Data Communications ASSIGNMENT

1.What are the different types of networks?

- LAN(Local Area Network)
- MAN(Metropolitan Area Network)
- WAN(Wide Area Network)

2. Explain the Shielded twisted pair (STP) and Unshielded twisted pair(UTP)

BASIS FOR COMPARISON	UTP	STP
Basic	UTP (Unshielded twisted pair) is a cable with wires that are twisted together.	STP (Shielded twisted pair) is a twisted pair cable enclosed in foil or mesh shield.
Noise and crosstalk generation	High comparatively.	Less susceptible to noise and crosstalk.
Grounding cable	Not required	Necessarily required
Ease of handling	Easily installed as cables are smaller, lighter, and flexible.	Installation of cables is difficult comparatively.

BASIS FOR COMPARISON	UTP	STP
Cost	Cheaper and does not require much maintenance.	Moderately expensive.
Data Rates	Slow comparatively.	Provides high data rates

3. What is difference between baseband and broadband transmission?

S.NO	BROADBAND TRANSMISSION	BASEBAND TRANSMISSION
1.	In broadband transmission, the type of signalling used is digital.	In baseband transmission, the type of signalling used is analog.
2.	Baseband Transmission is bidirectional in nature.	Baseband Transmission is unidirectional in nature.
3.	Signals can only travel over short distances.	Signals can be travelled over long distances without being attenuated.

4.	It works well with bus topology.	It is used with a bus as well as tree topology.
5.	In broadband transmission, Manchester and Differential Manchester encoding are used.	Only PSK encoding is used.

4. What is the difference between a hub, modem, router and a switch?

Hub

A hub is to sent out a message from one port to other ports. For example, if there are three computers of A, B, C, the message sent by a hub for computer A will also come to the other computers. But only computer A will respond and the response will also go out to every other port on the hub. Therefore, all the computers can receive the message and computers themselves need to decide whether to accept the message.

Switch

A switch is able to handle the data and knows the specific addresses to send the message. It can decide which computer is the message intended for and send the message directly to the right computer. The efficiency of switch has been greatly improved, thus providing a faster network speed.

Router

Router is actually a small computer that can be programmed to handle and route the network traffic. It usually connects at least two networks together, such as two LANs, two WANs or a LAN and its ISP network. Routers can calculate the best route for sending data and communicate with each other by protocols.

5. When you move the NIC cards from one PC to another PC, does the MAC address gets transferred as well?

Yes, that's because MAC addresses are hard-wired into the NIC circuitry, not the PC. This also means that a PC can have a different MAC address when another one replaced the NIC card

The Media Access Control address (MAC address) for any network adapter is hard coded into the card itself. Each manufacturer of network adapters has a group of characters assigned that refer specifically to that company. I believe that is the first 1/2 of the MAC address which is 12 hexadecimal characters long. But the MAC address is part and parcel of the network adapter, just as your internal organs are part of you. When you move to a new house, you take your liver with you. In the same way, when you move a NIC to a different computer, it takes its MAC address with it.

6. When troubleshooting computer network problems, what common hardware-related problems can occur?

- Open Settings.
- Click on Update & Security.
- Click on **Troubleshoot**.
- Select the **troubleshoot** that matches the **hardware** with the problem. ...
- Click the Run the troubleshooter button. ...
- Continue with the on-screen directions.

7. In a network that contains two servers and twenty workstations, where is the best place to install an Anti-virus program?

The best solution is to install anti-virus on all the computers in the network. This will protect each device from the other in case some malicious user tries to insert a virus into the servers or legitimate users.

8. Define Static IP and Dynamic IP? Discuss the difference between IPV4 and IPV6.

S.NO	STATIC IP ADDRESS	DYNAMIC IP ADDRESS
1.	It is provided by ISP(Internet Service Provider).	While it is provided by DHCP (Dynamic Host Configuration Protocol).
2.	Static ip address does not change any time, it means if a static ip address is provided then it can’t be changed or modified.	While dynamic ip address change any time.
3.	Static ip address is less secure.	While in dynamic ip address, there is low amount of risk than static ip address’s risk.
4.	Static ip address is difficult to designate.	While dynamic ip address is easy to designate.
5.	The device designed by static ip address can be trace.	But the device designed by dynamic ip address can’t be trace.
6.	Static ip address is more stable than dynamic ip address.	While dynamic ip address is less stable than static ip address.

