

**FIRST TERM EXAMINATION [MARCH 2016]**  
**SIXTH SEMESTER [B.TECH]**  
**WEB ENGINEERING [ETCS-308]**

Time : 1½ Hrs.

Note: Q.No. 1 is compulsory. Attempt any two more Questions from the rest.

M.M. : 30

**Q.1. Attempt All**

**Q.1. (a) Who is known as the father of World Wide Web?**

(10×1 = 10)

Ans. Tim Berners-Lee is known as the father of world wide Web.

**Q.1. (b) What is the standard port for HTTP connections?**

Ans. The standard port for Hyper Text Transfer Protocol is 80.

**Q.1. (c) Differentiate between DIV and SPAN.**

Ans. ) The difference between span and div is that a span element is in-line and usually used for a small chunk of HTML inside a line (such as inside a paragraph) whereas a div (division) element is block-line (which is basically equivalent to having a line-break before and after it) and used to group larger chunks of code.

**Q.1. (d) What are the current technologies used to develop dynamic web applications?**

Ans. The two current technologies for creating dynamic web pages are as follows : Ajax use a combination of both client-side scripting and server-side requests. It is a web application development technique for dynamically interchanging content, and it sends requests to the server for data in order to do so. Example- Google maps makes use of this technology.

Javascript is for adding dynamics to your website. You can do things like drop down menus and changing things after your page loads .

**Q.1. (e) Which command allows a client to remove a file from a Web Server using HTTP?**

Ans. HTTP provides a method DELETE which allows a client to delete a file on the web server. An attacker can exploit it as a very simple and direct way to deface a web site or to mount a DoS attack.

The following example requests the server to delete the given file hello.htm at the root of the server:

DELETE /hello.htm HTTP/1.1

User-Agent: Mozilla/4.0

Host: www.Tutors.com

**Q.1. (f) Define GET() and POST() methods.**

Ans. A GET request retrieves data from a web server by specifying parameters in the URL portion of the request. This is the main method used for document retrieval. The following example makes use of GET method to fetch hello.htm:

GET /hello.htm HTTP/1.1

User-Agent: Mozilla/4.0

Host: www.tutors.com

Accept-Language: english

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**Accept-Encoding: gzip**

The POST method is used when you want to send some data to the server, for example, file update, form data, etc. The following example makes use of POST method to send a form data to the server, which will be processed by a process.cgi and finally a response will be returned:

POST /cgi-bin/process.cgi HTTP/1.1

User-Agent: Mozilla/4.0

Host: www.tutorialspoint.com

Content-Type: text/xml; charset=utf-8

Content-Length: 88

**Q.1. (g) Differentiate between XML and HTML.**

**Ans.**

HTML	XML
HTML is an abbreviation for HyperText Markup Language.	XML stands for extensible Markup Language.
HTML is a markup language itself.	XML provides a framework for defining markup languages.
HTML was designed to display data with focus on how data looks.	XML was designed to be a software and hardware independent tool used to transport and store data, with focus on what data is.

**Q.1. (h) What is WML Script used for?**

**Ans.** WMLScript (Wireless Markup Language Script) is the client-side scripting language of WML (Wireless Markup Language). A scripting language is similar to a programming language, but is of lighter weight. With WML Script, the wireless device can do some of the processing and computation. This reduces the number of requests and responses to/from the server.

**Q.1. (i) ..... is the space between the content and cell boundary in table cell.**

**Ans.** The space between the table cells is controlled by the CELLSPACING attribute in the TABLE tag. By setting CELLSPACING to zero, you can remove all the space between the cells of your table.

**Example-**

```
<TABLE BGCOLOR = "#FFFFCC" BORDER=0 CELLSPACING = 0 >
```

**Q.1. (j) Which Tag is used for making a drop-down list in HTML?**

**Ans.** The <select> element is used to create a drop-down list.

**Example-**

```
<select>
  <option value="volvo">Volvo</option>
  <option value="saab">Saab</option>
</select>
```

**Q.2. (a) What is the purpose of CSS Box model and mention its parts also? (5)**

**Ans.** All HTML elements can be considered as boxes. In CSS, the term "box model" is used when talking about design and layout.

