

WEB- TECHNOLOGY

Assignment -1

Q1: What are protocols? Explain the working of CSMA/CD protocol.

Ans: A protocol is a standard that controls or enables the connection, communication and data transfer between two computing devices. Protocol is the most fundamental concept of network communication. A protocol is a formal set of rules that must be followed in order to communicate.

CSMA/CD (Carrier Sense Multiple Access / Collision Detection) Protocol

Carrier Sense Multiple Access (CSMA) is a network protocol that listens to or senses network signals on the carrier/medium before transmitting any data. CSMA is implemented in ethernet networks with more than one computer or network device attached to it.

Working of CSMA :

CSMA works on the principle that only one device can transmit signals on the network, otherwise a collision will occur resulting in the loss of data packets or frames. CSMA works

When a device needs to initiate or transfer data over the network. Before transferring, each CSMA must check or listen to the network for any other transmissions that may be in progress. If it senses a transmission, the device will wait for it to end. Once the transmission is completed, the waiting device can transmit its data signals. However, if multiple devices access it simultaneously and a collision occurs, they both have to wait for a specific time before reinitiating the transmission process.

Q2: Explain the use and working of FTP tool on the internet in brief.

Ans: File Transfer Protocol (FTP) is a client/server protocol used for transferring files to or exchanging files with a host computer. It may be authenticated with user names and passwords.

Anonymous FTP allows users to access files, programs and other data from the Internet without the need for a User ID or password.

FTP is the both program and method used to transfer files from thousands of host computers on the internet to their personal computer.

account. It transfers text or binary files between an FTP server and client.

There are various uses for and types of FTP:

1. An FTP site is a web site where users can easily upload or download specific files.
2. FTP by mail allows users without access to the internet to access and copy files using anonymous FTP by sending an email message to ftpmail@decwrl.dec.com and putting the word help in the body of the text.
3. FTP explorer is an FTP client based on Windows 95 file manager (Windows 95 Explorer)
4. An FTP Server is a dedicated computer which provides an FTP service. This invites hackers and necessitates security hardware or software such as utilizing usernames, passwords and file access control.

Q5. An FTP client is a computer application which accesses an FTP server. While doing so, users should block incoming FTP connection attempts using passive mode and should check for viruses on all downloaded files.

Q3. Differentiate between Web browser and Web server. How does a Web Server Work?

Ans Definition of Web browser: A web browser is best defined as software with the help of which people can get the information they are looking for on the internet.

This information can be in different forms such as images, pages, videos and other files.

The earliest browsers were text only and could not display any other material including pictures but they have evolved and now can show various sorts of information. It shows data which is sent through the internet in the form of a website also called URL which when entered sends the information and search request to the web server where the desired data is sent back and displayed on the computer screen.

The information is located with the help of data source identifier and uses plugins to display particular types of material.

Definition of Web Server

A web server is defined as a computer unit or software which creates and keeps all the information in a place which can be accessed with the help of web browsers. In simple words, it is a place where all the data of a website can be saved. Every web server has an IP address and even a proper name. When a search address is entered through the web-browser, it is converted into an internet protocol where the server is located.

It sends a request to the server which gets the required page and sends it to the browser. ~~is not a paper~~ A website cannot be displayed without a working server whenever the server is not up, the site will stop working.

Web browser

Web browser is an application program that displays a World Wide Web document. It usually uses the Internet service to access the document.

The web browser requests the server for the web documents and services.

The web browser acts as an interface b/w the server and the client and displays a web document to the client.

The web server sends an HTTP request and gets an HTTP response.

Web Server

Web server is a program or the computer that provides services to other programs called clients.

The web server accepts, approves and responds to the request made by the web browser for a web document or services.

The web server is a software or a system which maintains the web applications, generate response and accept clients' data.

The web server gets HTTP requests and send HTTP responses.

Doesn't exist any processing model for the web browser.

Web browser stores the cookies for different websites.

