COMPUTER SYSTEMS SERVICING

Computer Network Concepts

Software

Self-Check 1.1

Direction: Identify what is being described in each statement. Write your answer on separate sheet of paper.
1. These are computers with a high configuration that can handle the resources in the network.
2. The interconnection of two or more computers or other devices that allows nodes and links to share resources and information.
3. These are the middleware between computers and networks. which binds them together.
4. Refers to any computer or digital device that use the network.
5. These are computers that request or get the information or service from the servers to access the network resources.
6. This controls the data flow between the computer and network and can send and receive data.
7. These are the mode through which data is transferred from one device to another.
8. This allows the computer to connect to the wireless network.
9. – 10 Give two things that computer network can do.

Activity Sheet 1.1

Direction: Draw a simple schematic diagram of a computer connected to a network and label the parts. Materials:
Short Bond Paper   Ruler   Pencil   Coloring Materials   Performance Criteria

Criteria	Percentage	Score
1. Originality of network layout	40%	
2. Neatness of the drawing	10%	
3. Adherence to the proper network setup	40%	
4. Quality of Work	10%	
Performance Rating		

Types of Computer Network (Geographic)

Pre-Test 1.2

Direction: Match the type of Network in Column B with its description in Column A. Write only the letter of the correct answer on separate sheet of paper.

	A		B
1.	Consisting of a computer network across an entire city, college campus, or a small region	a.	PAN
		b.	LAN
2.	A computer network formed around a person	c.	CAN
3.	A group of computer and peripheral devices which are connected in a limited area such as school 4.	d.	MAN
		e.	WAN

A network that covers a large geographical area such as states
5. A connection of various Local Area Networks in a limited geographical area

Self_Check1.2

Direction: Identify which type of network are the following description. Write **PAN, CAN, LAN, MAN** or **WAN** on your answer sheet.
1. It is a network which consists of less than 5000 devices across several buildings.
2. It mostly covers towns and cities in a maximum 50 km range and mostly used medium is optical fibers, cables.
3. It can be used in a college within a city.
4. It is typically set up to share resources within a personal computer such as wireless keyboard and mouse, wireless printers, scanners, and more.
5. A group of computer and peripheral devices which are connected in a limited area such as school, laboratory, home, and office building.
6. Used in interconnecting networks in Military bases, dedicated laboratories, educational campuses
7. A network that covers a large geographical area such as states, countries, or the entire world.
8. Considered as the slowest data communication because of the largest distances.
9. Relatively secure and safe but it may establish a bad connection to other networks at the same radio bands and has distance limits.
10.Mostly installed in private IP address and do not involve heavy routing.

Task_Sheet:1.2

Direction: Complete the chart below about the different types of network.

Direction: Draw a layout plan of a computer café connected to a network and incorporate the following requirements:
   - one computer server   - one DSL modem   - hub

- 20 client computers	- UTP cables
Materials:	
- Short Bond Paper	- Ruler
- Pencil	- Coloring Materials

Performance Criteria

Criteria	Percentage	Score
1. Originality of network layout	40%	
2. Neatness of the drawing	40%	
3. Proper use of equipment and materials is observed.	10%	
4. Observance of Safety Precautions.	10%	
Performance Rating		

Self_Check:1.3

Direction: Write **TRUE** if the statement is correct and **False** if it is not. Write the answer on separate sheet of paper.
1. An intranet is a private network that is contained within an enterprise.
2. The terms World Wide Web (WWW) and Internet are the same.
3. Each network in an Internetwork has its own Network Address, which is the same from other networks in the Internetwork.
4. Internetwork allows different users at different geographical locations of an organization to share data, resources and to communicate.
5. Extranet provides controlled access to authorized people outside of the company.
6. World Wide Web (WWW) is a collection of interconnected documents and other resources, linked together by hyperlinks and URLs.
7. Intranet is a public Internetwork, which is maintained by a private organization.
8. Typical intranet for a business organization consists of many interlinked local area networks and use any Wide Area Network (WAN) technology for network connectivity.
9. Most of the interconnected documents in World Wide Web (WWW) are created using a markup programming language called HTML.
10. Largest Internetwork in the world is Intranet.

