WESTBERRY High School

PART TEST- II
2024-25 (Key)

Name of the student: **Date: 19.11.2024**

Grade: XII **Time: 90 min**

Subject: IP **Marks: 35**

Weightage : Networks (28 Marks), Societal Impacts (7 Marks)

General Instructions:

This question paper is divided into 5 sections – **A, B, C, D and E**

•**Section A**, consists of 11 questions **(1 – 11).** Each question carries 1 mark.

•**Section B**, consists of 3 questions (**12 – 14**). Each question carries 2 marks.

•**Section C**, consists of 3 questions (**15 – 17**). Each question carries 3 marks.

•**Section D**, consists of 1 question (**18).** It carries 4 marks.

•**Section E**, consists of 1 question (**19).** It carries 5 marks.

•Internal choices have been given for question numbers – 13, 16, 19.

SECTION-A 9X1=9 Marks

1. Which of the following best defines 'etiquettes'. (Select the most appropriate answer.).

A) A set of rules governing the proper use of computers and the internet
B) The set of formal rules for internet security
C) The guidelines for polite and respectful behaviour in digital communication
D) A list of hardware and software components required for setting up a computer network
Ans) C

2. What is a violation of Intellectual Property Rights (IPR) from the following?

A) Using a music file after purchasing it from an authorized online store
B) Sharing a copyrighted eBook with friends without the author's permission
C) Downloading a free software from an official website
D) Modifying an open-source software as per its license agreement
Answer:
B) Sharing a copyrighted eBook with friends without the author's permission
Ans) B

3. E-waste refers to: (Select the most appropriate answer.)

A) The process of recycling electrical components to create new products
B) Discarded electrical or electronic devices that are no longer in use
C) Electronic waste used in the production of renewable energy
D) The safe disposal of batteries and non-recyclable electronic materials
Answer:B

4. What is the term used for smaller chunks of data in computer networking?

A) Bytes
B) Packets
C) Frames
D) Segments
Answer: B

5. What is the full form of MODEM?

A) Monitor and Demonitor
B) Modulator and Demodulator
C) Modelling and Demodelling
D) Modular and Demodular
Answer: B

6. A _____is a device that connects the organisation's network with the outside world of the Internet.

i. Hub **ii.** Modem
iii. Gateway i**v.** Repeater

7. Out of the following, which is not scripting language/used to apply scripting on a web page.
(a) JavaScript (b) PHP (c) Python **(d) MySQL**
8. Out of the following, which is not a browser.
(a) Internet Explorer **(b) Unix** (c) Mozilla Firefox (d) Google Chrome
9. **What does "chatting" or "instant messaging (IM)" over the internet refer to? (Select the most appropriate answer.)**

A) Communicating via email with attachments
B) Sending voice messages through social media
C) Communicating with people at different geographic locations in real time through text messages
D) Sharing images and videos with friends online
Answer:
C) Communicating with people at different geographic locations in real time through text messages

10. **What is the full form of HTTP?**
A) HyperText Transfer Protocol
B) HyperText Transmission Protocol
C) HighText Transfer Protocol
D) HighText Transmission Protocol
Answer:
A) HyperText Transfer Protocol

. ASSERTION AND REASONING based questions. Mark the correct choice as
i. Both A and R are true and R is the correct explanation for A
ii. Both A and R are true and R is not the correct explanation for A
iii. A is True but R is False
iv. A is false but R is True

11. Assertion (A): - Internet cookies are text files that contain small pieces of data, like a username, password and user's preferences while surfing the internet.
Reasoning (R):- To make browsing the Internet faster & easier, its required to store certain information on the server's computer.
A) iii

SECTION-B **3X2=6 Marks**

12. What is a computer network? Name the four types of computer networks.

A) **<u>Computer Network:</u> A computer network is an interconnection among two or more computers or computing devices.**

<u>Types of Computer Networks:</u>

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

• PAN (Personal Area Network)

13. Expand URL. Give an example of it. Also name the two types of URL addresses.

A. Uniform Resource Locator.

Ex: https://www.westberry.in/

Types of URL addresses: Absolute Address, Relative Address

(OR)

What is Internet and how does it differ from World Wide Web (WWW)?

A) The Internet is a vast network of interconnected computer networks facilitating global communication and data exchange. The World Wide Web (WWW), on the other hand, is a system of interlinked hypertext documents accessed via the Internet.

14. Briefly explain the basic concepts of a web server and web hosting.

A) Web server: A web server is used to store and deliver the contents of a website to clients such as a browser that request it. A web server can be software or hardware.

Web hosting: It is a service that allows to put a website or a web page onto the Internet, and make it a part of the World Wide Web.