The web browser is installed on the client computer.

There exist three types of processing models for web server i.e. Process-based, Thread based and hybrid.

Web servers provide an area to store and organize the pages of Website.

The web server can be a remote machine placed at the other side of your network or even on the other end of the globe, or it is your very own personal computer at home.

Q4: What do you mean by MIME, SMTP and IMAP?

Ans

MIME (Multi-Purpose Internet Mail Extensions)

: It is an extension to the Internet email protocol that allows its users to exchange different kinds of data files over the Internet such as Images, audio, video.

MIME was designed to extend the format of email to support non-ASCII characters, attachments other than text format, and message bodies which contain multiple parts.

MIME describes the message content type and the type of encoding used with the help of headers.

All manually composed and automated emails are transmitted through SMTP in MIME format.

The features offered by MIME to email services are as follows:

- Support for multiple attachment in a single message
- Support for non-ASCII characters.
- Support for layouts, fonts and colors which are categorized as rich text.
- Support for attachments which may contain executables, audio, images and video files etc.
- Support for unlimited message length.

MIME is extensible because it defines a method to register new content types and other MIME attribute values.

2. SMTP (Simple mail transfer protocol):

Simple Mail Transfer Protocol (SMTP) is the standard protocol for email services on a TCP/IP network. SMTP provides the ability to send and receive e-mail messages.

SMTP is an application-layer protocol that enables the transmission and delivery of e-mail over the Internet.

SMTP is one of the most common and popular protocol for e-mail communication over the Internet and it provides intermediary network services between the remote email provider or organization email server and the local user accessing it.

SMTP is generally integrated within an email client application and is composed of four key components:

1. Local user or client-end utility known as the mail user agent (MUA)

2. Server known as mail submission agent (MSA)

3. Mail transfer agent (MTA)

4. Mail delivery agent (MDA).

3. IMAP (Internet Message Access Protocol)

Internet Message Access Protocol (IMAP) is a standard protocol for accessing email on a remote server from a local client.

IMAP allows the client program to manipulate the email message on the server without downloading them on the local computer.

The e-mail is held and maintained by the remote server.

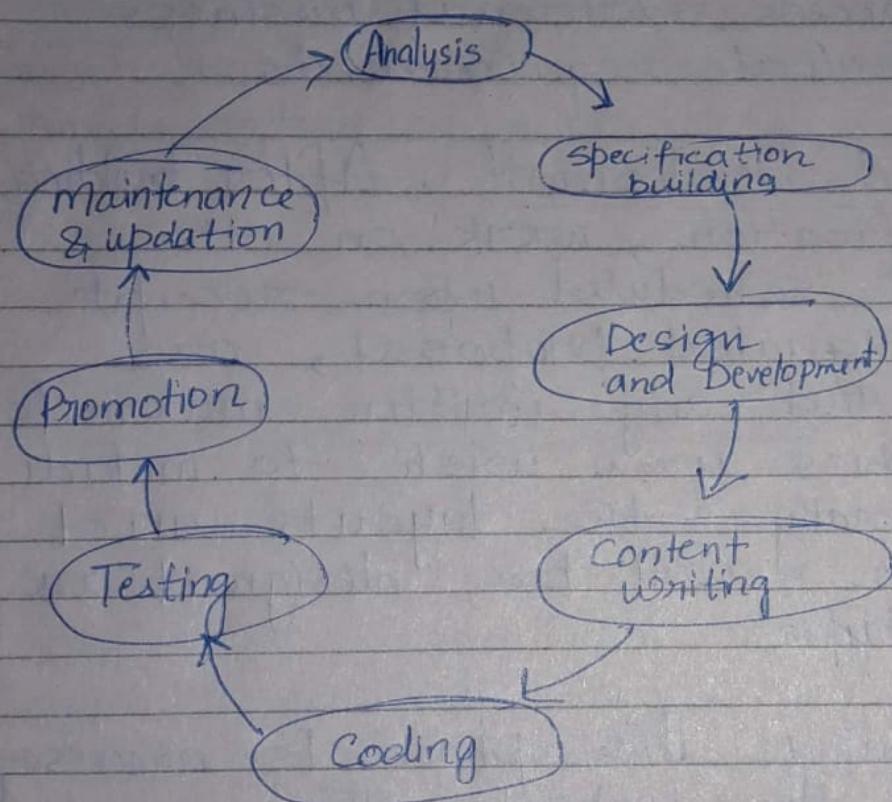
It enables us to take any action such as downloading, delete the mail without reading the mail. It enables us to create, manipulate and delete remote message folders called mail boxes.

