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Internal Assessment Test 1 – Sept. 2017

Sub:	PROGRAMMING THE WEB					Sub Code:	10CS73	Branch:	CSE
Date:	21-09-2017	Duration:	90 min's	Max Marks:	50	Sem / Sec:	VII / B,C	OBE	

Answer any FIVE FULL Questions

		MARKS	CO	RBT
1 (a)	Explain Internet and World Wide Web using suitable figures.	[05]	CO1	L2
(b)	What are the differences between Internet and WWW? Describe the protocol suites used in both Internet and WWW.	[05]	CO1	L4
2 (a)	What are web browsers and web servers? Explain how communication takes place in between web browser and web server.	[05]	CO1	L2
(b)	Differentiate between URL and URI.	[05]	CO1	L4
3 (a)	What is MIME? Explain its type specifications.	[06]	CO1	L2
(b)	What is the purpose of a MIME type specification in request/response transactions between a browser and a server? Explain the purpose of helper applications and plug-ins.	[04]	CO1	L2
4 (a)	What is hypertext? Explain HTTP phases.	[06]	CO1	L2
(b)	Explain various methods and status codes of HTTP.	[04]	CO1	L2

5 (a)	What are the security concerns in Internet and WWW? What issues might occur in an online transaction?	[2+3]	CO1	L2
(b)	Explain the basic tools used to handle the issues in an online transaction.	[05]	CO1	L2
6 (a)	Describe basic tools used in Web Development.	[05]	CO1	L2
(b)	What are the syntactic differences between HTML and XHTML?	[05]	CO1	L2
7 (a)	What is XHTML? What are basic motivations behind using the XHTML?	[2+2]	CO1	L2
(b)	Explain standard XHTML document structure.	[06]	CO1	L2
8 (a)	Explain the steps required to change an HTML document to corresponding XHTML document.	[05]	CO1	L2
(b)	Develop an XHTML document using document level CSS. It should contain a document heading, a paragraph as a description of image and a hyperlink to the top of page.	[05]	CO1	L3

CMR

INSTITUTE OF

TECHNOLOGY

Solution : Internal Assessment Test 1 – SEPT.2017

Sub:	**Programming the Web**				**Code:**		10CS73		
Date**:**	21/09/2017	Duration:	90mins	Max Marks:	50	**Sem:**	VII B,C	**Branch:**	CSE

Question1. A) Explain Internet and World Wide Web using suitable figures.

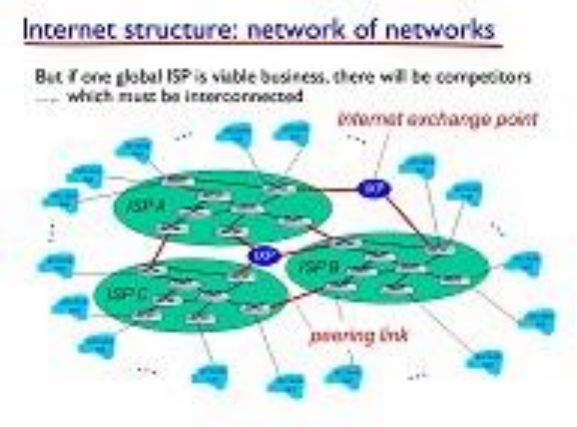
Solution:

Internet

The Internet is a global system of interconnected computer networks that use the standard Internet Protocol Suite (TCP/IP) to serve billions of users worldwide. It is a network of networks that consists of millions of private, public, academic, business, and government networks of local to global scope that are linked by a broad array of electronic and optical networking technologies. The Internet carries a vast array of information resources and services, most notably the inter-linked hypertext documents of the World Wide Web (WWW) and the infrastructure to support electronic mail. Most traditional communications media, such as telephone and television services, are reshaped or redefined using the technologies of the Internet, giving rise to services such as Voice over Internet Protocol (VoIP) and IPTV.

The origins of the Internet reach back to the 1960s when the United States funded research projects of its military agencies to build robust, fault-tolerant and distributed computer networks. This research and a period of civilian funding of a new U.S. backbone by the National Science Foundation spawned worldwide participation in the development of new networking technologies and led to the commercialization of an international network in the mid 1990s, and

resulted in the following popularization of countless applications in virtually every aspect of

