R (2)	N (5)	Oral (3)	Total (10)	Dated Sign

Assignment Group-A_1

Problem Definition:
Setup a wired LAN using Layer 2 Switch and then IP switch of minimum four computers. It includes preparation of cable, testing of cable using line tester, configuration machine using IP addresses, testing using PING utility and demonstrate the PING packets captured traces using Wireshark Packet Analyzer Tool.

Part B: Extend the same Assignment for Wireless using Access Point

1.1 Prerequisite:

a) IP Address
b) OSI & TCP/IP Model
c) Networking Devices

1.2 Learning Objectives:

1. Understand how to Create LAN, PAN & CAN
2. Understand how to Create wireless LAN using Accesspoint.

1.3 New Concepts:

1. Crimping
2. Accesspoint Configuration

1.4 Theory

1.4.1 Introduction

A **computer network** is a system in which multiple computers are connected to each other to share information and resources.

Characteristics of a Computer Network

- Share resources from one computer to another.

- Create files and store them in one computer, access those files from the other computer(s) connected over the network.

- Connect a printer, scanner, or a fax machine to one computer within the network and let other computers of the network use the machines available over the network.

Network Cables

Network cables are used to connect computers. The most commonly used cable is CAT cable & RJ-45.

Network Card

Network card is a necessary component of a computer without which a computer cannot be connected over a network. It is also known as the network adapter or Network Interface Card (NIC). Most branded computers have network card pre-installed. Network cards are of two types: Internal and External Network Cards.
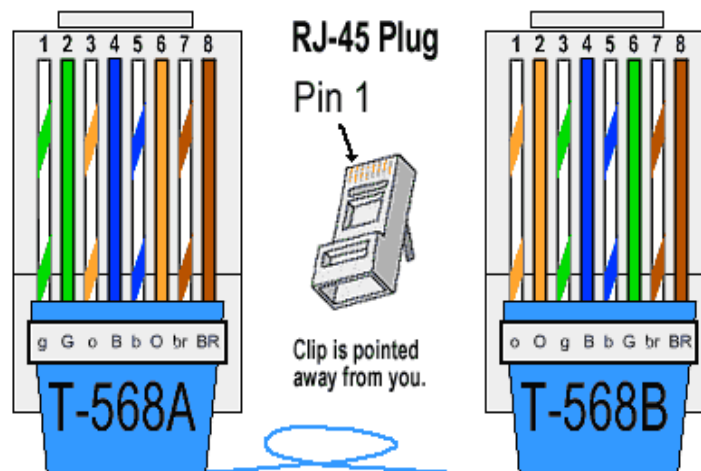
Straight Through & Crossover Cable:

The information listed here is to assist Network Administrators in the color coding of Ethernet cables. Please be aware that modifying Ethernet cables improperly may cause loss of network connectivity.

Straight-Through Ethernet Cable
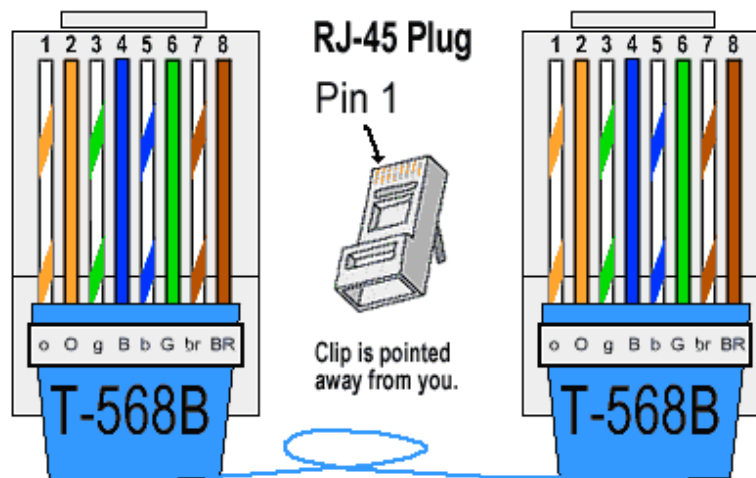
Straight-Through Ethernet Cable

- **Local Area Network:**

A local area network (LAN) is a computer network that interconnects computers within a limited area such as a residence, school, laboratory, university campus or office building and has its network equipment and interconnects locally managed. By contrast, a wide area network (WAN) not only covers a larger geographic distance, but also generally involves leased telecommunication circuits or Internet links. An even greater contrast is the Internet, which is a system of globally connected business and personal computers. Ethernet and Wi-Fi are the two most common transmission technologies in use for local area networks.

- **Wireless LAN:**

A wireless local area network (WLAN) is a wireless computer network that links two or more devices using a wireless distribution method (often spread-spectrum orOFDM radio) within a limited area such as a home, school, computer laboratory, or office building. This gives users the ability to move around within a local coverage area and yet still be connected to the network. A WLAN can also provide a connection to the wider Internet.

Most modern WLANs are based on IEEE 802.11 standards and are marketed under the Wi-Fi brand name.

Benefits of Wireless LAN:
- People can access the network from where they want; they are no longer limited by the length of the cable
- Some places and vehicles have Wireless LANs. This means that people can access the internet even outside their normal work environment, for example when they ride a train.
- Setting up a wireless LAN can be done with one box called wireless access point or wireless router. This box can handle many connections at the same time. Wired networks require cables to be laid. This can be difficult for certain places.
- Access points can serve a varying number of computers.

1.5 Assignment Questions:

1. Explain LAN, CAN, MAN & WAN?

2. Write down the Difference between TCP/IP Model & OSI Model?

3. Which Topology you have implemented in your laboratory? Why?

4. Explain various IEEE Standard for Wireless LAN?

5. How to Configure Wireless LAN Explain step by Step?

6. Which Security protocols are used in Wireless LAN?

7. Explain Ping, Traceroot, Telnet, Ipconfig Commands?

Conclusion:
Hence we conclude that we have created Wired LAN & Wireless LAN Sucessfully.