IMAP enables the users to search the e-mails.

It allows concurrent access to multiple mailboxes on multiple servers.

Q5: Discuss Various Web project development phases.

Ans: lifecycle of a web project development



Analysis: As the website is going to be a part of system, it needs a complete analysis as how the website or the web based application is going to help the present system and how the site is going to help the business.

specification building: Primarily preliminary specification are drawn by covering up each and every element of the requirement. Large projects will require further levels of consultation to access additional business and technical requirements.

Design and Development : After building the specification, work on the website is scheduled upon receipt of the signed proposal, are deposited and any written materials and graphics you wish to include. Here normally the layouts and navigation will be designed as a prototype.

Content Writing: This phase is necessary mainly for the websites. There are professional content developers who can write industry specific and relevant content for the site.

Coding : Now it's programmer's turn to add his code without disturbing the design. Unlike traditional design, the developer must know the interface and the code should not disturb the look and feel of the site or application.

Testing: Unlike software, web based applications need intensive testing as the application will always function as a multi-user system with bandwidth limitations

Promotion: This phase is applicable only for websites. Promotion needs preparation of meta-tags, constant analysis and submitting the URL to the search engines and directories

Maintenance and updating: Websites

will need quite frequent updations to keep them very fresh. In that case we need to do analysis again and all the other lifecycle steps will repeat.

Q6: What is virtual management?

How can one manage virtual teams?

Ans Virtual Management, is the supervision, leadership, and maintenance of virtual teams - dispersed work groups that rarely, if ever, meet face to face. As the number of virtual teams has grown, brought about by the rise of the internet, globalization,

outsourcing, telecommuting the need to manage them has also grown.

Ways to successfully manage virtual teams

1. Define work systems: Different people have different ways of going about tasks. Setting standards can shorten the time needed to achieve the desired result. By setting standards, and defining repeatable work systems, the team has generally less questions, and gets a feeling for how long certain tasks should take. These work systems need to be both standardized to allow for maximum effectiveness and tailored to allow for the necessary freedom to complete task at the best of one's ability.

2. Establish multiple communication

tools: The benefits of establishing multiple communication tools is two-fold. First of all, your team has a way to communicate something that is urgent to the right person immediately. Secondly, it unifies processes such as what to use for conference calls, screen recordings, and so on. It is clear ~~too~~ what tool is used for what, which

contributes to creating that internal feeling of togetherness.

3. Schedule regular meetings: Scheduling briefings at the same time on the same weekday contributes to creating a routine. Routine provides the team with something they are used to and familiar with.

4. Have clear and detailed deliverables:

It is better to provide more detailed descriptions of the tasks with example of what the final result should look like. Give the team the freedom to execute it than less instructions and having to deal with potential misunderstandings.

5. Make sure work hours overlap

Regardless of what time zones your team members are in, it is recommendable to have at least three to four hours a day where most of the team is online at the same time. Even if some of the team members are unlikely to need each other to complete their tasks, being online at the same

time brings the team closer together and is the quickest problem solving solution.

6. Create a professional work environment:

Professional attire and a distraction-free work environment are part of any corporate culture. Additionally, setting professional standards contributes to being efficient and puts people in the right mindset.