The CSS box model consists of: margins, borders, padding and content. It illustrates the box model.

**Explanation of the box model**

**Content - The content**

**Padding - Clear padding**

**Border - A border**

**Margin - Clear margin**

The box model allows for styling between elements.

**Example**

```
div {
  width: 300px;
  border: 25px solid black;
  padding: 25px;
  margin: 25px;
}
```

**Q.2. (b) Compare Java and JSP.**

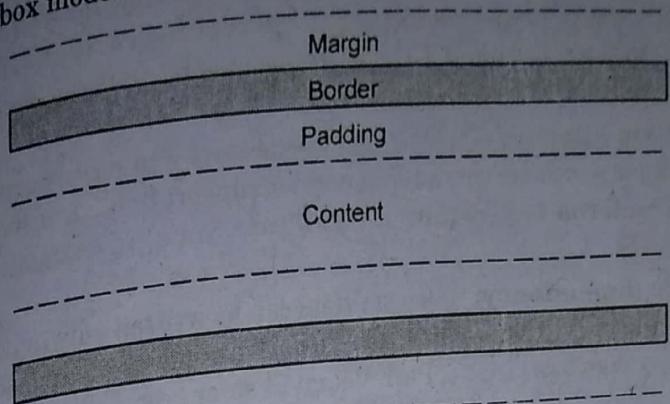
**Ans.** Both Java and JSP are server-side technologies that accept a user request. However, Java servlets are more efficient than JSPs as follows:

- Efficient:** Unlike JSP, in Java, a request, a servlet processes the request and improves the performance every time.

Also, unlike JSP, Java code remains in memory and the servlet container is responsible for managing database connections.

- Powerful:** Java is a powerful language that can accomplish tasks such as distributed computing, web server, sharing data, and previous computations.

The CSS box model is essentially a box that wraps around every HTML element. It consists of: margins, borders, padding, and the actual content. The image below illustrates the box model:



### Explanation of the different parts:

**Content** - The content of the box, where text and images appear

**Padding** - Clears an area around the content. The padding is transparent

**Border** - A border that goes around the padding and content

**Margin** - Clears an area outside the border. The margin is transparent

The box model allows us to add a border around elements, and to define space between elements.

### Example

```
div {
    width: 300px;
    border: 25px solid green;
    padding: 25px;
    margin: 25px;
}
```

### Q.2. (b) Compare Servlets with CGI.

**Ans.** Both Java servlets and CGI are used for creating dynamic web applications that accept a user request, process it on the server side and return responses to the user. However, Java servlets provide a number of advantages over traditional CGI which are as follows:

- Efficient:** Unlike traditional CGI where a new process is started for each client request, a servlet processes each request as a thread inside of a process. Thus servlets improve the performance as it removes the overhead of creating a new process for request every time.

Also, unlike CGI program which terminates after handling a request, the servlets remains in memory even after they complete a response and destroyed only when the servlet container is shutdown. Thus servlets make it easier to cache computations, keep database connections open and perform other optimizations that rely on persistent data.

- Powerful:** Servlets support several capabilities that are difficult or impossible to accomplish with traditional CGI. These capabilities include talking directly to the web server, sharing data between multiple servlets, session tracking and caching of previous computations.

Q.3. (b) Differentiate  
Ans.

POP3-POST OFFICE P

You can use only one com  
Your email (no other devi  
that you use  
Sent mail is stored local  
not on a mail server  
The POP protocol, by de  
download all the messa  
e-mail server onto your  
means that all the acti  
on the messages (readin  
deleting...) will be perf  
computer.

Because everything is  
user's computer, the u  
able to reopen messag  
location other than th  
where the messages ha  
downloaded.

