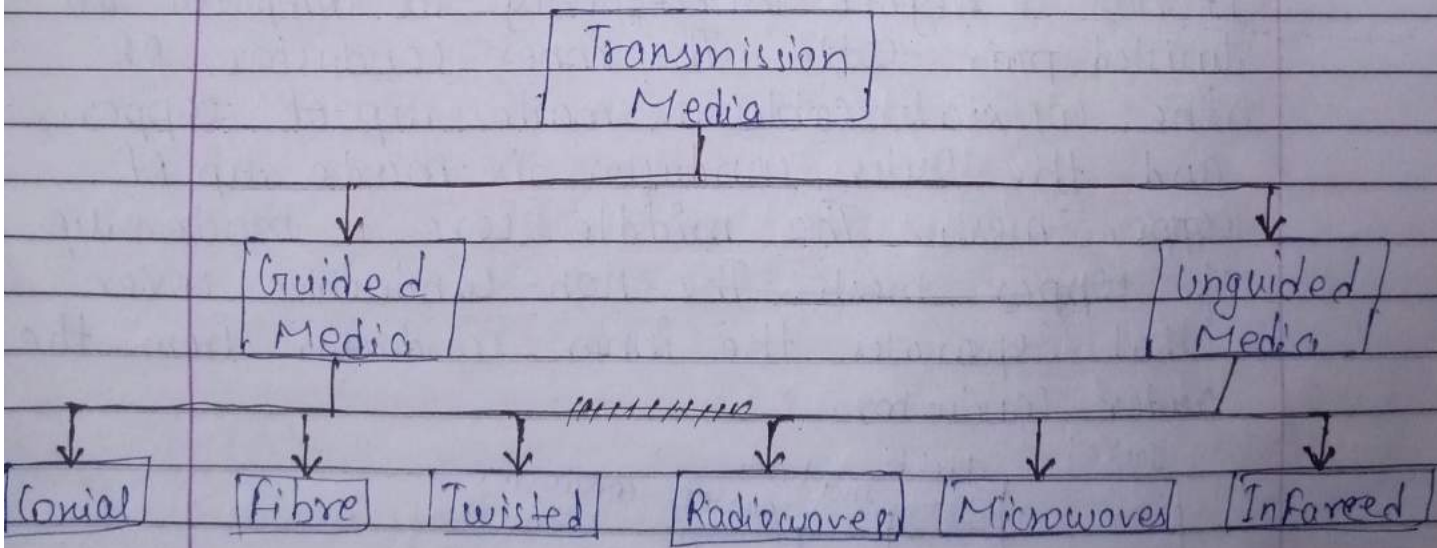
Batch - C
Subject - Data Computer Network (DCN)

Q.1.) What is Transmission media ? Explain fibre optic and coaxial cable in details.

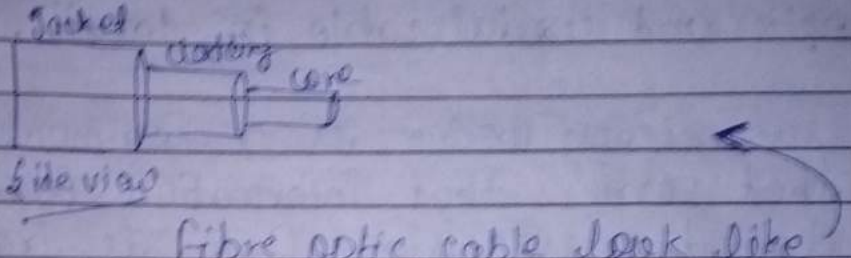
Ans

Transmission media is a communication channel that carries that information from the sender to the receiver. Data is transmitted through the electromagnetic signals. The main functionality of the transmission media is to carry the information in the form of bits through LAN.