S.NO	STATIC IP ADDRESS	DYNAMIC IP ADDRESS
7.	The cost to maintain the static ip address is higher than dynamic ip address.	While the maintaining cost of dynamic ip address is less than static ip address.
8.	It is used where computational data is less confidential.	While it is used where data is more confidential and needs more security.

9. Discuss TCP/IP model in detail.

TCP/IP Reference Model is a four-layered suite of communication protocols. It was developed by the DoD (Department of Defence) in the 1960s. It is named after the two main protocols that are used in the model, namely, TCP and IP. TCP stands for Transmission Control Protocol and IP stands for Internet Protocol.

The four layers in the TCP/IP protocol suite are −

- **Host-to- Network Layer −**It is the lowest layer that is concerned with the physical transmission of data. TCP/IP does not specifically define any protocol here but supports all the standard protocols.
- **Internet Layer −**It defines the protocols for logical transmission of data over the network. The main protocol in this layer is Internet Protocol (IP) and it is supported by the protocols ICMP, IGMP, RARP, and ARP.
- **Transport Layer −** It is responsible for error-free end-to-end delivery of data. The protocols defined here are Transmission Control Protocol (TCP) and User Datagram Protocol (UDP).
- **Application Layer −** This is the topmost layer and defines the interface of host programs with the transport layer services. This layer includes all high-level protocols like Telnet, DNS, HTTP, FTP, SMTP, etc.

10. What is a Web Browser (Browser)? Give some example of browsers.

The most used browser is Google **Chrome**, with a 66% global market share on all devices, followed by Safari with 17%. Other notable browsers include **Firefox** and Microsoft Edge.

11. What is a search engine? Give example.

A **search engine** is a web-based **tool** that enables users to locate information on the World Wide Web. Popular **examples** of **search engines** are Google, Yahoo!, and MSN **Search**.

12. What is the Internet & WWW? What are the uses of internet in our daily life?

The internet has become unavoidable in our daily life. Appropriate use of the internet makes our life easy, fast and simple. The internet helps us with facts and figures, information and knowledge for personal, social and economic development.

The Internet is a great platform for students to learn throughout their lifetime. They can use the internet to learn new things and even acquire degrees through online education programs. Teachers can also use the internet to teach students around the world.

13. What is an Internet Service Provider? Give some example of ISP in India.

An Internet Service Provider (ISP) is a company such as **AT&T**, Verizon, Comcast, or BrightHouse that provides Internet access to companies, families, and even mobile users. ISPs use **fiber**-optics, satellite, **copper** wire, and other forms to provide Internet access to its customers.

Reliance Jio, Airtel, Vodafone Idea, BSNL, ACT Fibernet, Hathway,

14. Discuss the difference between MAC address, IP address and Port address.

Sr. No.	Key	MAC Address	IP Address
1	Definition	MAC Address stands for Media Access Control Address.	IP Address stands for Internet Protocol Address.

Sr. No.	Key	MAC Address	IP Address
2	Usage	MAC Address ensure that physical address of the computer is unique.	IP Address is a logical address of the computer and is used to uniquely locate computer connected via a network.
3	Format	MAC Address is of six byte hexadecimal address.	IP Address is of 4 bytes or of 16 bytes.
4	Access Protocol	MAC Address can be retrieved using ARP protocol.	IP Address can be retrieved using RARP protocol.
5	Provider	Chip maker manufacturer provides the MAC Address.	Internet Service Provider, ISP provides the IP Address.

15. How do we view my Internet browser's history?

To view the web history in Google Chrome, click to open the menu ⋮ at the top-right of its window and select **History**, then click **History** a second time. Or press **Ctrl+H** on your keyboard.

This shows the web history as a list of pages, organised by time and date, in the current tab. You can search the web history using the **Search history** box at the top of the page. If you click the menu dots ⋮ to the right of any entry in the list, there's an option to show all pages in the web history for that site.

To clear the browsing history, click the **Clear browsing data** button to the left.

When the dialog box opens, choose how far back to clear using the drop-down list and click the **Clear browsing data** button. Select **Browsing History** to clear your visited websites and untick **Passwords** and **Cookies** to sign in quickly next time.