7. choose (video) calls over chatting and e-mails

With virtual teams, video calls or at least regular calls are more than a way to avoid misunderstandings. They connect the team members on a more personal level.

8. Find the right people to work with :

Not everyone is cut out for remote work and not everyone fits the team personality-wise.

There are quite a few professional personality tests out there, and they can be a great way to determine whether someone

is the right fit. It is still to ask yourself whether you are sure about that person or not. If you are not, it is usually best to move on to the next candidate. Additionally, double checking all references is a must to make sure you know as much as possible what you are getting yourself into.

9. Establish a meritocratic system:
Meritocracy -- or the process of rewarding and recognizing people based on their skills - stimulates people to work harder and better.

10. Use project management tools:

Project management tools can be ideal to keep track of deadlines. They also send alerts and reminders for deadlines and give you a quick daily, weekly or monthly overview of what needs to be done, by who, and when.

Q7: What are cyber laws? Who is responsible for generation and hosting of these laws?

Ans In response to absolutely complex and newly emerging legal issues relating to cyber space, cyber law or the law of internet came into being. The growth of cyber space has resulted in the development of our new and highly specialised branch of law called cyber law. In essence, cyber law is an attempt to apply laws designed for the physical world to human activity on the internet.

I Intellectual property: Intellectual property (IP) is a legal field that refers to creation of mind such as musical, literary and artistic works, inventions and symbols, names, images and designs used in commerce. Intellectual property rights give creators exclusive rights to their ~~own~~ creations, thereby providing an incentive for the author or inventor to develop and share the info rather than keep a secret.

② Privacy: Privacy is the ability of an individual or group to seclude themselves or information about themselves and thereby reveal themselves selectively

③ freedom of expression: This right shall include freedom to seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of choice.

It is the right not confined to the verbal speech but is understood to protect any act of seeking, receiving and imparting information or ideas regardless of the medium use.

④ Jurisdiction: It's the practical authority granted to the following constituted legal body or to the political leader or deals with and make pronouncements on legal matters and implication or administrator of justice within a defined area of responsibility.

Q8: What do you mean by target users? Also explain the desired characteristics of Web project.

Ans: Target users refer to the potential customers or users. Group of people to whom we want to address our web project. It can be described by behavioral and demographic attributes, such as age, gender, income, education or localization.

Desired characteristics of Web project

1. Mobile Compatibility
2. Accessible to all users.
3. Well planned information architecture
4. Well-formatted content that is easy to scan.
5. Fast load time
6. Browser consistency
7. Effective navigation
8. Good error handling
9. Valid Mark-up and clean code
10. Contrasting colour scheme.

Besides these characteristics of web project, the characteristics of the web project objectives are: SMART i.e.

S - Specific
 M - Measurable
 A - Attainable
 R - Realistic
 T - Time-limited

Q9: What is difference between traditional project and web project? Also write down some objectives to develop web project?

Ans

	Web project	Traditional project
1. Project Managers	Project managers and client managers are often same.	Project managers and client managers are often different
2. Pricing	No specific pricing model exists for web projects	No. of pricing models like Cocomo etc are available for these projects.
3. Standards	There are no standards available for web projects.	There are standards available like ISO, CMM etc.

4. Team roles	Team roles are less specified	Team roles are more specified.
5. Planning cost	clients are often unwilling to bear the cost of web development, especially of planning phase.	Here the cost is paid by client for the whole project including the planning phase.
6. Technologies used	New, often Beta technologies are used for testing, often w/o technical support	It's not applicable in developing traditional projects.

OBJECTIVES TO DEVELOP WEB PROJECT

The objectives are the results which we get after meeting the requirements of the user. They are specific and attainable. Objectives must be smart meaning that they are

S - Specific
 M - Measurable
 A - Attainable
 R - ~~Risk~~ - Realistic
 T - Time limited

Q10: Give names of those protocols which help in web and explain the working of those protocols.

Ans: Protocols governing the Web are

① HTTP: HTTP transmits hyper text over networks. It is application-layer protocol used primarily on the world wide web. HTTP uses a client-server model where the web-browser is the client and communicate to the server ~~and~~ that hosts the website. The browser uses HTTP, which is carried over TCP/IP to communicate to the server and retrieve web content for the user. HTTP is stateless and connectionless protocol.

② ICMP (Internet control messages protocol): It provides management and error reporting to help manage the process of sending data between computers. This protocol is used to report connection status back to computers that are trying to connect other computers.

For eg: It may report that a destination host is not reachable.

③ TCP/IP (Transmission control protocol):

It is a reliable connection oriented protocol used to control the management of application level services between computers. TCP is set of networking protocols that allows two or more computers to communicate.

TCP allows the transmission of arbitrary amount of data by breaking it into stream of separate ~~IP~~ IP packets.

④ FTP (file transfer protocol): FTP

is both a program and the method used to transfer files from thousands of host computers on the internet to their personal computer account. It transfers text or binary files b/w an FTP server and client.

⑤ DHCP: Dynamic host configuration

protocol is a method of assigning and controlling the IP addresses of computers on a given network. It is a server based service that automatically assigns IP numbers when a computer boots.

⑥ SMTP: (Simple mail transfer protocol)
simple mail transfer protocol is the standard protocol for email services on TCP/IP network. SMTP provides ability to send and receive e-mail messages.

⑦ UDP (User datagram protocol): An unreliable connection less protocol used to control the management of application level services between computers. It is used for transport by some applications which must provide their own reliability

⑧ TELNET (Telnet protocol): TELNET is a program that allows you to log into computers on internet and use online databases, library catalogs, chat services and more. This can consist of words (logics.log.gov) or numbers (140.147.254.3)

⑨ ARP (Address resolution protocol):
It enables the packaging of IP data into ethernet packages. It is the system and managing protocol that is used to find the ethernet (hardware address) from a specific IP no.

Q11: Write down steps to create website.

Ans Step 1: Hosting your site : Web hosting is like paying rent for your website's virtual storefront including the pages, images, documents and other resources needed to display that site. Web hosting uses a web server which is where we put those website resources so others can access them through web.

Step 2 Registering a domain name - A domain name is the friendly URL through which people can type into their browser to access your website. Ex- www. obed.com, www. lifecure.com.

Step 3 Planning your website : While planning a website, we need to make no. of important decisions.

- (I) Type of site needed
- (II) Navigation design
- (III) Content.

Step 4 Designing and building your website: This is the most complex part of Web page's creation process and there are no. of topics to be aware of.

Design basics - The elements of good and appropriate design and how to use them on website.

HTML- Hyper text Markup language (HTML) is the building block of a web page.

CSS- Cascading style sheet dictate how web page look.

Step-5- Publishing Website: Publishing website is a matter of getting the pages created in step 4 up to hosting provider that set up in step-1.

Step-6 Promoting website: One of the most desirable ways to promote website is through a search engine optimization or SEO. This is because it allows site to be found by

people who are looking for information, services, or products that the site provides.

Step-7- Maintaining the website :

Maintenance can be the most tedious part of the website design but in order to keep the site going well and looking good, it needs regular attention and maintenance.

Q12: Who are the people that you need to develop your web site? What are the essential skills that must be identified while selecting the members of a team.

Ans People that ^{are} needed to develop the website are:

① Core members:

① Project Manager / Producer: A project manager is responsible for scoping the work, developing, scheduling, budgeting and managing the ~~the~~ whole team.

② Technical leads: A technical lead is responsible for the technical aspects of the websites. They ensure to manage the programmers, database and other system integrators.

③ Web production specialists: He is responsible for integrating the site using the HTML or Java Script. He is also responsible for getting project ready for development or delivery to the client.