Fibre Optics

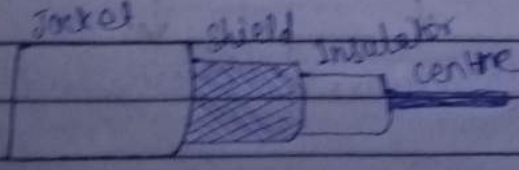
Fibre optic cable is a cable that uses electrical signals for communication. Fibres optic is a cable that are used holds the optical fibre coated in plastic that are used to send the data by pulses of light. Fibre optics provide faster data transmission than copper wires.



Fibre optic cable look like

Coxial Cable

Coaxial cable is very commonly used in transmission media, TV wire is usually a coaxial cable. It has a higher frequency as compared to twisted pair cable. The inner conductor of the coaxial cable is made up of copper, and the outer conductor is made up of copper mesh. The middle core is made up of ~~copper mesh. The~~ non-conductive cover that separates the inner conductor from the outer conductor.



Coxial Cable

Q.2) What is IP addressing ? Explain class-full IP address in detail.

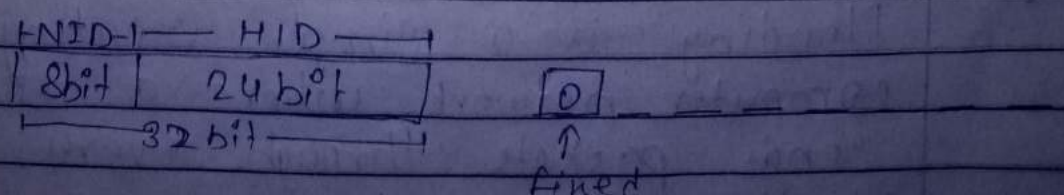
Ans

IP stands for Internet Protocol. It is a numerical label that is connected to a computer network that uses the internet protocol for communications. There are two versions of IP address that is IPV4 and IPV6.

* IPV4 is of 32 bits and IPV6 is of 64 bits. Globally IPs assigned by IANA (Internet Assigned Number Authority).
* The IPV4 is divided into 5 sub-classes. These are follows :-
  (i) Class A
  (ii) Class B
  (iii) Class C
  (iv) Class D
  (v) Class E

* IPV4 divided into 2 parts.
  (i) Network ID
  (ii) Host ID

Class A



Q.3.) Explain Sub-netting with example.

Ans

Subnetting is the practice of dividing a network into two or more smaller networks. It increases routing efficiency, enhances the security of the network and reduces the size of the broadcast domain.

Q.4.) Explain distance vector routing Algorithm?

Ans

A Distance-vector Algorithm (DVR) protocol requires that a routes inform its neighbors of topology changes periodically. It is also known as old ARPANET algorithm of Bellman-ford algorithm.

$$Dx(y) = \min\{C(x,v) + Dv(y), D(x)y\}$$

min = Apply above equation over all of x's neighbours

Dx(y) = least cost path from node x to y.

Q.5.) What is Flooding?

Ans

Flooding is a simple routing technique in computer network where a source or node sends packets through every outgoing link. Flooding is used in computer network routing

algorithm in which every incoming packet is sent through every outgoing link except the one is arrived on. Flooding is used in bridging and in system such as usenet and peer-to-peer and as part of some routing protocols OSPF, DVMRP.

Q.6) Explain Dijkstra's Algorithm to finding shortest path.

Ans Dijkstra's Algorithm to finding shortest paths b/w nodes in a graph, which may represent for example road networks. It was concined by computer scientist Edsger W. Dijkstra in 1956 and published 3 year later.

* Dijkstra's Algorithm basically starts at the node that we choose and it analyzes the graph to found the shortest path b/w that node and all the other nodes in the graph
* The algorithm keeps track of the currently known shortest distance from each node to the source node and it updates these values if it finds a shorter path
* Once the algorithm found the shortest path b/w the source node and another nodes, that node is marked as "visited" and added to the path.

Q.8) Compare IPV4 vs IPV6.

Ans

	Basis	IPV4	IPV6
I.	Address length	IPV4 is a 32-bit address	IPV6 is a 64-bit address
II.	Fields	IPV4 is a numeric address that consists of 4 fields which are seperated by dot(.)	IPV6 is an alphanumeric address that consists of 8 field, which are seperated by colon (:)
III.	Classes	IPV4 has 5 different clases of IP address that includes class A, class B, class C, class D and class E	IPV6 does not contain clases of IP address
IV.	Number of IP address	IPV4 has a limited number of IP address.	IPV6 has as a large numbers of IP addresses
V.	Address Representation	On IPV4, the IP address is represented in decimal	On IPV6 the representation of the IP address in in hexa-decimal.

Q.9) Explain ICMP protocol in detail.

Ans

The ICMP Stands for Internet control message protocol. It is a network layer protocol. It is used for error handling in the network devices such as router as different types of of errors can exist in the network layer, So ICMP can be used to report these errors and to debug those error.

* For example, some sender want to send the message to some destination, but the router couldn't send the message to the destination. In this case, the router sends the message to the sender that I could not send the message to that destination.
* The IP protocol doesn't have any error-reporting or error-correcting mechanism, so it uses a message to convey the information

Q.10) What is switching? Explain its methods in detail.

Ans

Switching :- Network switching is the process of channeling data recieved from any number of input ports to another designated port that will transmit the data to its desired destination.

Types of Switching are :-

(i) Store and forward switching method :-
In this method, the switch waits till all bits of the frame, the switch verifies wheather the recieved frame is cross-free If the recieved frame from the selected port.

(ii) Cut-through switchig method :-
In this method, the switch starts the 3rd phase as soon as the forward port is determined. An ethernet frame stores the destination MAC address in the third field its formated a frame, a switch only needs the destination MAC address of the frame.
Since the destination MAC address of the occurs very early in the ethernet frame, a switch can start forwarding the recieved bits of the frame before recieving all bits of the frame

(iii) The fragment-free switching method :-
In this method, after determining the forword port, the switch till the first 64 bytes of the frame are recieved the 64 bytes is the minimum legal size of an ethernet frame An ethernet frame that is smaller than 64 bytes is known as the runt frame A runt frame is a corupt frame.

Q.11) What is Transmission Impairment ?

Ans

In communication system, analog signals travel through transmission media, which tends to deteriorate the quality of analog signal at the beginning of the medium is not the same as the signal at the end of the medium. The imperfection courses signal impairment.

(i) Attenuation :-

It means loss of energy The strength of signal decreases with increasing distance which causes loss of energy in overcoming resistance of medium. This is also known as attenuated signal which gives the original signal back and compensate for this loss.

(ii) Distortion :-

It means changes in the form or shape of the signal. This is generally seen in composite signals made up with different frequencies each frequencies component has its own prosagation speed travelling through a medium and that why it delay in arriving at the final destination. Every component arrive at different time which leads to distoration. Therefore, they name different phases at reciever

end from what they had at sender end

(iii) Noise :-
The random or unwanted signal that mixes up with the original signal is called noise. There are several types of noise such as induced noise crosstalk noise, thermal noise and impulse noise which may corrupt the signal.

Q.12.) Write note on communication satellite.
Ans

A communications satelite is a wireless communication device in Earth's orbit that uses a transponder to send and recieve data from Earth. It is primarily used to redirect communication station to another station. Typically, a communication satellite works when it recieves data from terrestrial stations in the form of electromagnetic waves. The data is usually sent via large satellite dishes based on the intended destination the communication satellite redirects the wave to the corresponding station.

Q.13) Comparision :- Satellite vs Fibre.
Ans

Feature	Optic Fibre	Satellite
Bandwith	Higher	Lower
Data Rate	Higher	Lower
Mobility	Not Mobile	Mobile
Reliability	Higher	Lower
Terrain	Urban areas, plains	Mountains, terrain, and remote areas.
Delay	No delay	Delay in transmission
Cost	Lower recurring cost	Higher recurring cost