EX NO:02
DATE: 21.07.2025

STUDY OF NETWORK CABLES

Aim:

To study different types of network cables.

a) Understand different types of network cable

Different types of cable used in networking are:

1. Unshielded Twisted Pair (UTP) cable.
2. Shielded Twisted Pair (STP) Cable.
3. Coaxial cable.
4. Fibre Optic Cable.

Cable Type	Category	Maximum Data Transmission	Advantages/ Disadvantages	Application/ Use
UTP	Category 3	10 bps	Advantages: • cheaper in cost • Easy to install as they have a smaller overall diameter. Disadvantages: • More prone to (EMI) Electromagnetic interference and noise.	10 Base-T Ethernet
	Category 5	upto 100 Mbps		Fast Ethernet, Gigabit Ethernet
	Category 5e	1 Gbps		Fast Ethernet, Gigabit Ethernet.
STP	Category 6, 6a	10Gbps	Advantages: • Shielded • Faster than UTP. • Less susceptible to noise & interference Disadvantages: • Expensive. • Greater installation effort.	Gigabit Ethernet, 10G Ethernet (55m) widely used in data centres.
SSTP	Category 7			Gigabit Ethernet 10G Ethernet (100m)

Coaxial Cable	RG-6 RG-59 RG-11	10-100 Mbps	Advantages: • High bandwidth. • Immune to interference • Low loss bandwidth. • versatile. Disadvantages: • Limited distance • cost • Size is bulky	Speed of Signal is 500 m Television Network High speed internet connections.
Fibre optics Cable	Single mode Multi mode	100 Gbps	Advantages: • High speed • High bandwidth • High security • Long distance Disadvantages: • Expensive • Requires skilled installers.	Maximum distance of fibre optics cable is arround 100m.

Student Observation:

1. What is the difference between cross cable and straight cable?

Ans: Cross cable is used to connect different types of devices whereas straight cable is used to connect similar devices.

2. Which type of cable is used to connect two PCs?

Ans: When connecting two similar devices like PC to PC, a cross cable is used so that the transmit and receive pairs are correctly aligned.

3. Which type of cable is used to connect a router/ switch to your PC?

Ans: A straight cable (straight-through cable) to connect a router or switch to a PC.

4. Find out the category of twisted pair cable used in your LAN to connect the PC to the network socket.

Ans: Modern LANs use:

i) Cat 5e (Category 5 enhanced): Supports upto 1 Gbps

ii) Cat 6: Supports up to 10 Gbps over short distance

These are Unshilded Twisted Pair (UTP) cables.

5. Write down your understanding, challenges faced and output received while making a twisted pair cross/straight cable?

Ans: Understanding:

i) Twisted pair cables (like Cat 5e or Cat 6) have 8 wires twisted into 4 pairs.

ii) Correct pin configuration (T568A or T568B) is crucial.

a) Straight cable: Same standard on both ends

b) Cross cable: One end T568A

Challenges faced:

i) Stripping cable without damaging the internal wires.

ii) Verifying the cable with cable tester.

iii) Maintaining the correct wire order.

Output received:

i) Successfully made a functional cable that connects

Result:

Thus the study of network cables is done successfully.