Pre-Test 1.4

Direction: Identify what is being describes in each statement. Choose the answer on the box below and write the answer on separate sheet of paper.

Modem	Router	Fax Machine
Network Interface Card	Hub	

1. Connects multiple computers or other routers together and transmits data to its correct destination on the network.
2. Electronic devices that convert digital data signals into modulated analog signals suitable for transmission over analog telecommunications circuits.
3. A device that sends and receives printed pages or images over telephone lines by digitizing the material with an internal optical scanner and transmitting the information as electronic signals.
4. Enables a computer or device that does not have built-in networking capability to access a network.
5. One common point for connecting all networks devices.

Internet
It is a worldwide collection of networks that links millions of businesses, government agencies, educational institutions, and individuals. It is widely used research tool, providing society with access to global information and instant communications.

Types of Internet Connections
To connect to the Internet, you connect your computer to a computer that is on the Internet, usually one run by an ISP.
The type of Internet service you choose will largely depend on which Internet service providers (ISPs) serve your area, along with the types of service they offer.

1. **Dial-up**: The dial-up line uses PSTN (Public Switched Telephone Network). PSTN may be of the telephone line, fiber optic, Microwave transmission or communications satellite. Dial-up internet connections are connected through a telephone line.
2. **DSL (Digital Subscriber Line)** In a DSL internet connection, both voice and internet data can flow over the same telephone line at the same time. It has a DSL modem which filters the voice and data. DSL represents a high-speed connection, much fast than the ancient dial-up connection, but it is not as fast as a cable connection
3. **Cable**: Cable service connects to the Internet via cable TV, although you do not necessarily need to have cable TV in order to get it. It uses a broadband connection and can be faster than both dial-up and DSL service; however, it is only available where cable TV is available.
4. **Satellite**: Satellite internet is the internet which uses the path of the outer space. As a result, it can be used almost anywhere in the world, but the connection may be affected by weather patterns. 5. **Fiber**: A fiber internet connection provides the fastest internet speed today. It can provide download and upload speed of up to 1000 Mbps. It uses light to transfer the data through the optical fiber cable.
6. **Cellular:** Radio waves are used for transfer signal to and from the mobile phone. In cellular technology geographic area is divided into hexagonal cells, with it each cell having its tower and frequency slot. Smartphone transmits a signal in the form of electromagnetic waves.
7. **Wireless:** The wireless network is built with the help of several hardware components like wireless excess point or router and user devices like mobile phone, tablets, laptop, etc. which are equipped with the wifi adaptor.
8. **Broadband:** Broadband is also known as a wideband because during communication it uses and provides a wide band of frequencies

9. Hotspots: A hotspot is a technology which is relatively similar to the wifi. Hotspot provides internet access to users via WLAN in the specific area to their location.


Self – Check 1.4

Direction: Choose the letter of the correct answer. Write the answer on separate sheet of paper.

1. Any type of hardware capable of transmitting data, instructions, and information between a sending device and a receiving device.

A. Communications Device
C. Connectivity Device
B. Internet Connection
D. Internet Connectivity

2. A device that sends and receives printed pages or images over telephone lines by digitizing the material with an internal optical scanner and transmitting the information as electronic signals.

A. Telephone
C. Mobile Phone
B. Fax Machine
D. Laptop

3. Uses Public Switched Telephone Network.

A. Cable   B. Fiber   C. DSL   D. Dial-Up

4. One common point for connecting all networks devices.

A. Hub   B. Modem   C. Router   D. Network Card

5. Provides internet access to users via WLAN in the specific area to their location.

A. Bluetooth   B. DSL   C. Dial-Up   D. Hotspots

6. A communications device that connects multiple computers or other routers together and transmits data to its correct destination on the network.

