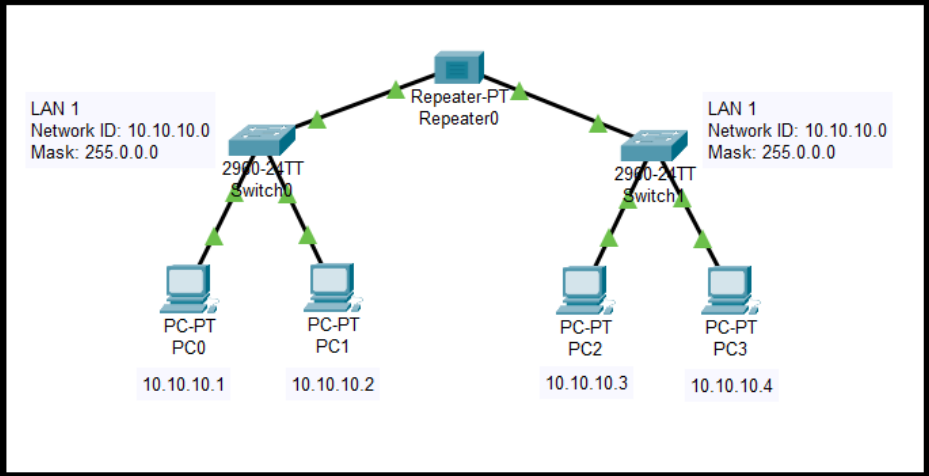
## REPEATER:

★ The data signals generally become too weak or corrupted if they tend travel a long distance.
★ Repeater regenerates the signal over the same network.
★ It operates at the physical layer.
★ They do not amplify the signal. Just does the regneration of the signal.
★ It is a 2 port device.
★ In star topology, repeater is called a hub, otherwise repeater and hub are the same devices except for the number of ports which are 2 in repeater but many in hub.
★ The function of repeater becomes prominent when we use hubs in place of switches in the below diagram.
★ Or if we use hubs in place of switches in the below diagram we have to user bridge in place of the repeater so that the signal does not get forwarded to other network to minimize the traffic in the network. But we can still use repeaters with hubs, if our sole purpose is just regenration of the signals but with the consequence will be high traffic in the network which will make signals collide with each other and the network will be flooded.

## REPEATER IN CPT:




## REAL LIFE EXAMPLE OF USE OF REPEATER:

Suppose if an organization has 2 buildings and they don't want to create a different network with different IP address scheme and the devices in bulding 1 wants to communicate with building 2. The signal may lose their strength when they cover some distance. So for that purpose repeater regenerates the signals and make the communication between distant devices possible over the same network.

## BRIDGE:

★ A bridge is a repeater plus the capability or reading MAC address.
★ Used for connecting two LANs running on the same protocols.
★ It acts as a repeater to extend a network.

★ Network traffic on a segment can be reduced by subdividing it into network communications.
★ Collisions can be reduced.
★ This networking device is used for dividing local area networks into several segments.
★ In the OSI model, it works under the data link layer ( Layer 2 device ).
★ These are expensive as we compare with repeaters.

## WORKING OF BRIDGE:

The working principle of a bridge is, it blocks or forwards the data depending on the destination MAC address.

## DIFFERNCE BETWEEN ROUTER AND BRIDGE:

☐ A router is a layer 3 device capable of reading IP addresses and provides internet connectivity and can be used to connect 2 LANs running on different protocols both having different Network IDs and subnet masks.

☐ A bridge is a layer 2 device capable of reading MAC address and extends the range of the network and blocks or forwards the data depending on the destination MAC address and connect LANs running on the same protocols.

## LIST OF VARIOUS NETWORK DEVICES:

★ REPEATER:

Regenerates the signals.

★ HUB:

Make LAN and broadcasts the message.

★ SWITCH:

Make LAN but is an intelligent device.

★ BRIDGE:

Repeater+ Functionality of reading MAC Address.

★ ROUTER:

Connect networks running on different protocols.

★ MULTILAYER SWITCH (LAYER 3 SWITCH):

Can act as a layer 2 switch and layer 3 router to some extent.

★ BROUTER:

Combination of router and bridge. Can connect LANs running on same or different protocols.

★ MODEM:

Modem means modular and demodulator. A modem is the device that allows your computers, smartphones, tablets, and other devices to connect to the internet. It does this by converting digital signals from these devices into analog signals that can be transmitted over telephone lines or cable networks. Modems also do the opposite by converting incoming analog signals into digital signals so that they can be processed by your device.

★ FIREWALL (SECURITY DEVICE):

It filters the incoming and outgoing network traffic based on IP Address, Port numbers etc to prevent the network from malicious or unwanted traffic.

NETWORK DEVICES QUESTIONS:

QUESTION 1:

Which of the following devices is a component of PC that connects PC to the networking device?