4. Creative Lead: They determine the creative concept of the site. They act like an art direction for the site.

5. Designer: The designer is responsible for the look and feel of the site. Web designers should have a good understanding of the design principles.

6. Production artist: A production artist transforms the artwork that the designer creates into web ready art.

7. Quality assurance lead: A quality assurance lead makes sure that the product delivered meets the criteria specified in the scope document and functional specification.

Extended team Members

1. Account Manager: The account manager in the company is responsible for selling in different products and providing the necessary consumer inside information.

② Programmer: A programmer develops application for the web-project. These applications can be simple or may be complex depending upon site's requirements.

③ Network Engineer: A network engineer is responsible for setting up and configuring web-server. Sometimes he is also a database administrator.

④ Information architect: He is responsible for displaying information visually to users to make them understand how to interact with the website.

⑤ Tester: A tester test the web project based on the test plan that quality Assurance (QA) lead writes.

Special Members

① Security experts: A security expert provides security strategy for website.

② Audio Engineers: An audio engineer designs sounds for websites. These sounds could range from

music to sounds that happen when the user does something.

③ ~~Video~~ Video Engineer: Creates video images and delivers them in digital format to the creative lead.

④ 3D Modeler: Creates artwork that is in 3D

⑤ Media buyer: He is usually a part of the client's advertising agency. He is also responsible for designing the advertisements based on the size of the media purchase.

⑥ Strategic planner: They are the person who give the consumers inside the team to help the creative team understand the mind of the target audience.

Essential skills that must necessarily be covered while making a web team are:

① Project management skills: This is the ability to manage the man power, resources, budget and other things so that the desired site can be built in the given time and in the given budget.

② Information design | Architecture Skills: This is the ability to design an unusual and useful interface that includes how the user will interact with the interface and will navigate the site.

③ Graphic design skills: Ability to transform the information design into visual design.

④ Content development skills: Ability to develop both written and interactive content for websites.

⑤ Programming skills: Ability to create web pages using HTML, Java Script and other client server Scripting languages

⑥ Technical | Network Infrastructure skills: The ability to understand the requirements for serving a website on the Internet and to recommend the best strategy

based on the clients or stakeholder's needs.

Q3: Why is testing of website very essential before their actual implementation?

Ans Web testing is a software testing practice to test websites or web applications for potential bugs. It's complete testing of web-based application before making live.

