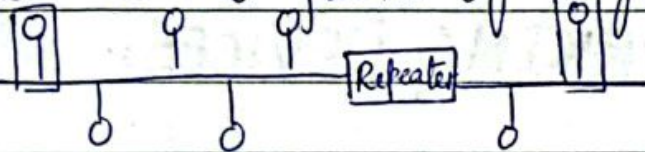


Devices on Physical Layer

01) REPEATER:-

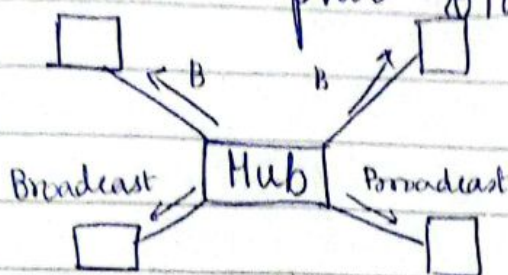
- repeats the transmissions
- transmissions in the form of signals.



- When transmission arrives at repeater, it retransmits it so that weak strength can be made strong again like it was at the start.
- transmission will be broadcast and it will be sent to all
- Repeater only forwards the request broadcast way, doesn't do filtering
- Devices in physical layer don't do forwarding.
- If all nodes start transmission all at once then there will be collisions.
- For 'n' number of nodes, n collisions are possible. Maximum
- Repeater's collision domain is n.

02 - HUB:-

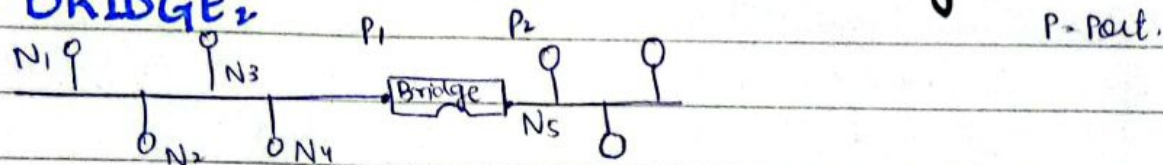
- Hub is central in the network.
- To the transmission ayege wo Hub kya pass ayege or hub phir broadcast kardy ga.



- Hub can't do filtering
- Hub doesn't have any storage mechanism or buffer to store transmissions that's why collision domain = n , n = number of nodes
- don't have any criteria to distinguish b/w MAC Addresses

Devices on Data Link / MAC Layer

01 - BRIDGE:-



- also has software characteristics
- b/c it recognizes MAC addresses, it doesn't do broadcast.
- Table is made in which entries are then with nodes and ports
- 2 methods of maintaining tables.

Static Method - Done by Network Administrator. Update table when setting/connecting nodes to ports.

MAC	Ports
N ₁	P ₁
⋮	
N ₄	P ₁
N ₅	P ₂

- Static update needs to be updated manually by network administrator.

Dynamic Method:-

- At start the table is empty

MAC	Port
N_1	P_1
N_6	P_2

$N_1 - N_6$

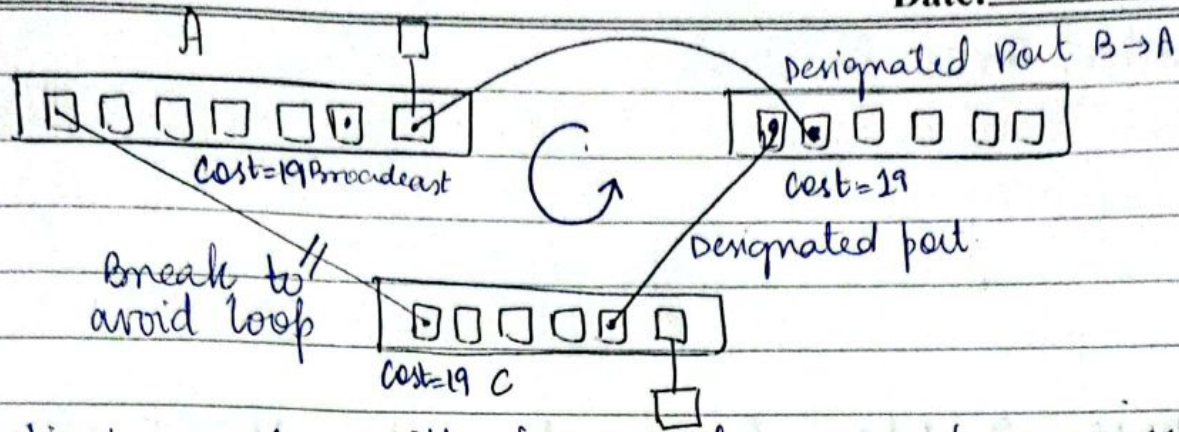
- Bridge doesn't know which port has N_6 so it will broadcast then N_6 will send acknowledgement.
- Learning mechanism in which it detects changes in network and updates the tables.
- Collision in case of small size of buffer.
- After buffering capacity is full, then collision will occur.

