MRA DAV PUBLIC SCHOOL, SOLAN

Class XII (Informatics Practices)

Topic: Network Devices

Learning Objectives

- Learning about different network devices
- Learning about the difference of working of different devices

Ethernet Card

- An Ethernet card is one kind of network adapter. These adapters support the Ethernet standard for high-speed network connections using cable connections.

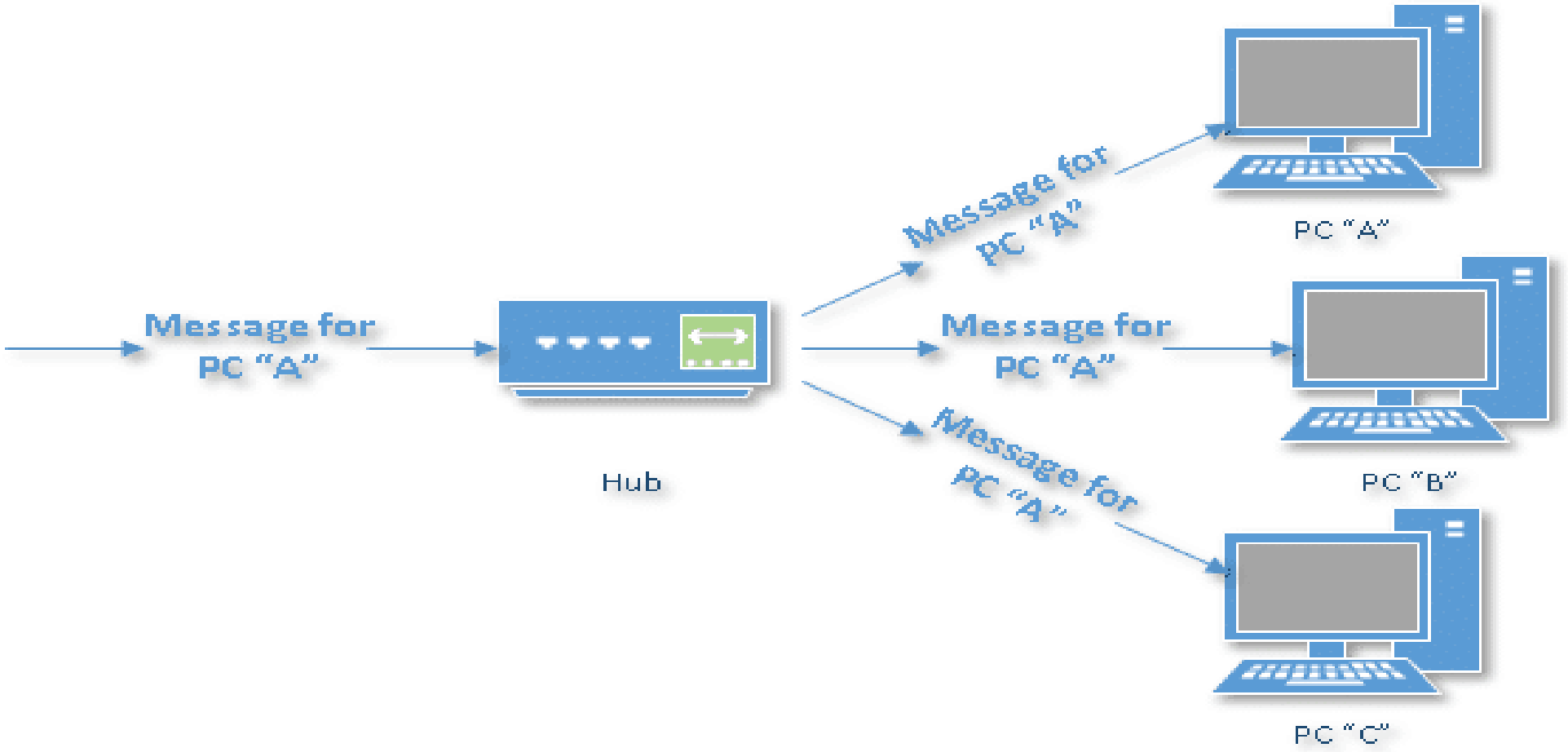
Hub

A hub, also called a network hub, is a common connection point for devices in a network.

Hubs are devices commonly used to connect segments of a LAN. The hub contains multiple ports. A computer which intends to be connected to the network is plugged in to one of these ports

A hub has a simple job i.e. anything that comes in one port is sent out to the others

The limitation of hub is that if data from two devices come at the same time they will collide.