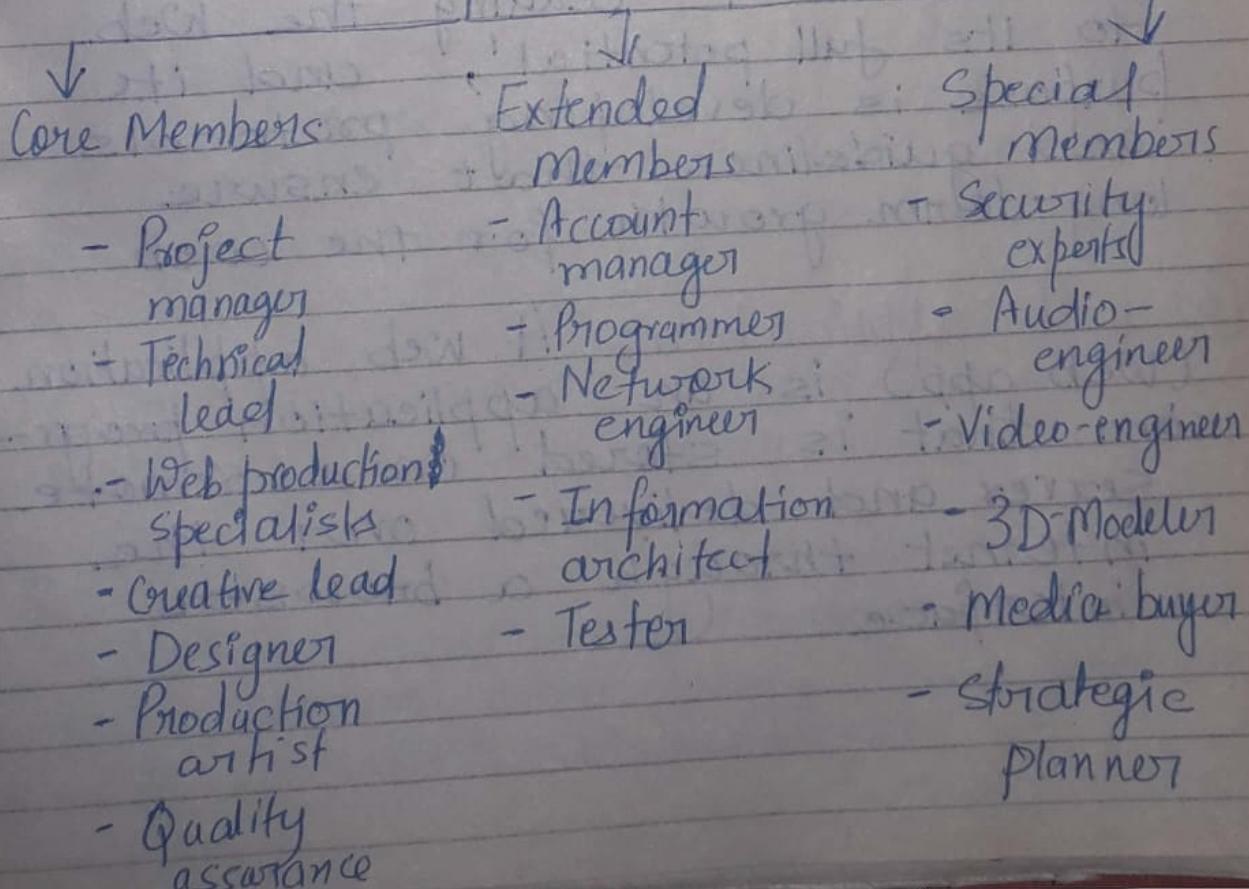
Just having a website is not enough as all of us make decisions by searching information on the internet these days, hence hosting a website is no longer optional but mandatory for all kind of business.

Hence, An organization is needed to develop a website that is informative, accessible and user-friendly. To maintain all these qualities, the website should be well tested, and this process of testing a website is known as web-testing which is very essential before the actual implementation.

Q14: Write short notes on the following:

① Web Team: Web teams must be able to perform all business functions from business strategizing to setting up secure network for financial transactions. Like any other project building, a website also requires a set of skilled workers. This set of workers is also known as Web team. A web team begins with web masters, people who did everything from coding the page to maintaining the web server.

Web team



② Web ~~see~~ W3C: The World Wide Web Consortium (W3C) is the main international standards organization for the World Wide Web (www). It was founded and currently led by Tim Berners-Lee, made up of member organizations which maintain full time staff for the purpose of working together in the development of standards for the World Wide Web.

The W3C also engages in education and outreach, develops software and servers as an open forum for discussion about the web.

Its motto is, 'leading the Web to its full potential', and its purpose is developing protocols and guidelines that ensure long-term growth for the web

③ Web application: A web application (Web app) is an application program that is stored on a remote server and delivered over the internet through a browser interface.

Web project : A web project is the process of developing and creating a web site, activities in a network which are aimed at a ~~po~~ pre-defined goal.

Q15:

Web browser : Web browser is an application program that displays a world wide web document. It usually uses the Internet service to access the document.

Web Server : Web server is a program or the computer that provide services to other programs called clients.

History of Web : In the history of web, there are two events

- ① Development of hypertext, and
- ② The development of the internet protocols.

② In 1972, DARPA starts research leading to the internet.

3. Its main characteristic is the automatic routing of information packets and ~~overcome~~ overcoming the problem of network vulnerability

In 1979, Charles Goldfarb invents SGML.