Difference b/w Switch & Bridges.

- Bridges are only able to connect 2 networks and switch has multi-ports (48)
- can turn off a port or update the MAC address at a port of switch.
- Tagging to recognize users.
- Forwarding, filtering & collision prevention.

Jab bhe B to C hogi
transmission to yeh
path use hoga.

Date: _____



- A first node will forward any transmission which arrives at A to C.
- Designate a port for switch-to-switch comm.
- Redundancy in network to ensure that comm doesn't stop.
- 1 connection means zero link.
- Second last node of A will send network broadcast to all of A including first.
- First of A will send to C then C will send to B.
- B will get same data from A & C, so B will not know who is the originator.
- Ping, if there is infinite loop then it will timeout.

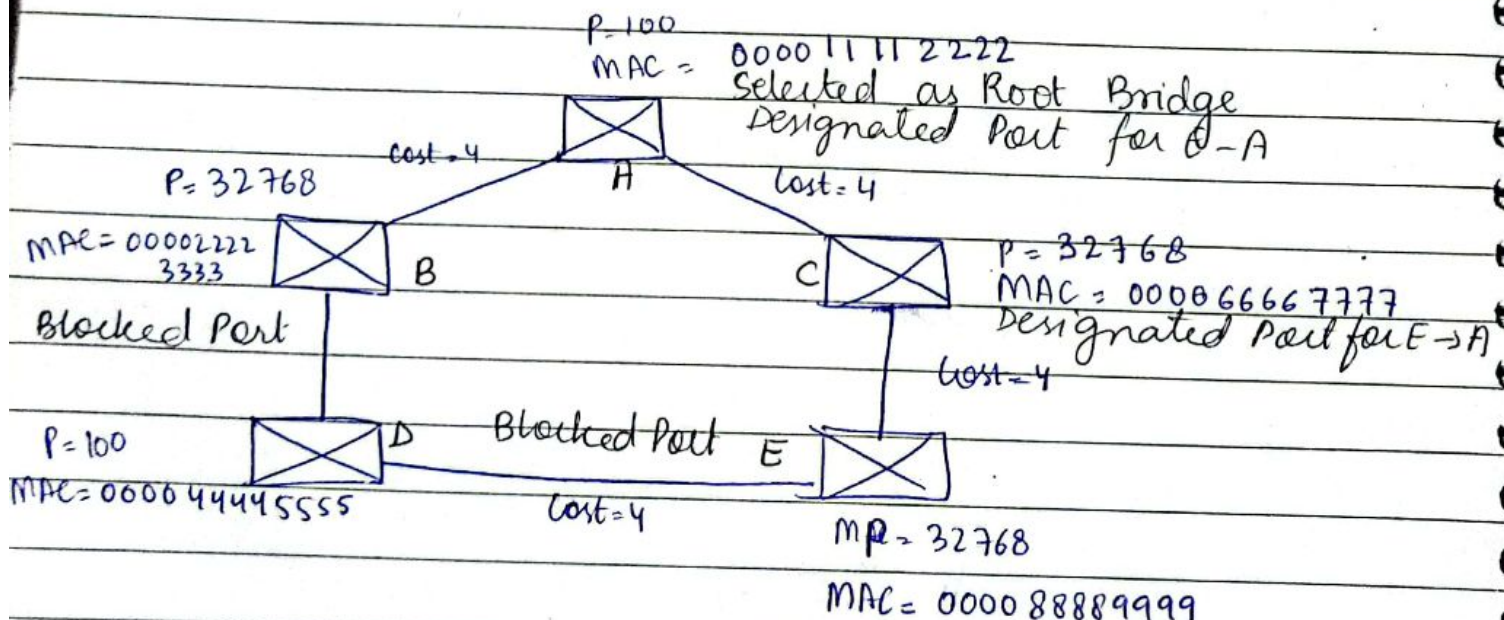
Spanning Tree Protocol:-

- Same nodes connected, then but no closed loop.
- Every branch of tree has an ending point.
- Also provides redundancy and loop avoidance.

a) BPDU - Bridge Protocol Data Unit:-

- Root Bridge will manage all transactions.
- focal point for all transmissions.
- Bridge ID for every bridge.
 - ↳ Priority | MAC Address
- Lowest ID bridge will be selected as root bridge.
- By default 52768

A	B
52768 00002222	52768 00001111...



Date: _____

- Multiple paths are available so we will decide on the basis of focal point which path to select.
- If diff paths have same cost then we will look at Bridge ID and select the lowest