A. Hub   B. Modem   C. Router   D. Network Card

7. A electronic devices that convert digital data signals into modulated analog signals suitable for transmission over analog telecommunications circuits.

A. Hub   B. Modem   C. Router   D. Network Card

8. A communications device that enables a computer or device that does not have built-in networking capability to access a network.

A. Hub   B. Modem   C. Router   D. Network Card

9. Uses short range radio waves about 10 meters.

A. Bluetooth   B. DSL   C. Dial-Up   D. Hotspots

10. Both voice and internet data can flow over the same telephone line at the same time.

A. Bluetooth   B. DSL   C. Dial-Up   D. Hotspots

Direction: Answer the crossword puzzle below. Write the answer on separate sheet of paper.
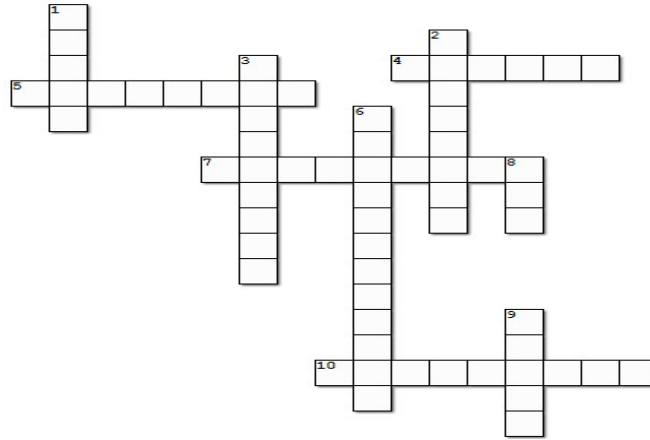
Across

4. Connects multiple computers or other routers together and transmits data to its correct destination on the network
5. Radio waves are used for transfer signal to and from the mobile phone
7. uses short range radio waves about 10 meters
10. It uses and provides a wide band of frequencies

Down

1. Electronic devices that convert digital data signals into modulated analog signals suitable for transmission over analog
2. A technology which is relatively similar to the wifi
3. The internet which uses the path of the outer space
6. Enables a computer or device that does not have built-in networking capability to access a network
8. One common point for connecting all networks devices
9. Connection provides the fastest internet speed today

Pre_Test:1.5

Direction: Choose the letter of the correct answer. Write the answer on separate sheet of paper.
1. Consists of dozens or hundreds of thin strands of glass or plastic that use light to transmit signals.
   a. Coaxial Cable   b. Twisted Pair Cable   c. Fiber Optics
2. Consists of a single copper wire surrounded by at least three layers
   a. Coaxial Cable   b. Twisted Pair Cable   c. Fiber Optics
3. Consists of one or more twisted-pair wires bundled together.
   a. Coaxial Cable   b. Twisted Pair Cable   c. Fiber Optics
2. A sightline transmission which means the transmitting & receiving antennas need to align correctly with each other.
      a. Microwaves   b. Radiowaves   c. Infrared Waves
3. Used in extremely small distance communication
      a. Microwaves   b. Radiowaves   c. Infrared Waves

Self – Check 1.5

Direction: Match the transmission media under Column B with their functions/description under Column A. Write only the letter of the correct answer on separate sheet of paper.

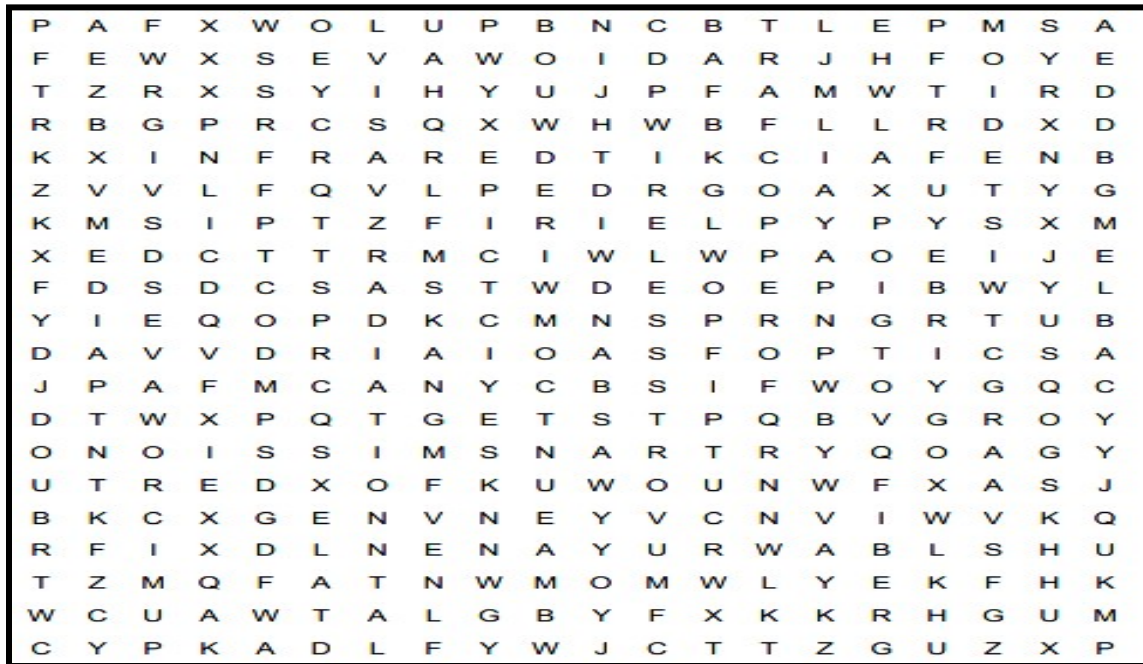**A**   **B**

1. Consists of a single copper wire surrounded by at least A. Twisted Pair three layers   B . Microwaves

2. A sightline transmission which means the transmitting & C. Infrared waves receiving antennas need to align correctly with each D. Fiber Optics other.   E. Radiowaves

3. Consists of dozens or hundreds of thin strands of glass or F. Wired Media plastic that use light to transmit signals. G. Wireless Media

4. The signals can be transmitted directly & restricted in a H. Coaxial thin path through physical links.

5. These waves are very easy to produce as well as penetrate through buildings.
6. It is one of the most used transmission media for network cabling and telephone systems.   7. It does not require any physical medium to transmit electromagnetic signals.

8. Used in extremely small distance communication as they cannot go through obstacles.

9. Used in Cable television (CATV) network wiring

10. It has faster data transmission, smaller size and better security for signals during transmission because they are less susceptible to noise.

Activity_Sheet:1.5

Direction: Search the word that is related in transmission media.