SECTION-C **3X3=9 Marks**

15. Explain about the following:

(a) Modem **(b) Router**

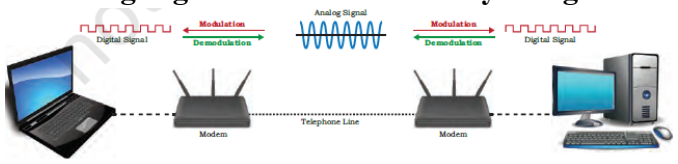
A) <u>Modem :</u>

Modem stands for '**MOdulator DEMolulator**'. It refers to a device used for **conversion between analog signals and digital bits**.

We know computers store and process data in terms of 0s and 1s. However, to transmit data from a sender to a receiver, or while browsing the internet, digital data are converted to an analog signal and the medium (be it free-space or a physical media) carries the signal to the receiver.

There are modems connected to both the source and destination nodes. The modem at the **sender's end** acts as a **modulator that converts the digital data into analog signals.** The modem at the **receiver's end** acts as a **demodulator that converts the analog signals into digital data** for the destination node to understand.

Following Figure shows connectivity using a modem:



Use of Modem

<u>Router :</u>

A router is a network device  **that can receive the data, analyse it and transmit it to other networks.**

A router connects a local area network to the internet.

Compared to a hub or a switch, a router has advanced capabilities as it can analyse the data being carried over a network, decide or alter how it is packaged, and send it to another network of a different type.

For example, data has been divided into packets of a certain size. Suppose, these packets are to be carried over a different type of network which cannot handle bigger packets, in such a case, the data is to be repackaged as smaller packets and then sent over the network by a router.

A router can be wired or wireless. A wireless router can provide Wi-Fi access to smartphones and other devices. Usually, such routers also contain some ports to provide wired Internet access.

These days, home Wi-Fi routers perform the dual task of a router and a modem or switch. These routers connect to incoming broadband lines, from **ISP** (Internet Service Provider), and convert them to digital data for computing devices to process.

16. What is a topology? Explain about the following topologies.

a) Star Topology b) Bus Topology

A) <u>Networking Topologies:</u> The arrangement of computers and other peripherals in a network is called its topology.

<u>Star Topology:</u>



In star topology, each communicating device is connected to a central node, which is a networking device like a hub or a switch.

Star topology is considered very effective, efficient and fast as each device is directly connected with the central device.

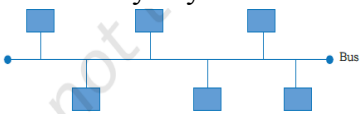
Although disturbance in one device will not affect the rest of the network, any failure in the central networking device may lead to the failure of complete network.

The central node can be either a broadcasting device means data will be transmitted to all the nodes in the network, or a unicast device means the node can identify the destination and forward data to that node only.

<u>Bus Topology:</u>

In bus topology, each communicating device connects to a transmission medium, known as bus.

Data sent from a node are passed on to the bus and hence are transmitted to the length of the bus in both directions. That means data can be received by any of the nodes connected to the bus.



In this topology, a single backbone wire called bus is shared among the nodes, which makes it cheaper and easy to maintain. Both ring and bus topologies are considered to be less secure and less reliable.

(OR)

Define the following : (a) Website (b) Webpage (c) Homepage

A) A **website** (usually referred to as a site in short) **is a collection of web pages related through hyperlinks, and saved on a web server.**

A web page (also referred to as a page) **is a document on the WWW that is viewed in a web browser.**

Homepage : The first page of the website is called a **home page.**

17. Differentiation between Plug-ins and Add-ons. Also give examples of each.

Plug-ins	Add-Ons
A **plug-in** is a complete program or may be a third-party software.	**Add-on** is not a complete program and so is used to add only a particular functionality to the browser.
A plug-in is a software that is installed on the host computer and can be used by the browser for multiple functionalities and can even be used by other applications as well.	An add-on is also referred to as extension in some browsers.
Ex: Flash, Java	**Ex:** Ad blockers, Adding the functionality of a sound and graphics card is an example of an add-on.

SECTION-D 1X4=4 Marks

18. Ram Rishith received an email from a company, named Moneygift Pvt. Ltd., claiming that Ram Rishith has won ₹ 15 lakhs in a survey done online. In order to claim the prize money, he was required to answer few security questions such as his Name, Account number, PAN card details, Phone number and OTP for verification purposes. For this, he had to click on the link provided in the email.

Answer the following questions:

(i) Should Ram Rishith give the required details to the company?

(ii) What is the activity depicted above?

(iii) What should he do with this email?