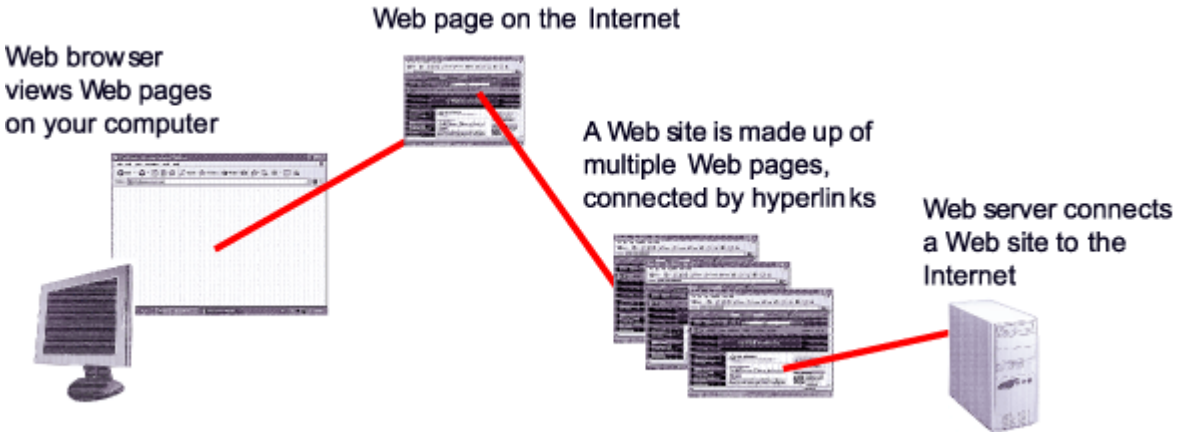


modern human life.

WWW

The **World Wide Web**, abbreviated as **WWW** and commonly known as **the Web**, is a system of interlinked hypertext documents accessed via the Internet. With a web browser, one can view web pages that may contain text, images, videos, and other multimedia and navigate between them by using hyperlinks.

"The World-Wide Web (W3) was developed to be a pool of human knowledge, which would allow collaborators in remote sites to share their ideas and all aspects of a common project." If two projects are independently created, rather than have a central figure make the changes, the two bodies of information could form into one cohesive piece of work.



b. What are the differences between Internet and WWW? Describe the protocol suites used in both Internet and WWW.

SR. NO.	Internet	WWW
1.	Internet originated sometimes in late 1960s.	English scientist Tim Berners-Lee i World Wide Web in 1989
2.	Nature of Internet is hardware.	Nature of www is software.
3.	Internet consists of computers, routers, cables, bridges, servers, cellular towers, satellites etc.	www consists of information like tex audio, video
4.	The first version of the Internet was known as ARPANET	In the beginning WWW was known
5.	Internet works on the basis of Internet Protocol (IP)	WWW works on the basis of Hyper Protocol (HTTP)
6.	Internet is independent of WWW	WWW requires the Internet to exist
7.	Internet is superset of WWW	WWW is a subset of the Internet. A supporting www, the Internet's hard infrastructure is used for other thing FTP, SMTP)
8.	Computing devices are identified by IP Addresses	Information pieces are identified by Resource Locator (URL)

Basic Protocol suite used

Internet : TCP /IP

WWW : http/ https

Question 2- a) What are web browsers and web servers? Explain how communication takes place in between web browser and web server.

Web Browsers:

A **web browser** is a software application for retrieving, presenting, and traversing information resources on the World Wide Web. An information resource is identified by a Uniform Resource Identifier (URI) and may be a web page, image, video, or other piece of content. Hyperlinks present in resources enable users to easily navigate their browsers to related resources.

Although browsers are primarily intended to access the World Wide Web, they can also be used to access information provided by Web servers in private networks or files in file systems. Some browsers can be also used to save information resources to file systems.

Web Servers

A **web server** is a computer programs that delivers (serves) content, such as web pages, using the Hypertext Transfer Protocol (HTTP), over the World Wide Web. The term web server can also refer

to the computer or virtual machine running the program. In large commercial deployments, a server computer running a web server can be rack-mounted with other servers to operate a web farm.

Communication between Web Browser and web server

1. Browser requests the resource through a URL
2. URL has an associated port number
3. Through URL, a DNS lookup takes place to identify the respective IP address of server.
4. By using the IP address browser connects to server.
5. On server through port number, particular resource is identified.
6. Then based on the request method, server responds to browser.

Question 2- b)

Difference between URL and URI

Uniform Resource Locator (URL) is a Uniform Resource Identifier (URI) that specifies where an identified resource is available and the mechanism for retrieving it.

Through URI, we can only identify the resource while through URL we can identify and access the particular resource.

Question 3- a)

What is MIME? Explain its type specifications.

Multipurpose Internet Mail Extensions (MIME) is an Internet standard that extends the format of e-mail to support:

Text in character sets other than ASCII

Non-text attachments

Message bodies with multiple parts

Header information in non-ASCII character sets

MIME's use, however, has grown beyond describing the content of e-mail to describing content type in general, including for the web (see Internet media type).

Virtually all human-written Internet e-mail and a fairly large proportion of automated email is transmitted via SMTP in MIME format. Internet e-mail is so closely associated with the SMTP and MIME standards that it is sometimes called SMTP/MIME e-mail.