P	A	F	X	W	O	L	U	P	B	N	C	B	T	L	E	P	M	S	A
F	E	W	X	S	E	V	A	W	O	I	D	A	R	J	H	F	O	Y	E
T	Z	R	X	S	Y	I	H	Y	U	J	P	F	A	M	W	T	I	R	D
R	B	G	P	R	C	S	Q	X	W	H	W	B	F	L	L	R	D	X	D
K	X	I	N	F	R	A	R	E	D	T	I	K	C	I	A	F	E	N	B
Z	V	V	L	F	Q	V	L	P	E	D	R	G	O	A	X	U	T	Y	G
K	M	S	I	P	T	Z	F	I	R	I	E	L	P	Y	P	Y	S	X	M
X	E	D	C	T	T	R	M	C	I	W	L	W	P	A	O	E	I	J	E
F	D	S	D	C	S	A	S	T	W	D	E	O	E	P	I	B	W	Y	L
Y	I	E	Q	O	P	D	K	C	M	N	S	P	R	N	G	R	T	U	B
D	A	V	V	D	R	I	A	I	O	A	S	F	O	P	T	I	C	S	A
J	P	A	F	M	C	A	N	Y	C	B	S	I	F	W	O	Y	G	Q	C
D	T	W	X	P	Q	T	G	E	T	S	T	P	Q	B	V	G	R	O	Y
O	N	O	I	S	S	I	M	S	N	A	R	T	R	Y	Q	O	A	G	Y
U	T	R	E	D	X	O	F	K	U	W	O	U	N	W	F	X	A	S	J
B	K	C	X	G	E	N	V	N	E	Y	V	C	N	V	I	W	V	K	Q
R	F	I	X	D	L	N	E	N	A	Y	U	R	W	A	B	L	S	H	U
T	Z	M	Q	F	A	T	N	W	M	O	M	W	L	Y	E	K	F	H	K
W	C	U	A	W	T	A	L	G	B	Y	F	X	K	K	R	H	G	U	M
C	Y	P	K	A	D	L	F	Y	W	J	C	T	T	Z	G	U	Z	X	P

WIRED   WIRELESS   INFRARED
RADIOWAVES   MICROWAVES   FIBER OPTICS

COAXIAL   MEDIA   CABLE
TWISTED PAIR   TRANSMISSION   RADIATION
BANDWIDTH   ATTENUATION   COPPER

Self_Check1.7

Direction: Write TRUE if the statement is correct and FALSE if it is not correct. Use a separate sheet of paper.
1. Patch panels are usually specified by the number of ports they have.
2. Patch panels are used to organize the network cables.
3. Having a patch panel allows you to use longer cables, which cost more than shorter ones.
4. A punch down tool is also called a krone tool.
5. Patch panels aren't considered "smart" devices in that they don't perform any function other than facilitating the passing of data.
6. Patch panels are an important piece of equipment in the data center.
7. Patch panels are designed for Cat 7, Cat 8, Cat 9, and Cat 10 cables.
8. Each socket on the front of the patch panel is usually labeled with the identity of the device connected on its punch down connector on the back of the panel.
9. If you ever need to run a test cable, it is much easier than if each device had a cable run to its final destination.
10.   After installing a patch panel, you can easily add new devices, but you have to run new cables end-to-end.

Pre-Test 1.8

Direction: Choose the letter of the correct answer. Write the answer on separate sheet of paper.

1. Maintains a history of device drivers that are installed on your computer
a. System Restore   b. Data Back up   c. Disk Clean Up
2. A maintenance utility designed to free up disk space on a computer's hard drive.
a. System Restore   b. Data Back up   c. Disk Clean Up
3. Creating a redundant copy of a data so you have a spare copy.
a. System Restore   b. Data Back up   c. Disk Clean Up
4. An efficient and reliable tool to help you determine and identify the possible network issues that prevent you from using your computer to the fullest
a. Malware   b. Network Diagnostic Tool   c. System Tool
5. Any kind of malicious codes, objects or content that infiltrates your computer, resulting in damage and causing your system to act in an undesirable manner
a. Malware   b. Network Diagnostic Tool   c. System Tool

Self_Check1.8

Direction: Write TRUE if the statement is correct and FALSE if it is not. Write the answer on separate sheet of paper.
1. System Information maintains a history of device drivers that are installed on your computer.
2. There are free available network diagnostic tools that can be download online.
3. Network Diagnostic Tool is an efficient and reliable tool to help you determine and identify the possible network issues that prevent you from using your computer to the fullest.
4. System Information also provides access to tools you can use for troubleshooting your computer.
    5. The Network Diagnostic Tool is a utility that analyzes your system and performs a wide range of tests to determine the cause of your connectivity issues.
6. Regular maintenance is essential to keep a network running well.
7. If your computer worked fine yesterday, but is not working properly today, try restoring today's configuration files.
8. If a device does not work correctly, and its history indicates a recent upgrade to a new driver, replace the original driver with the existing driver, and test to see if doing so resolves the issue.
9. Network Diagnostic Tool cannot run an Internet connection validation test.
10.   Network Diagnostic Tool will assist you during the troubleshooting operation, enabling you to save significant amounts of time by sparing you from finding the causes of your network problems by yourself.

