BRAC
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Assignment 01

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<u>Answer to the Question No. 1</u>

The differences among simplex, half-duplex and full-duplex modes are:

Simplex	Half-duplex	Full-duplex
1. In communication, if only one device can send and the other one can just receive, then it's called a Simplex mode.	1. In communication, if both devices can send and receive but one at a time, then it's called a Half-duplex mode.	1. In communication, if both devices can send and receive simultaneously, then it's called a Full-duplex mode.
2. The entire capacity is used by the sending device.	2. The entire capacity of the channel is used by whichever device is transmitting data at a time.	2. The capacity is divided between the two devices.
3. Example: TV, Keyboard, Mouse, Monitor.	3. Example: Walkie-talkie, Traditional CB (citizens band) radio.	3. Example: Discord, Telephone calls.

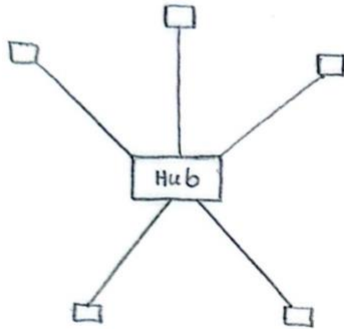<u>Answer to the Question No. 2</u>

The elements of a network are:

1. Message: Shared data or information. Can be text, image, audio, video, number.

2. Sender: The device that sends data. Example: Computer, Mobile phone, Video camera.

3. Receiver: The device that receives data. Example: Computer, Mobile phone, Television.

4. Transmission medium: The path by which the data flows from sender to receiver. Example: Cable wire, Optical fiber, Radio wave.

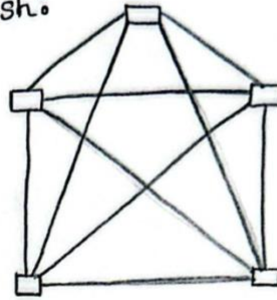5. Rules/Protocol: A set of rules that governs data flow for smoother communication.
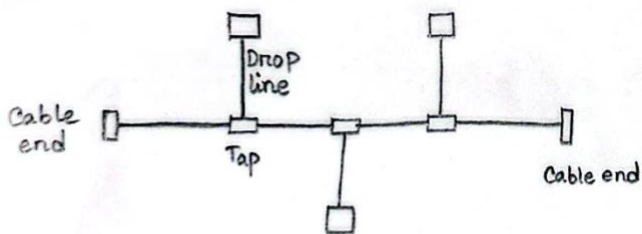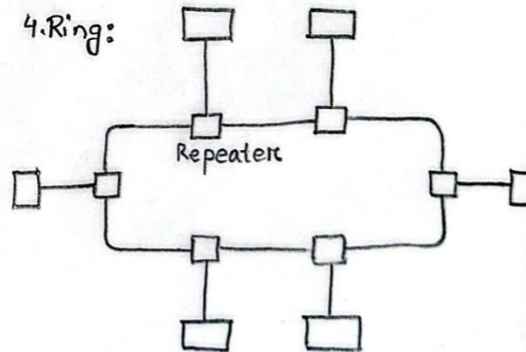
The four network topologies are drawn below:

1. Star:

2. Mesh:

3. Bus

Drop line

Cable end

Tap

Cable end

4. Ring:

Repeater

Answer to the Question No. 4

Topology	Structure	Pros	Cons	Example
Mesh	All the devices are interconnected.	Provides a tight security.	Costly and maintenance is critical.	CBI
Star	All the devices are connected through a central hub or switch.	Failure of one device doesn't affect others, easy to expand.	If the central hub is damaged the entire system goes down.	Wi-fi
Bus	Devices are connected with a central cable (Backbone).	Low costing, easy to set up.	If backbone fails the whole system goes down, transmission is slower compared to others.	Small office
Ring	The devices are connected in circular loop.	Relatively easy to install and reconfigure.	Doesn't provide that much of security.	Industrial network

A hybrid network architecture combining ring, bus and star topologies: