**Queston 1**

**Reliability**:

RJ45 connectors provide a stable and secure connection, ensuring consistent data transmission with minimal interference or signal loss.

**Speed:** These connectors support high-speed data transfer, making them ideal for modern Ethernet standards like Gigabit and 10 Gigabit Ethernet.

**Ease of Use:**

The design of RJ45 connectors, with their locking latch and straightforward crimping process, makes them user-friendly for both professional installers and DIY enthusiasts.

**Cost-Effective:**

RJ45 connectors and Ethernet cables are generally affordable, offering a cost-effective solution for building and maintaining wired networks.

Disadvantages

**Limited Mobility:** Unlike wireless connections, RJ45 connectors require physical cables, which can restrict the mobility of connected devices.

**Compatibility**:

RJ45 are not compatible with other connectors, leading to compatibility issues. Different cable categories also require different RJ45 connectors.

**Susceptibility to Damage**:

Ethernet cables and connectors can be susceptible to physical damage, such as bending or crushing, which can impair network performance.

**Question 2**

In simple terms, data is transmitted in a wireless medium using radio waves. Here’s how it works:

**Data Conversion:**

Your device converts the data (like a text message or a video) into a form that can be transmitted as radio waves.

**Transmission:**

These radio waves are then sent through the air by an antenna. The waves travel through the air to reach other devices.

**Reception:**

Another device with an antenna picks up these radio waves.

**Data Decoding**:

The receiving device converts the radio waves back into the original data, like the text message or video, so you can see or hear it.

This process happens very quickly and allows devices like phones, Wi-Fi routers, and Bluetooth devices to communicate without needing physical cables.

**Question 3**

1. **Bus Topology:**

All devices are connected to a single central cable, known as the bus.

1. **Star Topology:**

All devices are connected to a central hub or switch.

1. **Ring Topology:**

Devices are connected in a circular sequence, forming a ring.

1. **Mesh Topology:**

Every device is connected to every other device in the network.

1. **Tree Topology:**

A hierarchical structure combining star and bus topologies.