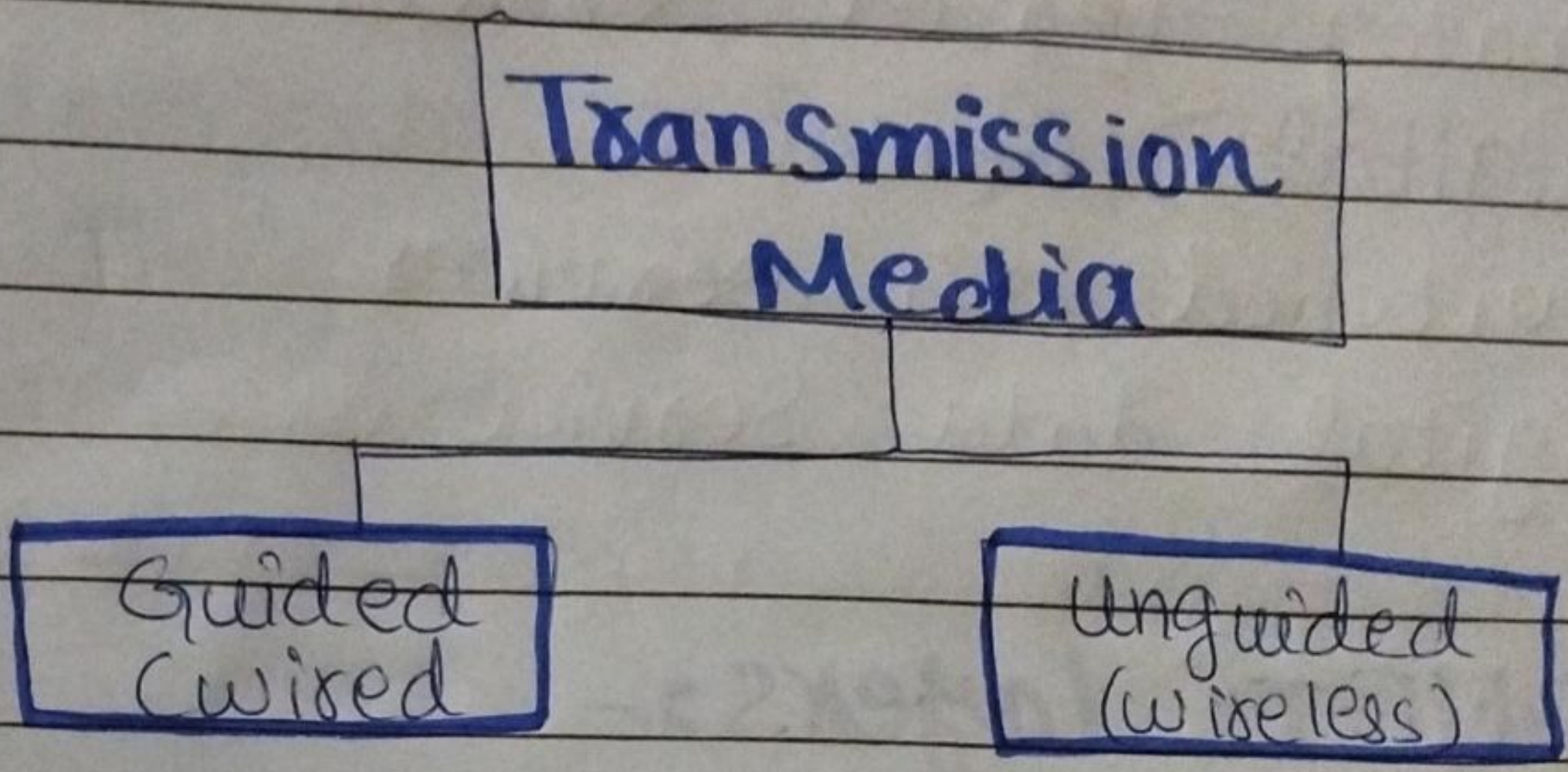
CS601 Abbrevations

CSMA/CA : (Collision Sense multiple access / collision Avoidance)
IFS : (Inter Frame SPace)
FDMA: (Frequency division multiple access)
TDMA : (Time division multiple access)
CDMA : (code division multiple access)
LLC : (Logical link Control)
NIC : (Network interface Card)
LATAS: (Local-Access Transport areas)
LEC : (Local exchange carriers)
IXCS: (Inter exchange carriers)
DSL: (Digital Subscribes line)
HFC: (Hybrid fiber Coaxial)
CMTS: (cable modem Transmission System)
SONET: Synchronous Optical Network
SDH: Synchronous digital Hierarchy
STS: Synchronous Transport Signals
OCs: Optical Carriers
STM: Synchronous Transport Module
ATM: Asynchronous Transfer Mode
Wifi: wireless fidelity
DCF: Distributed Coordination function
PCF: Point coordination function

CS601 Abbreviations

ARP: (Address Resolution Protocol)
cRC: (cyclic Redundency check)
DLC: (Data link Control)
CRC: (cyclic Redundancy check)
DLC: (Data link Control)
MAC: (Media Access Control)
TCP: (Transfer Control Protocol)
IP: (Internet Protocol)
DLL: (Data link layer)
FSM: (Finite state machine)
HDLC: (High-level Data link Control)
NRM: (Normal Response Mode)
ABM: (Asynchronous Balanced Mode)
PPP: (Point-to-Point Protocol)
LCP: (Link Control Protocol)
APs: (Authentication Protocols)
NCPs: (Network control Protocols)
PAP: (Password Authentication Protocol)
CHAP: (Challenge Handshake Authentication protocol)
IPCP: (internet Protocol Control Protocol)
CSMA: (Carriex Sense Multiple Access)
CD: (collision detection)



Types of guided media

- Twisted pair cable
- Coaxial cable
- Fiber optic cable

unguided media

- Radio waves
- Microwaves
- infrared

* Types of addresses
1) unicast 2) Multicast 3) Broad cast
* Types of Errors:-
1) Single-bit error 2) Burst error
* Types of Coding schemes
1) Block coding
2) Convolution Coding
* DLC Services
- Framing
- Flow ~~chart~~ control
- Error control
* Variable Framing Techniques
- Connection Oriented Framing
- Bit Oriented Framing
* Responsibilities of DLC:-
- Flow Control
- Error Control

* Four Protocols of DLL to deal with flow & error control:-
1) simple protocol
2) Stop & wait protocol
3) Go-Back-N Protocol
4) Selective Repeat protocol

HDLC Transfer Modes

- Normal Response Mode (NRM)
- Asynchronous Balanced Mode (ABM)

HDLC define three types of frames:-

1) Information frames (I-frames)
2) Supervisory frames (S-frames)
3) Unnumbered frames (U-frames)

Random Access Protocols

- ALOHA
- CSMA/CD
- CSMA/CA

Controlled-Access ~~Protocols~~ Methods:-

- Reservation
- Polling
- Token Passing

Channelization Protocols

- FDMA
- CDMA
- TDMA

Multiple-access Protocols

- Random Access Protocols
- Controlled access Protocols
- channelization Protocols

- Collisions are avoided through the use of three strategies:-
  - The Interframe Space
  - The Contention window
  - Acknowledgements

Ethernet evolution

1) Standard Ethernet (10 Mbps)
2) Fast Ethernet (100 Mbps)
3) Giga bit Ethernet (1 Gbps)
4) 10 Gigabit Ethernet (10 Gbps)

Changes in the standard

- Bridge Ethernet
- Switched Ethernet
- Full-Duplex Ethernet

Goals of fast Ethernet

- Upgrade data rate to 100Mbps
- Make it Compatiable with Standard Ethernet
- Keep Same 48-bit address
- Keep Same Frame Format

VLAN: Virtual LAN

Services Provided by Telephone Companies

Telephone companies provide two types of services:

⇒ **Analog Services**

- Analog switch services
- Analog leased services

⇒ **Digital Services**

- Switched 156 services
- Digital data Service

SONET layers:-

- The Path layer
- The line layer
- The Section layer
- The photonic layer

Characteristics of wireless LAN

- Attenuation
- Interference
- Multipath propagation
- Errors

Frame Types

- Management frames
- Control frames
- Data frames

Goals of Gigabit Ethernet:

- Upgrade data rate to 1 Gbps
- Make it compatible with standard or fast Ethernet
- Use same 48 bit address
- Use the same frame format
- Keep same min & max Frame length

Components of Telephone Networks:

Three major components are as follows

- local loops
- Trunks
- Switching offices

Telephone Network level of Switching offices:-

- End offices
- Tandem offices
- Regional offices

Categories of SONET Networks:-

- Linear Networks
- Ring Networks
- Mesh Networks

* Coding Schemes ⇒ 1) Block 2) Convolution
* Block Coding :- $n = k + r$
* Minimum Haming distance: $d_{min} = S + 1$
* linear block code: $n = k + 1$
* XOR ; $R = P_1 \oplus P_2 \oplus \cdots \oplus P_i \oplus \cdots \oplus P_N$
* Efficiency of Ethernet = $\frac{1}{(1 + 6.4 \times a)}$

التاريخ: ___/___/___

* Connecting devices
- Hubs
- link-layer Switches
- Routers

FTTC: Fiber to the Curb

Router vs. Switch

Three differences between a router and a repeater or a switch:

1. A router has a physical and logical (IP) address for each of its interfaces.
2. A router acts only on those packets in which the link-layer destination address matches the address of the interface at which the packet arrives.
3. A router changes the link-layer address of the packet (both source and destination) when it forwards the packet.