Type Specifications

The **MIME type** is the mechanism to tell the client the variety of document transmitted: the extension of a file name has no meaning on the web. It is, therefore, important that the server is correctly set up, so that the correct MIME type is transmitted with each document. Browsers often use the MIME-type to determine what default action to do when a resource is fetched.

General structure

```
type/subtype
```

The structure of a MIME type is very simple; it consists of a type and a subtype, two strings, separated by a '/'. No space is allowed. The *type* represents the category and can be a *discrete* or a *multipart* type. The *subtype* is specific to each type.

A MIME type is case-insensitive but traditionally is written all in lower case.

Discrete types

```
text/plain

text/html

image/jpeg

image/png

audio/mpeg

audio/ogg

audio/*

video/mp4

application/octet-stream

…
```

Type	Description	Example of typical subtypes
text	Represents any document that contains text and is theoretically human readable	text/plain, text/html, text/css, text/javascript
image	Represents any kind of images. Videos are not included, though animated images (like animated gif) are described with an image type.	image/gif, image/png, image/jpeg, image/bmp, image/webp
audio	Represents any kind of audio files	audio/midi, audio/mpeg, audio/webm, audio/ogg, audio/wav
video	Represents any kind of video files	video/webm, video/ogg
application	Represents any kind of binary data.	application/octet-stream, application/pkcs12, application/vnd.mspowerpoint, application/xhtml+xml, application/xml, application/pdf

Question 3- b) What is the purpose of a MIME type specification in request/response transactions between a browser and a server? Explain the purpose of helper applications and plug-ins.

- When a response is sent to web browser, data is associated with a header.
- Header tells the content type and media type to browser.
- On the basis of content type browser chooses appropriate viewer application

Helper applications and plug-ins:

- Some of the viewer types are built in browsers.
- For all other kinds of viewer applications which are not present in web browser, helper applications and plug-ins are used.

Question 4- a)

What is hypertext? Explain HTTP phases.

Hypertext: Structured text that uses hyperlinks between nodes containing text.

HTTP Phases

Request Phase: Browser sends http request to web server.

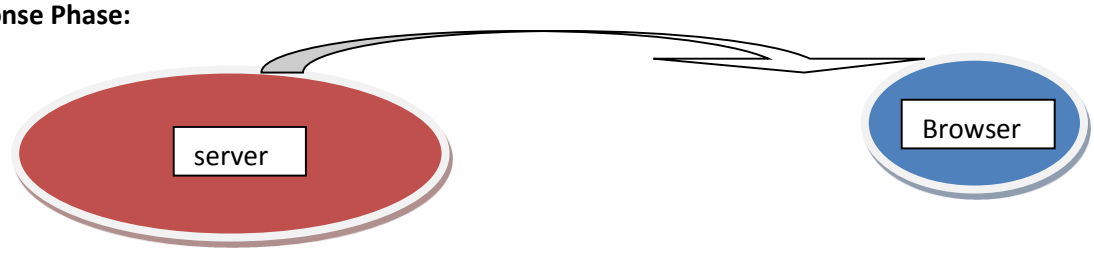
Request has two parts: Header and Body

General Form:

1. **Http method Domain part of URL http version**
2. **Header fields**
3. **Blank line**
4. **Message body**

Example: GET /storefront.html http/1.1

Response Phase:



General Form:

1. **Status line**
2. **Response header fields**
3. **Blank Line**
4. **Response Body**

Question 4- b) Explain various methods and status codes of HTTP.

Http request methods

GET – returns the content of specified doc

HEAD – returns the headers information for specified doc

POST – executes the specified doc, using enclosed data

PUT – replaces the specified doc with enclosed data

DELETE – Deletes the specified doc

Status codes (server Response)

It is of 3 digits

1st digit decides the category

1- Informational
2- Success
3- Redirection
4- Client error
5- Server error

Example: 200 – ok, 404 – page not found etc.

Question 5- a) What are the security concerns in Internet and WWW? What issues might occur in an online transaction?

Security Concerns

Web Server

1. Malicious Software run request on web server
2. Unauthorized Data / Database access on web server

Web Browser

1. Malicious Software run requests from server, which can access parts of memory and memory devices

On the way data interception or corruption in request or response phase

Concerns in Online / credit card Transaction:

1. Privacy of data : data should be confidential
2. Integrity of data : no data is changed or corrupted
3. Authentication issues : authentication of both buyer and merchant
1. Non repudiation: Nonrepudiation is the assurance that someone cannot deny something. Typically, nonrepudiation refers to the ability to ensure that a party to a contract or a communication cannot deny the authenticity of their signature on a document or the sending of a message that they originated.

Question 5- b) Explain the basic tools used to handle the issues in an online transaction.

