Transmission Media

1. Guided Media
2. Unguided media
Transmission Media

- Each media has its own bandwidth, delay, cost and ease of installation

- **Guided Transmission media**
  1. Magnetic Media
  2. Twisted pair
  3. Base bad coaxial cable
  4. Broad band Coaxial cable
  5. Optical Fiber cable
Magnetic Media

• **Magnetic** storage or **magnetic** recording is the storage of data on a Magnetised **medium**
• Common transport type from one PC to other
• It is Accomplished by writing data into video tapes, Floppy disc, magnetic tape, pen drives
• Method is not sophisticated
• Cost and Storage are serious concern
Magnetic Media
Twisted pair

- Consists of two insulating copper wires typically 1mm thick
- Wires are twisted together in Helical
- Reduces electrical interface
- Used in telephone system
- Run several km without amplification
- Can be used for analog and digital transmission
- Low cost- widely used
**Shielded twisted pair (STP)**

**Unshielded twisted pair (UTP)**
Twisted pair

- Bandwidth depends on thickness of wire
- Category 3 twisted pair is used in Telephony
- Category 5 twisted pair used for data Tx upto 100 Mbps
Twisted Pair Wires

- **Category 3 UTP**
  - data rates of up to 10mbps are achievable
  - Standard cable for most telephone systems
- **Category 5 UTP**
  - data rates of up to 100mbps are achievable
  - more tightly twisted than Category 3 cables
  - more expensive, but better performance
  - Used in LAN.
- **STP**
  - More expensive, harder to work with
Base band Coaxial cable

- Gives better shielding then twisted pair
- Serve long distances with high speed
- 50 ohm cable used for digital transmission
- 75 ohm used for Analog transmission
- Used in telephone lines Cable TV
- Bandwidth possible depends on cable length
Broad band coaxial cable

• It uses Analog transmission
• It uses Std Cable Tv technology
• Run up to 100km
• Difference between base band and broad band cable is system covers large area and need analog amplifiers
• Two types- Dual cable and single cable
Optical fiber cable
# Copper cable vs Fiber cable

<table>
<thead>
<tr>
<th>Copper Wires</th>
<th>Fiber Cables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less band width</td>
<td>High band width</td>
</tr>
<tr>
<td>High attenuation</td>
<td>Low attenuation</td>
</tr>
<tr>
<td>Repeaters are required for every 5 km</td>
<td>No need of repeaters</td>
</tr>
<tr>
<td>Affected by interference</td>
<td>Not affected by interference</td>
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</tbody>
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Optical fiber cable

• Single Mode Fiber Optic Cable is used for both inter building and intra building backbone cable.

• At distances up to 3 km, single mode fiber will deliver data rates up to $10 \text{ Gbps}$ with a bandwidth of $20\text{Ghz}$.

• Its operating wavelengths are 1310 nm and 1550 nm