Messages are deleted  
PC. Comparatively, i  
to clean up your mail  
Once e-mail is down  
accessed only using

Q.4. (a) Explain

Ans. When a brow  
to the information in

There are three  
Inline styles

Inline styles are  
styles affect only th  
unique style for a si

To use inline s  
attribute can conta

<a href="" st

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- Portable:** Since servlets are written in the Java programming language and follow a standard API, so a servlet can be moved from one servlet compatible web server to another very easily. For example, servlets written for Apache web server can run unchanged on other servers such as Microsoft Internet Information (IIS) Server, IBM Web Sphere etc. On the other hand, CGI programs may be platform dependent, need to be recompiled or web server dependent.

- Inexpensive:** A number of free or very inexpensive web servers are available these days. Once you have a web server, adding servlet support to it costs very little. On the other hand, CGI alternatives require a significant initial investment to purchase a proprietary package.

- Language dependency:** Since servlets can be written only in Java so they are language dependent. On the other hand, CGI programs can be written in any programming language like C, C++, Perl, Visual Basic or even Java so they are language independent.

- Secure:** As Java was designed from the ground up as a secure language, so a servlet can be run by a servlet engine or servlet container in restrictive sandbox just like an applet runs in a web browser's JVM, which increases the server security. On the other hand, CGI scripts are not subject to same degree of security sandboxing as Java servlets, they are significantly less secure.

- Convenient:** Servlets have an extensive infrastructure for automatically parsing and decoding HTML form data, reading and setting HTTP headers, handling cookies, session handling etc. On the other hand, CGI does not support such infrastructure.

#### Q.3. (a) Write a program to validate the content of an HTML form. (5)

**Ans.** HTML form validation can be done by JavaScript.

If a form field (fname) is empty, this function alerts a message, and returns false, to prevent the form from being submitted:

##### JavaScript Example

```
function validateForm() {
    var x = document.forms["myForm"]["fname"].value;
    if (x == null || x == "") {
        alert("Name must be filled out");
        return false;
    }
}
```

The function can be called when the form is submitted:

##### HTML Form Example

```
<form name="myForm" action="demo_form.asp" onsubmit="return validate
Form()" method="post">
```

```
Name: <input type="text" name="fname">
<input type="submit" value="Submit">
</form>
```

**Q.3. (b) Differentiate between POP3 and IMAP.**

Ans.

POP3-POST OFFICE PROTOCOL	IMAP- Internet Messaging Access Protocol
<p>You can use only one computer to check your email (no other devices)</p> <p>Your mails are stored on the computer that you use</p> <p>Sent mail is stored locally on your PC, not on a mail server</p> <p>The POP protocol, by default, is set to download all the messages from the e-mail server onto your computer. This means that all the actions performed on the messages (reading, moving, deleting...) will be performed on one's computer.</p> <p>Because everything is kept on the user's computer, the user will not be able to reopen messages from any location other than the computer where the messages have been downloaded.</p> <p>Messages are deleted on the desktop PC. Comparatively, it is inconvenient to clean up your mailbox on the server. Once e-mail is downloaded it can be accessed only using the same computer.</p>	<p>You can use multiple computers and devices to check your email</p> <p>Your mails are stored on the server</p> <p>Sent mail stays on the server so you can see it from any device.</p> <p>The IMAP protocol, by default, allows the user to keep all messages on the server. It constantly synchronizes the e-mail program with the server and displays what messages are currently present. All the actions performed on the messages (reading, moving, deleting...) will be done directly on the server.</p> <p>Message can be deleted directly on the server to make it more convenient to clean up your mailbox on the server.</p> <p>Because everything is kept on the server the user will be able to access the e-mail in the inbox from any computer in the world connected to the internet and will always find the same settings in their e-mail account.</p>

**Q.4. (a) Explain different types of Style Sheets?**

Ans. When a browser reads a style sheet, it will format the HTML document according to the information in the style sheet.

