Date: 20/06/2025

Lab Practical #03:

Study of different types of network cables & connectors and crimping a LAN.

Practical Assignment #03:

1. List various networks cable. Also, write short description.
2. Difference between guided and unguided media.
3. Give cross-wired cable and straight through cable diagram (Color Code wise).

1. List various networks cable and connectors. Also, write short description.

a) Network Cable Name: Coaxial Cable

- **Description**:
  - Coaxial cable is used to carry high-frequency electrical signals with low loss.
  - It has a central copper conductor, a dielectric insulator, a metallic shield to reduce interference, and a plastic outer sheath.
  - Commonly used in cable TV, internet, and telephone systems.
  - Maximum speed is 10 Mbps.

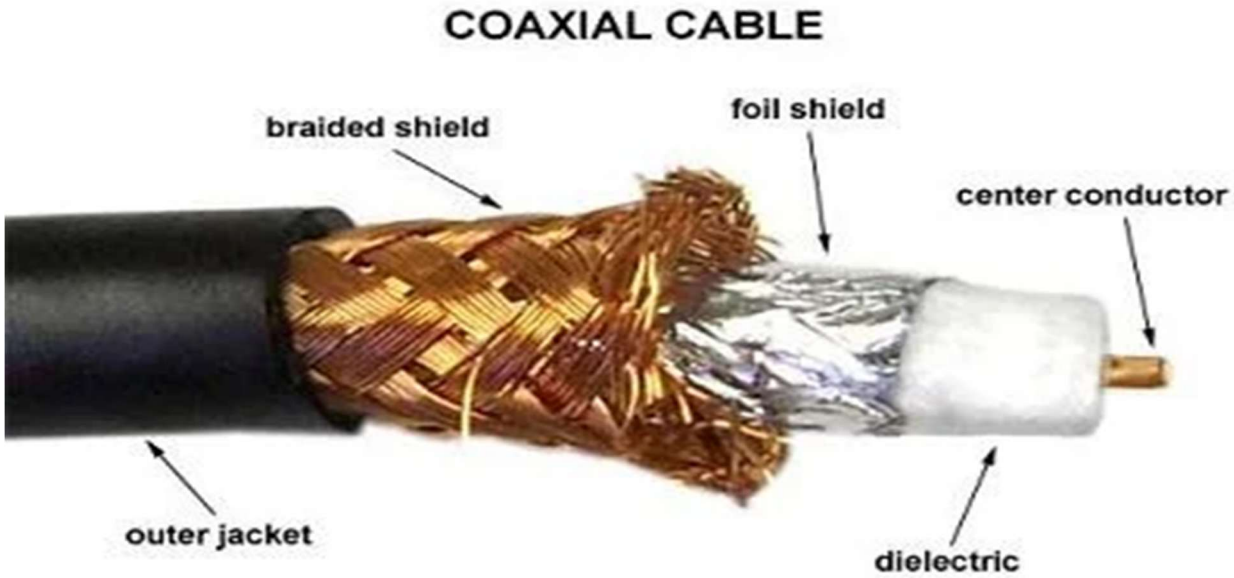
  Types of Coaxial Cables:

  1) Hardline Coaxial Cable – Used in internet and telephone lines requiring high signal strength.
  2) RG-6 Coaxial Cable – Used in broadband internet and cable TV, offers better signal quality.
  3) Tri-Axial Cable – Used in cameras and TVs, provides higher bandwidth and interference rejection.

  Connectors Used with Coaxial Cables:

  1) BNC (Bayonet Neil-Concelman)
  2) N Series Connector
  3) F-Type Connector
  4) SMA (Subminiature Connector)
  5) TNC (Threaded Neil-Concelman)

- **Diagram**:



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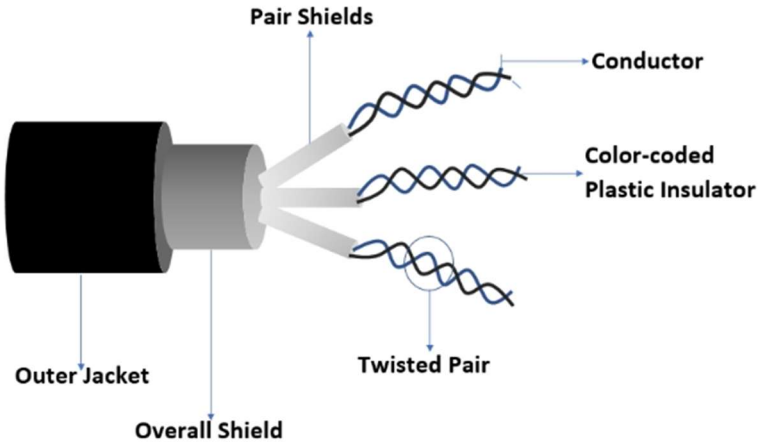
b) Network Cable Name: Twisted Pair Cable

- **Description**:
  - Twisted Pair Cable is made of two insulated copper wires twisted together to reduce interference.
  - It supports Ethernet standards like 10BASE-T, 100BASE-T, and uses RJ-45 connectors.
  - It is commonly used in LANs.

  Types of Twisted Pair Cables:

  1) Shielded Twisted Pair (STP) – Has extra shielding (foil or copper braid) to reduce external interference. Used for longer distances and higher speeds.
  2) Unshielded Twisted Pair (UTP) – No additional shielding. Most commonly used in computer networks for shorter distances.
- **Diagram:**



c) Network Cable Name: Fiber Optic Cable

- **Description**:
  - Fiber Optic Cable uses glass or plastic fibers to transmit data as light signals.
  - It supports Ethernet types like 10BaseF, 1000BaseSX, etc., and is ideal for high-speed and long-distance data transmission without interference.

  Types of Fiber Optic Cable:

  1) Single-Mode Fiber – Uses a single light path for long-distance, high-speed communication.
  2) Multi-Mode Fiber – Uses multiple light paths, suitable for shorter distances, and is cost-effective.

  Connectors Used with Fiber Optic Cables:

  1) ST (Straight-Tip) Connector
  2) FC (Fiber Channel) Connector
  3) SC (Subscriber Connector)
  4) LC (Lucent Connector)
- **Diagram:**

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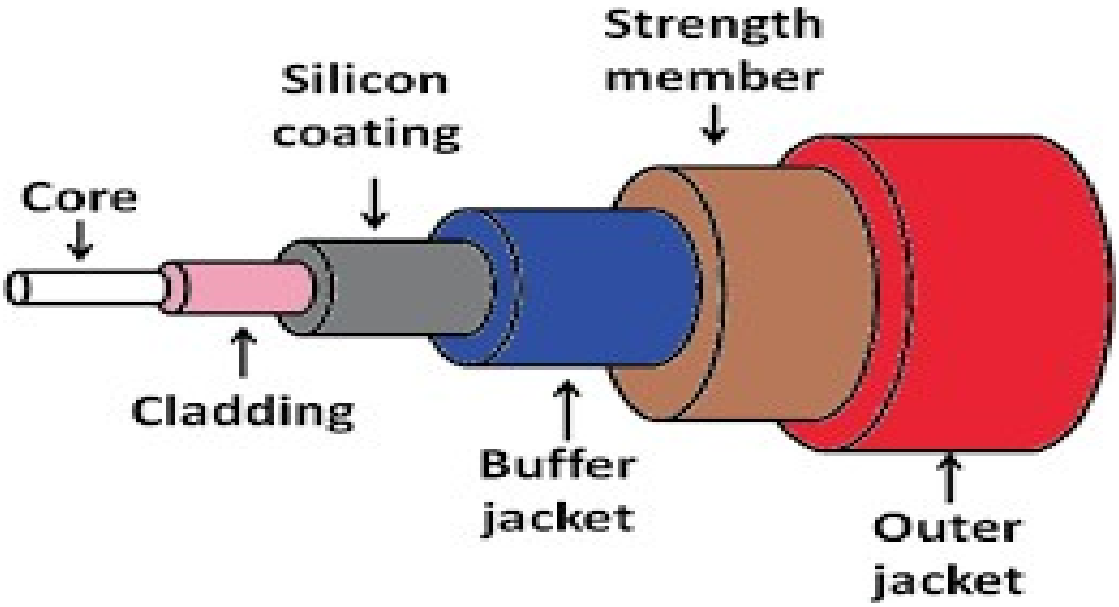