Switch

A network switch connects devices (such as computers, printers, wireless access points) in a network to each other.

A switch can detect specific devices that are connected to it and keeps a record of the mac addresses of these devices. So data is always directed to intended port.

Host MAC Address	Port
00 00 80 45 FE 21	5
00 00 80 45 DA 47	3
00 40 00 80 45 FE	2
00 40 80 10 AA 21	1
00 00 80 00 FF AB	5

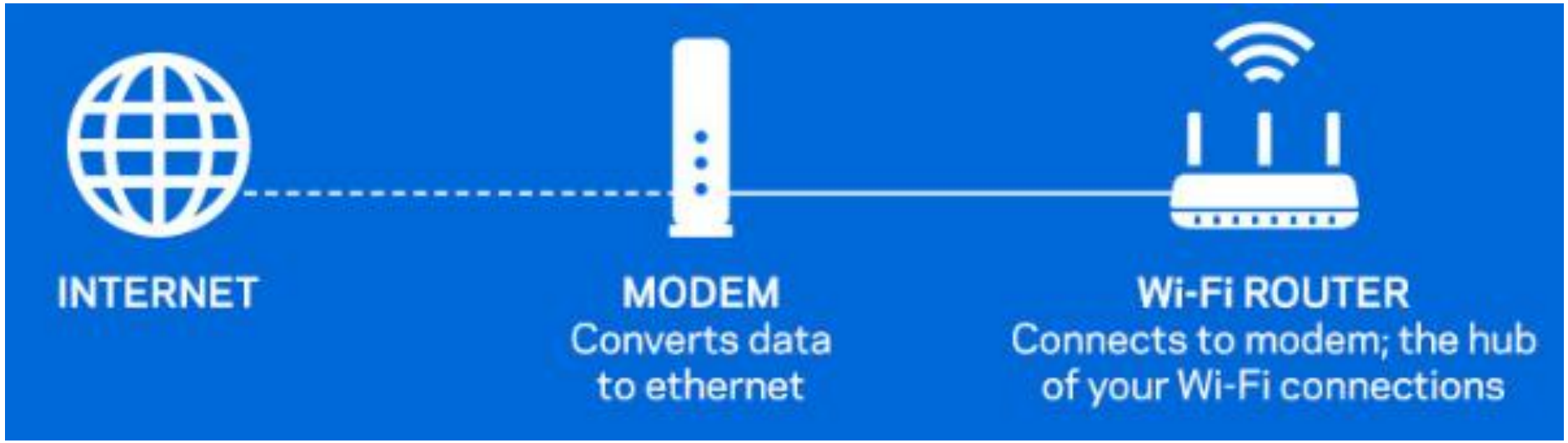
Modem

Modem (Modulator-Demodulator), is a network device that allows a computer or another device, such as a router or switch, to connect to the Internet.

The first modems were "dial-up," meaning they had to dial a phone number to connect to an ISP. These modems operated over standard analog phone lines and used the same frequencies as telephone calls, which limited their maximum data transfer rate to 56 Kbps.

Modern modems are typically DSL or cable modems, which are considered "broadband" devices. DSL modems operate over standard telephone lines, but use a wider frequency range.

Modem

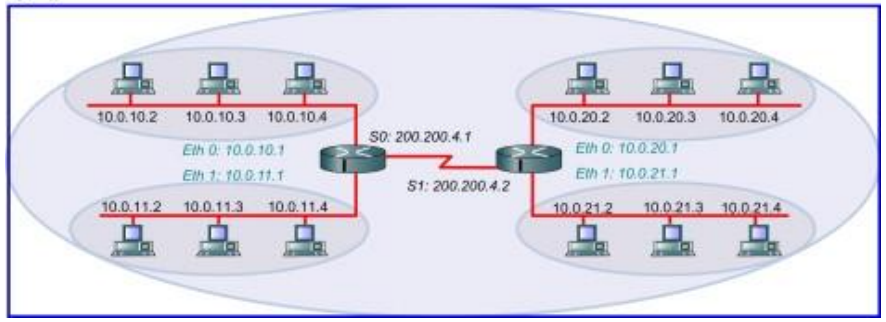

INTERNET
MODEM
Converts data
to ethernet
Wi-Fi ROUTER
Connects to modem; the hub
of your Wi-Fi connections

Router

(A)

Learned	Network Address	Hop	Interface
C	10.0.10.0	0	Eth0
C	10.0.11.0	0	Eth1
C	200.200.4.0	0	S0
R	10.0.20.0	1	S0
R	10.0.21.0	1	S0

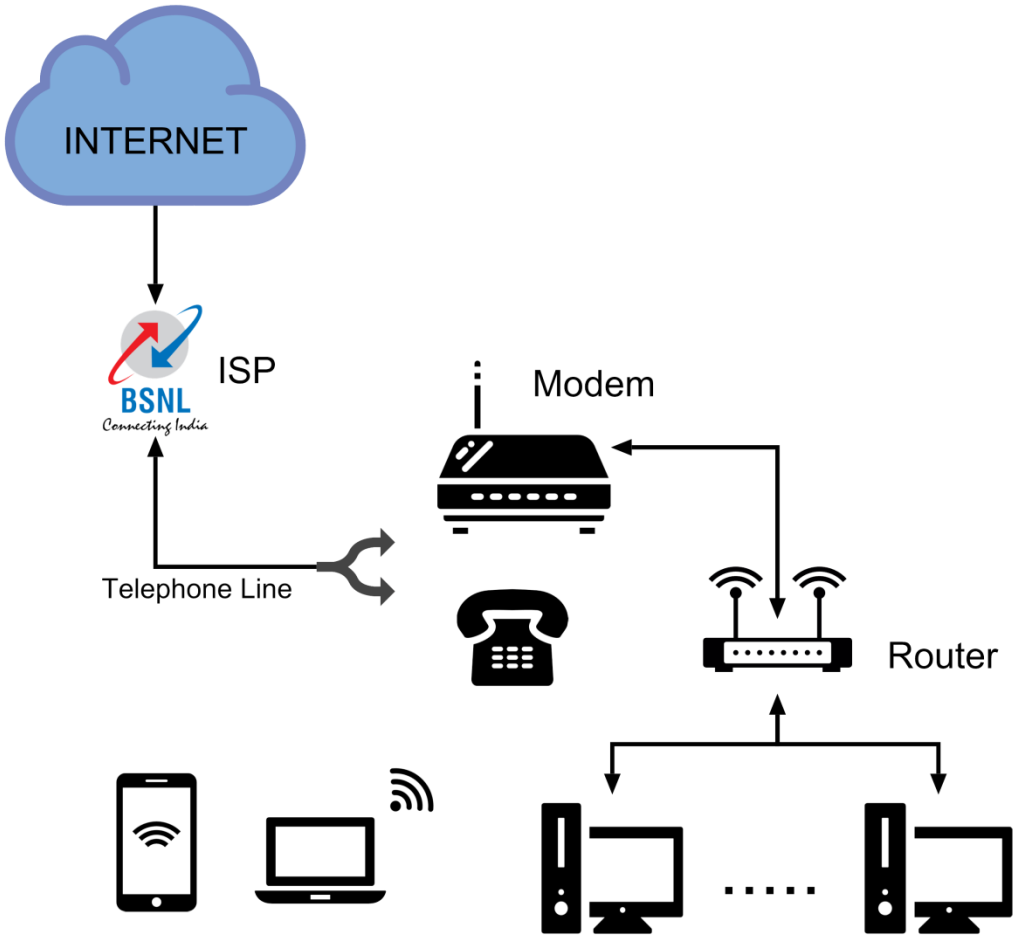
(B)



A router is a network device that can receive the data, analyse it and transmit it to other networks. A router connect a local area network to the internet.

A router is a physical or virtual device that passes information between two or more computer networks. A router inspects a given data packet's destination Internet Protocol address (IP address), calculates the best way for it to reach its destination and then forwards it accordingly.

Router



A router can be wired or wireless. A wireless router can provide Wi-Fi access to smartphone and other devices.

A Wi-FI router perform dual task of a router and a modem or switch.

