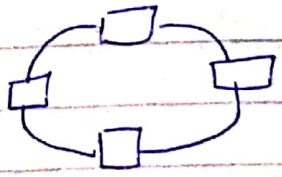
CCN

Q#1 Ring Topology

Topology is the organization of device connected in a network. A ring topology is a configuration in which nodes are connected in a circular path called Ring.

Packets of data can travel in one direction mostly called unidirectional ring network. Bi-directional is also possible



Repeaters are used to generate signals. Fault identification is easy due to alarm generated by a device that receives message - Failure of one nodes breaks the network.

Scalability

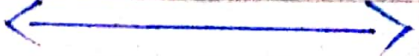
Adding new nodes are very easy in the network. Therefore you can add as

many devices as you need.
But there are scalability concerns and issues that occur due to addition of new nodes. These drawbacks are

* Bandwidth is shared by all the devices within the network. So that is limited for large number of devices

* More devices that are added to the network, the more communication delay the network experiences.

* We have to make sure that the network resources are not being stretched beyond their limit by large number of devices.



Question # 2

Physical addressing :-

Physical address is binary address or real address, that is identified in the

form of binary number or MAC address. At data link layer this physical address is present in frame of header.

Service-point addressing

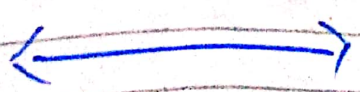
This is Port address. Transport layer header includes service point address.

Comparison

Service point addressing makes it possible to deliver the message to the correct process on the computer.

On the other hand, Physical address can identify Computer only so message cannot be delivered to exact process. Physical address is specified by Manufacturer Company.

While Service point addressing is determined by Operating System Kernal.



Question # 3

Attenuation distortion

It occurs during transmission when medium does not have flat frequency response and Analog signal is distorted. When an analog signal of constant amplitude suffers attenuation distortion, some frequencies of received signal arrive being greater in amplitude (louder), relative to other frequencies

Delay distortion

Delay distortion occurs when signal velocity and frequency vary. Simply, all signals are not received at the same time.

Difference

The difference between attenuation and distortion is that in attenuation signal losses some part of Energy- On the other hand Distortion is the change in the waveform of the signal

due to noise.
Overcoming effects of attenuation is easy. On the other hand distortion effects are harder to remove.

Question # 4

Optical fibers as transmission medium:-

Optical fibers are long, thin strands of glass similar to human hairs. Light signal are encoded with data. It is a "pipe" to carry signals over long distances at very high speed. There are many types of fiber optic cable.

Electromagnetic Isolation:-

Fiber optic cable is immune to electro-magnetic Interference because signals are transmitted as light instead of current.

Integrity of signals is not effected by electrical noise in the environment. fibes connections isolate data from dangerous increases in ground loop and electrical electro magnet interference.

Fibre optics cables transmit signals using pulses of light in glass thread. As a result they are immune to electromagnetic interference.

Question # 5

CSMA

Carrier sense Multiple access (CSMA) is a network protocal for carriers transmission that operates in Medium Access Control (MAC) layer. It defines how network devices respond when two devices attempt to use a data channel simultaneously and encounted a Data - Collision.

Collision Detection:-

CD technology detects the collission during transmission by sensing transmissions from other station.

* When a collision is detected station stops the collision resolution algorithm.
* The station continues current transmission with Jam signal to ensure that all stations detect collision.
* The station increments the retransmission counter.
* If Maximum number of retransmission is reached then the station aborts the transmission.
* Other Wise station waits for a backwoard period which is generally function of the number of collisions and restart main algorithm.
* It only detects collision but can't reduce the number of collision.