(iv) Consider Ram Rishith clicked on the link provided in the email. When he clicked on the link, his computer's files were suddenly encrypted. A message appeared on his screen saying that his files could be unlocked if he paid a certain amount of money. **What type of cybercrime is Ram Rishith a victim of?**

Answers:

i) No

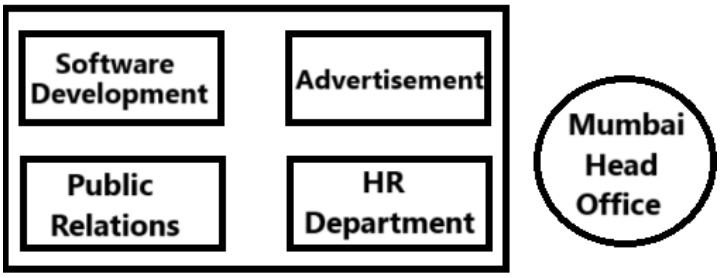
ii) Cyber Crime

iii) Delete **OR** Ignore It **OR** Block **OR** Report

iv) Ransomware

SECTION-E **1X5=5 Marks**

19. BG Software Solutions's head office is located in Mumbai. It is looking to establish its new branch in Hyderabad with 4 blocks. Block names are Software Development, Advertisement, Public Relations and HR Department. As a network engineer, you have to propose solutions for various queries.



The shortest distances between the departments/offices are as follows:

Software Development to Advertisement	60 M
Software Development to Public Relations	115 M
Software Development to HR Department	110 M
Advertisement to Public Relations	130 M
Advertisement to HR Department	50 M
Public Relations to HR Department	70 M
Hyderabad Branch to Mumbai Head Office	1200 KM

The number of computers in each department/office is as follows:

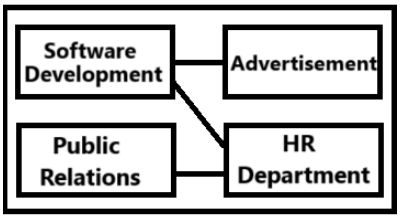
Software Development	250
Advertisement	5
Public Relations	20
HR Department	40
Mumbai Head Office	150

I. Suggest the topology and draw most efficient cable layout for connecting all the blocks of Hyderabad Branch of wired network connectivity between the blocks in Hyderabad Branch.

A) Layout 1 (Server location to all other locations)

For very fast and efficient connections between various blocks within the campus suitable topology: **Star Topology**

(Connecting from the building with max. number of computers)



II. What is the purpose of following device? Where will you install them?

Switch/Hub

A) Switch/Hub : The purpose of switch/hub is **to connect various computers together in a network**. Switch/Hub should be placed in each block ie Software Development, Advertisement, Public Relations and HR Department.

III. The organisation is considering establishing a network connection between Hyderabad Branch and its head office in Mumbai. Which type of network—LAN, MAN, or WAN—will be created? Justify your answer.

A) **WAN** (Wide Area Network) will be created as the offices are located in different cities.

IV. The organisation plans to develop an interactive website that will enable its employees to monitor their performance after login. Would you recommend a static or dynamic website, and why?

A) A **dynamic website** is recommended as it can display the dynamic performance data (which differs from employee to employee) of each employee.

V. Now a day, video-conferencing software is being used frequently by the company to discuss the performance of software development. Name any one video conferencing software.

A) Video Conferencing software: Teams, Zoom, Skype etc. (Any one)

OR

Consider the above question and answer the following:

I. Suggest the most suitable block in Hyderabad Branch, to install the server to get the best connectivity for maximum number of computers. Also, give a reason to justify your suggested location.

A) The server should be installed in "Software Development" block, as it has the most number of computers.

II. What is the purpose of following device? Where will you install them?

Repeater

A) Repeater : Repeater is used to be placed **between the blocks where the distance between them is more than 100 meters**.

As per layout, Repeater should be installed/placed between Software Development block to public relations and Software Development block to HR department as distance between them is more than 100 meters.

III. BG Software Solutions, wanted to start its branch in Secunderabad, which is 18 Kilometers away from Hyderabad Branch. Which type of network—LAN, MAN, or WAN—will be created between these two schools? Justify your answer.

A) MAN (Metropolitan Area Network) will be created as the distance between those two locations is 18 Kilometers. (More than LAN range and less than WAN range).

IV. Mr. Harsha, working in Mumbai office, is creating a software for conducting program for the Software engineers of Hyderabad Branch. Which protocol would help her in voice transmission over a computer network ?

A) VOIP/Voice over Internet Protocol

V. The Organisation's manager Ms. Ritu is worried as to how she can extend and modify the functionality of the web browser. Help her by giving names of any two tools.

A) Extensions, Plug-ins, Add-Ons