Gateway

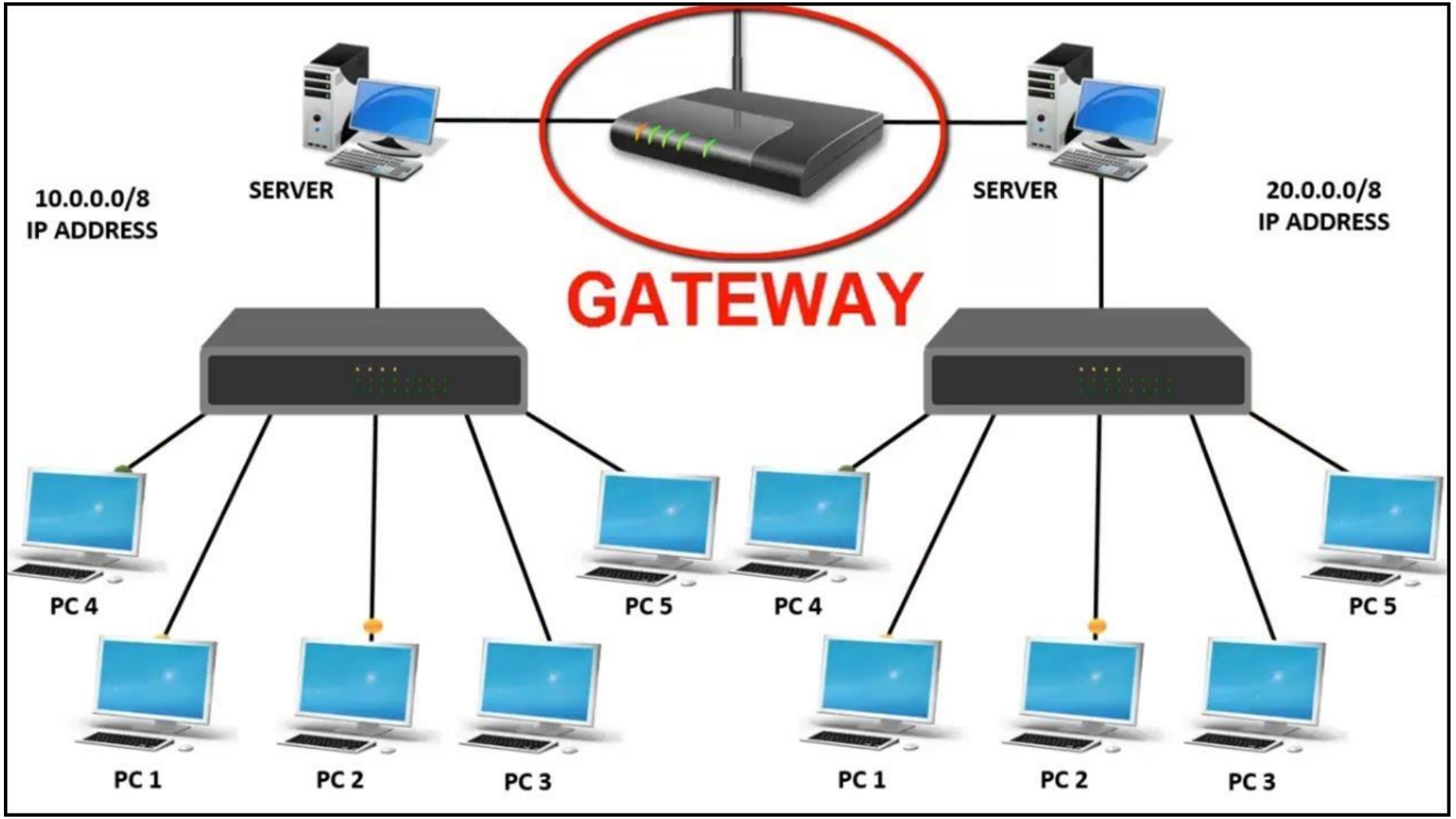
A gateway is a networking device that connects two networks using different protocol.

Network gateways, known as protocol translation gateways or mapping gateways, can perform protocol conversions to connect networks with different network protocol technologies.

For example, a network gateway connects an office or home intranet to the Internet. If an office or home computer user wants to load a web page, at least two network gateways are accessed—one to get from the office or home network to the Internet and one to get from the Internet to the computer that serves the web page.

Note: Gateways are network points that acts as an entrance to another network.

Gateway


10.0.0.0/8
IP ADDRESS
SERVER
GATEWAY
SERVER
20.0.0.0/8
IP ADDRESS
PC 4
PC 5
PC 1
PC 2
PC 3
PC 4
PC 5
PC 1
PC 2
PC 3

Repeater

As a signal travels a fixed distance, before attenuation of the signal, a repeater is used which amplifies and restores signals for long-distance transmission.

A repeater is an electronic device that receives a signal before it becomes too weak and regenerates the original signal.