- ☐ Bridge
- ☐ Hub
- ☑ NIC card
- ☐ Gateway

QUESTION 2:

Which of the following devices that modulates digital signals into analog signals that can be transmitted over traditional telephone lines?

- ☐ Bridge
- ☐ Hub
- ☐ Switch
- ☑ Modem

QUESTION 3:

Which of the following devices take data sent from one network device and broadcasts the same to all the devices regardless of the intended recipient?

- ☐ Bridge
- ☑ Hub
- ☐ Switch
- ☐ Modem

QUESTION 4:

In a network where security is a primary concern, which of the devices can be recommended: Switch or Hub?

Answer:
Switch.

QUESTION 5:

You being a network administrator, your client wants you to suggest either switch or Hub to be used in a medium-sized network. Which device will you recommend to such network?

- [x] Switch
- [ ] Hub
- [ ] Either a or b
- [ ] Neither a nor b

QUESTION 6:

Which of the following network device that connects two LAN segments of same protocol?

- [ ] Hub
- [x] Bridge
- [ ] Repeater
- [ ] Switch

QUESTION 7:

Which of the following network devices that can connect any two or more different networks that has two or more different protocols?

- ☐ Bridge
- ☑ Router
- ☐ Repeater
- ☐ Switch

QUESTION 8:

Which of the following are OSI layer 2 network devices?

- ☐ Hub
- ☑ Bridge
- ☐ Repeater
- ☑ Switch

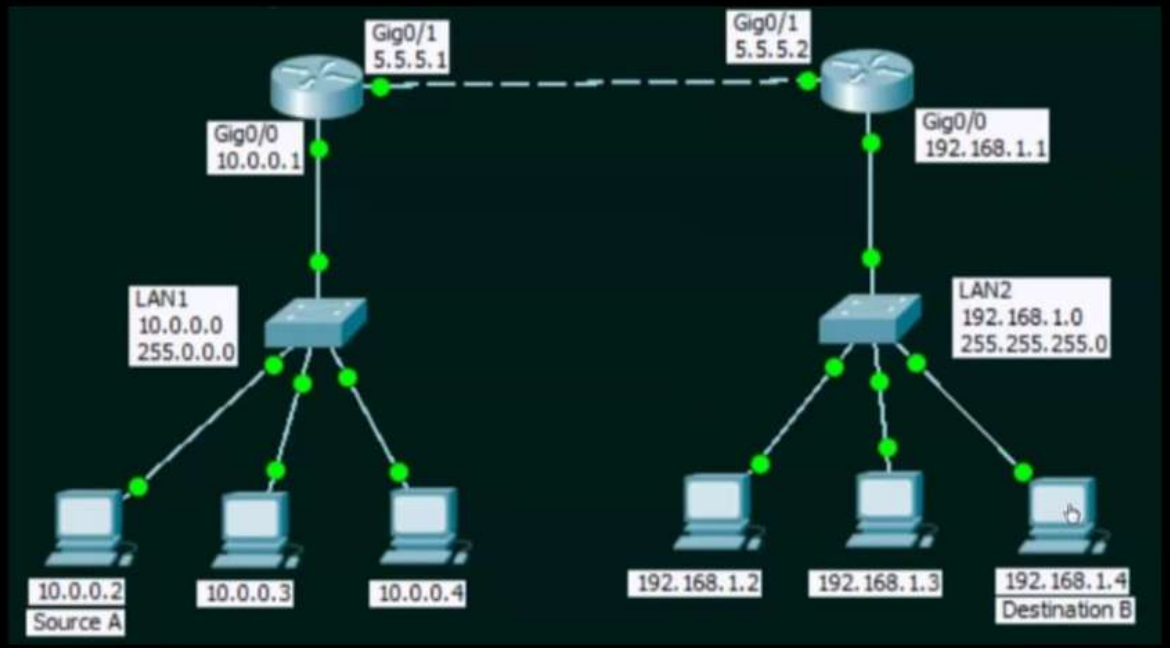
QUESTION 9:

Which of the following network devices has the functionality of a bridge and router?

- ☐ Hub
- ☐ Bridge
- ☐ Repeater
- ☑ Brouter

QUESTION 10:

In the given network scenario, how many different destination MAC addresses can be noted in the frame in its journey from the source computer 'A' to the destination computer 'B'?




Answer : 3.

FUNDAMENTAL PRINCIPLE OF PHYSICAL LAYER:

HAROON

★ One of the major functions of the physical layer is to move data in the form of electromagnetic signals across a transmission medium.
★ The data usable to a person or an application are not in a form that can be transmitted over a network. It is the data.
★ For example, an image must first be changed to a form that transmission media can accept.
★ To be transmitted, data must be transformed to electromagnetic signals.
★ The physical layer convert the data into signals.