**Take Home Assignment 1**

Q1.

1). highly flexible

2). Computer networks makes file sharing easier among users.

3). Reliability

4). share the single internet connection

5). Cost Efficiency

1. This technology can be very flexible, as it allows users the ability to discover all important things, such as applications, without compromising their features. Plus, people would have access to all the data they want to get and start sharing.
2. Computer networks allows easier accessibility for people to share their files, which greatly helps them with saving more time and effort, since they could do file sharing more accordingly and effectively.
3. Reliability means the backup of information. The information gets undermined or unavailable on one PC due to some cause of equipment crash, and so on, another duplication of identical information is available for later use on another workstation, which prompts proper running and further managing without interruption.
4. It is cost-effective and will help to protect your systems if you secure the network properly.
5. We can use several software products available on the market by computer networking, which can only be stored or installed on our device or server and can then be used by different workstations.

Q2.

1.There is a lack independence

Computer network includes a process operated by computers, so users will rely more on computer work instead of trying to perform their tasks. Apart from this they will depend on the main file server, which means that the system will become useless, if it breaks down.

1. Virus and Malware

In computer network one system gets infected with virus, then there is a high possibility in other systems to get infected too. In computer networks viruses can spread easily, because various devices are interconnected. Best propagating area for viruses are multiple systems with shared resources. Also, if malware gets installed by mistake on the central server then all the connected systems to the server in the computer network will automatically get infected.

1. Security problems

One of the main issues in the computer networks. If computer is connected to a server, a hacker can get access to our system by various tools. There is danger of hacking.

There is a Online order system, and the probability that order details could get in wrong hands. Also, personal information may be accessed by anyone. Security procedures are needed to prevent this type of security issues.

Q3.

1. Geographical location

Local area network is private network that connect systems in small geographical area. Ex: small office, small organizations.

Wide area networks composed with multiple LANs. WANs spans over multiple geographic areas.

2. Data transfer rate

WAN has lower data transfer rate and LAN has a higher data transfer rate. The speed of LAN is higher than WAN.

3.Maintenenace and design

Design and maintenance of LAN is easier than WAN.

WAN design and maintenance are more complex.

Q4.

A. Circuit switching is a switching technique that set up an allocated path between sender and receiver. Once the connection is fixed then the allocated path will remain to exist up to the connection is abort. In network circuit switching operates looks like the telephone works. In circuit switching at a time fixed data can be transfer. Usage of circuit switching is public telephone network. Used for voice transmission.

B. Transfer the data to a network form of packets. Its connectionless network switching technique. In here data breaks into number of parts that are packed in especially assigned units called packets. These are routed from source to the destination by using routers and network switches. Finally, the data is reassembled at the destination. Each packet includes address Information. Every packet going independently to the destination.

C. The maximum amount of data transfer over internet connection at a time. Bandwidth is not a measure of network speed. it describes the maximum data transfer rate of a network connection. It measured how many data can be sent over the specific connection.

D. set of rules we called as protocols. Set of rules for the formatting and processing data. It enables computers to communicate with one another. Access method, speed of data transfer and types of cabling. Protocols determine how data is transmitted between different devices in same network.