2. Difference between guided and unguided media.

Aspect	Guided Media	Unguided Media
Alternative Name	Wired/Bounded Media.	Wireless/Unbounded Media.
Signal Propagation	Signal energy travels through wires or cables.	Signal energy travels through air or space.
Communication Type	Point-to-point communication.	Broadcasting in all directions.
Cost	Affordable.	Expensive due to equipment and range.
Topology Formation	Forms discrete network topologies.	Forms continuous network topologies.
Signal Form	Transmitted as voltage, current or photons.	Transmitted as electromagnetic waves.
Scalability	Capacity can be increased by adding more wires.	Capacity increase is limited and difficult.
Routing Capability	Signal indicates specific direction/path.	Signal spreads freely without a fixed path
Best Use	Ideal for shorter distances.	Ideal for longer distances.
Obstacle Handling (Penetration)	Cannot pass through walls.	Can pass through walls.

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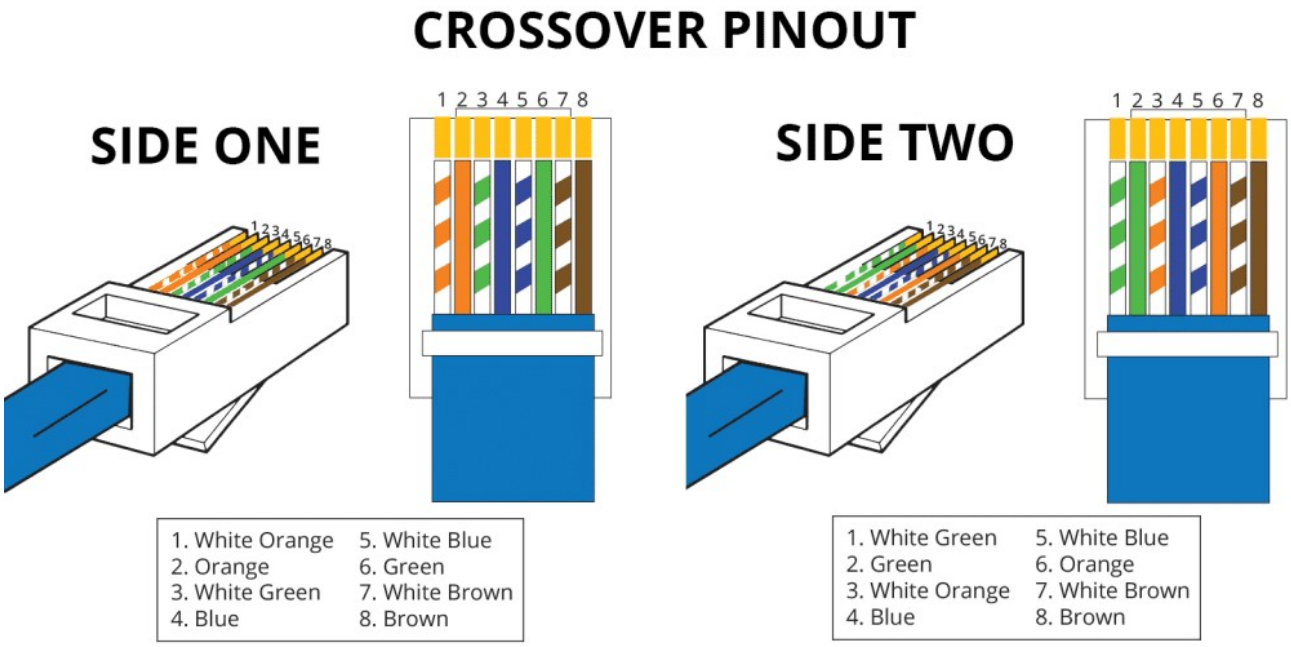
3. Give cross-wired cable and straight through cable diagram (Color Code wise).

a) Cross-wired Cable Diagram (Color Code)



b) Straight Through Cable Diagram (Color Code)