Self_Check 2.1

Direction: Identify what type of topology is being described in each statement. Write STAR, MESH, HYBRID, TREE, BUS, or RING on separate sheet of paper.
1.   Only one station on the network is permitted to send data at a time making it efficient at transmitting data without errors.
2.   An intricate and elaborate structure of point-to-point connections where the nodes are interconnected.
3.   Orients all the devices on a network along a single cable running in a single direction from one end of the network to the other.
4.   Combine two or more different topology structures.
5.   Reliable and stable, and the complex degree of interconnectivity between nodes makes the network resistant to failure.
6.   It is laid out so every node in the network is directly connected to one central hub via coaxial, twisted-pair, or fiber-optic cable.
7.   If the central hub goes down, the rest of the network can't function.
8.   Gets its name from how the central node functions as a sort of trunk for the network, with nodes extending outward in a branch-like fashion.
9.   The data can travel through the ring network in either one direction or both directions, with each device having exactly two neighbors.
10. The layout is simple, allowing all devices to be connected via a single coaxial or RJ45 cable.

Pre-Test 2.3

Direction: Choose the letter of the correct answer and write the answer on separate sheet of paper.
1. It delivers functions similar to those included in TCP/IP.
a. HTTP   b. FTP   c. IPX/SPX   d. POP3
2. Provides services for file transfer and manipulation
a. HTTP   b. FTP   c. IPX/SPX   d. POP3
3. Protocol governs how files such as text, graphics, sound, and video are exchanged on the World Wide Web
a. HTTP   b. FTP   c. IPX/SPX   d. POP3
4. Represents a set of public standards that specify how packets of information are exchanged between computers over one or more networks.
a. TCP/IP   b. SSH   c. IMAP   d. Telnet
5. It is an application used to connect to a remote computer that lacks security features.
a. TCP/IP   b. SSH   c. IMAP   d. Telnet

Self-Check 2.3

Direction: Give the meaning of the following acronym:
1. SSH   6. IEEE
2. HTTP   7. SMTP
3. IPX   8. FTP
4. TCP   9. IP
5. ISO   10. POP3

Pre-Test 2.5

Direction: Which of the following statements are the functions of Network Interface Card? Put a check and use separate sheet of paper.
1. Prepare data from the computer for the network cable.
2. Stores the information your computer is actively using so that it can be accessed quickly.
3. Control the flow of data between the computer and the cabling system
4. Send the data to another computer
5. Control the flow of current to other components.

Self-Check 2.5

Direction: Fill in the blanks with correct words to complete the procedures in configuring Network Interface Card Setting.
1. Go to _____ and click on _____.
2. Proceed to click   _____   in Control Panel window.
3. Network and Sharing Center window will appear, then click _____.
4. Right-click the connection that you want to configure and then choose _____ from the contextual menu that appears.
5. To configure the network adapter card settings, click _____.
6. To configure TCP/IP settings, click _____ ; click _____ to display the TCP/IP Properties dialog box; adjust the_____; and then click _____.

Pre-Test 2.6

Direction: Identify what is being describe in each statement. Choose the answer on the words inside the box and write the answer on separate sheet of paper.

Ping	IPConfig	Command Prompt	SI Model	DHCP

1. Software utility used to dynamically assign IP addresses to network devices.
2. Command Prompt command used to test the ability of the source computer to reach a specified destination computer.
3. Command used to find out the IP address of a certain network you are connected to.
4. A command line interpreter application available in most Windows operating systems.
5. Describes how computer services and procedures are standardized.