2. Encryption can be used to handle the privacy of data
    a. Shared key
    b. Public private key
    c. Using Https tunneling
3. MAC (message Authentication Code) : To handle the data Integrity Issue
4. Authentication : certificates, tokens, multi-factor authentication
5. Non Repudiation: Digital signature

Question 6-a) Describe basic tools used in Web Development.

Along with HTML and JavaScript, CSS is a cornerstone technology used by most websites to create visually engaging webpages, user interfaces for web applications, and user interfaces for many mobile applications.

Text editors: notepad++, sublime etc.

Web server : like Xampp for local development

Database Management software: MySQL, Sybase, Oracle etc

Question 6- b) What are the syntactic differences between HTML and XHTML?

- Structure
    - XHTML DOCTYPE
    - xmlns with html tag
    - All structural elements are mandatory <html>, <head>, <title>,<body>
- Elements
    - Proper nesting
    - Closing of all elements
    - Lowercase only
    - One root element
- Attributes
    - Lowercase only
    - Quoted values width="250"
    - Minimization forbidden

Question 7-a) What is XHTML? What are basic motivations behind using the XHTML?

XHTML

- XHTML stands for E**X**tensible **H**yper**T**ext **M**arkup **L**anguage
- XHTML is almost identical to HTML 4.01 with only few differences. This is a cleaner and stricter version of HTML 4.01.

- XHTML was developed by World Wide Web Consortium (W3C) to help web developers make the transition from HTML to XML.
- By migrating to XHTML today, web developers can enter the XML world with all of its benefits, while still remaining confident in the backward and future compatibility of the content.

Motivations Behind using XHTML

- Valuable because of strictness of syntax rules
- XHTML documents are XML conforming (can be readily viewed, edited, and validated with standard XML tools)
- XHTML documents can utilize applications such as scripts and applets that rely upon either the HTML DOM or the XML DOM
- XHTML gives you a more consistent, well-structured format
    - So better Parsing and processing by present & future browsers
- XHTML is an official standard of the W3C
    - Compatibility
- Combines strength of HTML and XML
    - XML browsers

Question 7-b) What is XHTML? What are basic motivations behind using the XHTML?

XHTML – Syntax

- XHTML DOCTYPE in start
- Lower case only
- Closing of all tags
- Proper nesting
- Attribute values quoted
- Attribute minimization forbidden
- Name → id
- Language attribute deprecated
- Common mistake : putting text directly in body element

- It should be inside some block element like text

Basic XHTML document

```
<?xml version="1.0" encoding="UTF-8"?>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/TR/xhtml1" xml:lang="en" lang="en">
   <head>
      <title>Every document must have a title</title>
   </head>

   <body>
      ...your content goes here...
   </body>
</html>
```

Question 8-a) Explain the steps required to change an HTML document to corresponding XHTML document.

- Make sure all basic syntactic elements are correct viz. lower case, nesting etc..
- 1st Change : Change Doctype in html document
    - <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"

"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

- 2nd change: Add attribute xmlns to html element
    - <html xmlns=http://www.w3.org/1999/xhtml >
- 3rd Change: comment the meta element
    - <!-- <meta charset="UTF-8" /> - - > // comment <!- - comment - - >

Question 8-b) Develop an XHTML document using document level CSS. It should contain a document heading, a paragraph as a description of image and a hyperlink to the top of page.

XHTML code:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
        "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">

 <head>
   <title>Taj Mahal </title>
 <meta http-equiv="Content-Style-Type" content="text/html" />
 </head>
 <body>

   <p><a id="top"> </a></p>

   <h1>Taj Mahal</h1>

   <p>The Taj Mahal was commissioned by Shah Jahan in 1631, to be built in the memory of his wife Mumtaz Mahal, a Persian princess who died giving birth to their 14th child, Gauhara Begum.[8] Construction of the Taj Mahal began in 1632.The imperial court documenting Shah Jahan's grief after the death of Mumtaz Mahal illustrate the love story held as the inspiration for Taj Mahal. The principal mausoleum was completed in 1643 and the surrounding buildings and garden were finished about five years later.</p>

   <p>Here is a picture Taj Mahal.</p>

   <p>
         <img src="tajmahal.jpg" alt="TajMahal"
   style="width: 400px; height: 300px; border: none;" />
         </p>
         <p>
   <br />
         <br />
   </p>
   <p><a href="#top">Top of page</a></p>

 </body>
</html>
```

Preview:

Taj Mahal

The Taj Mahal was commissioned by Shah Jahan in 1631, to be built in the memory of his wife Mumtaz Mahal, a Persian princess who died giving birth to their 14th child, Gauhara Begum [8] Construction of the Taj Mahal began in 1632.The imperial court documenting Shah Jahan's grief after the death of Mumtaz Mahal illustrate the love story held as the inspiration for Taj Mahal. The principal mausoleum was completed in 1643 and the surrounding buildings and garden were finished about five years later.

Here is a picture Taj Mahal.

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