This idea separates content structure from presentation.

In 1975, Alan Kay produces the first personal computer. In 1987, CERN and the US laboratories connect to the internet as the main means of exchanging data between the laboratories.

In 1991, SLAC, the Stanford linear Accelerator Center in California becomes the first web server in USA.

In 1992, the portable browser is released by CERN as freeware. Many HEP laboratories are now joined with servers.

In 1995, Sun Microsystems produce Hot Java, a browser which incorporates interactive objects.

In 2000, a massive denial of service attack is launched against major websites, including Yahoo, Amazon and eBay.

In 2004, Abilene, the Internet 2 backbone, upgraded from 2.5 Gbps to 10 Gbps. Network Solutions begins offering 100 year domain registration

HTTP: It transmits hyper text over networks. This is a protocol of web.

FTP: It is both a program and the method used to transfer files from thousands of host computers on the internet to their personal computer account. It transfers text or binary files b/w an FTP server and client.

Q16: What is need of cyber laws in India?

Ans The beginnings of internet were extremely small and the growth of subscribers painfully small. However as internet has grown in our country, the need has been felt to enact the relevant cyber laws which are necessary to regulate internet in India.

- ① The arrival of Internet signaled the beginning of the rise of new and complex legal issues.
- ② Secondly the existing laws of India even with the most benevolent and liberal interpretation could not be interpreted in the light of emerging cyber space, to include all aspects relating to different activities in cyber space.
- ③ Thirdly none of the existing laws gave any legal validity or sanction to the activities in cyber space.
- ④ Internet requires an enabling and supportive ~~infrastructure~~ legal infrastructure in tune with the times.

Q17:

E-mail : Electronic mail or E-mail allows computer users locally and world wide to exchange messages. Each user of E-mail has a mail box address to which messages are sent. For this SMTP is used, it distributes electronic messages and files.

to one or more electronic mail boxes.

2. IP: The Internet protocol (IP) is the method or protocol by which data is sent from one computer to another on the Internet.

Each computer on the Internet has at least one IP address that uniquely identifies it from all other computers on the Internet.

When you send or receive data, the message gets divided into little chunks called packets. Each of these packets contains both the sender's Internet address and the receiver's address. Any packet is sent first to a gateway computer that understands a small part of the Internet.

IP is a connection less protocol, which means there is no continuing connection b/w the end points that are communicating. Each packet that travels through Internet is treated as an independent unit of data without any relation

to any other unit of data.

TCP (Transmission Control protocol):

It's a reliable connection oriented protocol used to control the management of application level services b/w computers. It is used for transport by some application

UDP: An unreliable connection less protocol used to control the management of application level services b/w computers. It is used for transport by some application which must provide their own reliability.

Q18: What do you mean by Intellectual property?

Ans The term intellectual property reflects the idea that this subject matter is the product of the mind or the intellect, and that intellectual property rights may be protected at law in the same way as any other form of property.

foreg: Any creation of mind such as musical, literary and artistic works, inventions and symbols, names, images and designs used in commerce.

2 Various kinds of protection that come under the umbrella term 'Intellectual property' are -

- Patents
- Trademarks
- Geographical Indications
- Copyrights
- Industrial Designs
- Trade Designs
- Layout Design

Q19: Define freedom of expression in cyber laws.

Ans It is the right not confined to the verbal speech but is understood to protect any act of seeking, receiving and imparting information or ideas regardless of the medium used.

Q20: Differentiate between conventional crime and cyber crime.

Ans: Crime is a social and economic phenomena and is as old as the human society.

Crime is the legal concept and has the sanction of the law. Crime or an offence is a legal wrong that can be followed by criminal proceeding which may result into punishment.

While cyber crime is the latest and perhaps the more complicated problem in the cyber world.

Any criminal activity that uses a computer either as an instrumentality, target or a means for perpetuating further crimes, come within the cyber crimes.