There are three types of CSS styles:

**Inline styles**

Inline styles are styles that are written directly in the tag on the document. Inline styles affect only the tag they are applied to. An inline style may be used to apply a unique style for a single element.

To use inline styles, add the style attribute to the relevant element. The style attribute can contain any CSS property.

<a href="" style="text-decoration: none;">

(5)

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### Embedded styles

Embedded styles are styles that are embedded in the head of the document. Embedded styles affect only the tags on the page they are embedded in. An internal style sheet may be used if one single page has a unique style.

Internal styles are defined within the `<style>` element, inside the `<head>` section of an HTML page.

```
<style type="text/css">  
p { color: #00f; }  
</style>
```

### External styles

External styles are styles that are written in a separate document and then attached to various Web documents. External style sheets can affect any document they are attached to. With an external style sheet, you can change the look of an entire website by changing just one file.

Each page must include a reference to the external style sheet file inside the `<link>` element.

```
<link rel="stylesheet" type="text/css" href="styles.css" />
```

(5)

### Q.4. (b) Write a program.

#### (i) to add an ordered list in a web page

**Ans.** The ordered list element, `<ol>`, works very much like the unordered list element; individual list items are created in the same manner. The main difference between an ordered list and an unordered list is that with an ordered list, the order in which items are presented is important.

```
<ol>  
    <li>Head north on N Halsted St</li>  
    <li>Turn right on W Diversey Pkwy</li>  
    <li>Turn left on N Orchard St</li>  
</ol>
```

#### (ii) to create frames in a web page.

**Ans.** The `<frameset>` tag is not supported in HTML5.

The `<frameset>` tag defines a frameset.

The `<frameset>` element holds one or more `<frame>` elements. Each `<frame>` element can hold a separate document.

The `<frameset>` element specifies HOW MANY columns or rows there will be in the frameset, and HOW MUCH percentage/pixels of space will occupy each of them.

```
<frameset cols="25%,*,25%">  
    <frame src="frame_a.htm">  
    <frame src="frame_b.htm">  
    <frame src="frame_c.htm">  
</frameset>
```

Time: 1½ Hrs.  
Note: Q.No. 1 is compulsory

Q.1. Attempt All

Q.1. (a) What are

Ans. The types of

1. Trojan. Trojan is

to hide itself from anti-virus software. It is a

2. Virus. It is a

computer. The ultimate goal is to never be able to operate

3. Worms. One of

spread. It does not alter

but it can spread from

internet.

4. Spyware. Is a

are infected with it, spyware and it will

Q.1. (b) Different

(i) Cookies and

Ans. A "session" is

through the site. A session

etc. In PHP, session

in a session like the

Example: `$_SESSION`

A "cookie" is ho

username, last visit

may have the same

Example: `setcookie()`

(ii) DOS and

Ans. A DoS Atta

This means th

with packets (TCP)

targeted server's h

to others, thereby

UDoS

ADDOS Attack

In most respo

Instead of one co

mputers and

**FIRST TERM EXAMINATION [FEB. 2017]  
SIXTH SEMESTER [B.TECH]  
WEB ENGINEERING [ETCS-308]**

M.M. : 30

Time : 1.5 Hrs.

Note: Q. No. 1 is compulsory. Attempt any two more Questions from the rest.

**Q.1. Attempt All:**

(1)

**Q.1. (a) What is CDATA section?**

**Ans.** CDATA stands for Character Data and it means that the data in between these strings includes data that could be interpreted as XML markup, but should not be.

**The key differences between CDATA and comments are:**

- As Richard points out, CDATA is still part of the document, while a comment is not.

- In CDATA you cannot include the string ]]> (CDEnd), while in a comment -- is invalid.

- Parameter Entity references are not recognized inside of comments.

This means given these three snippets of XML from one well-formed document:  
<!ENTITY MyParamEntity "Has been expanded">

**Q.1. (b) Define eval() function.**

(1)

**Ans.** eval() is a function property of the global object. The argument of the eval() function is a string. If the string represents an expression, eval() evaluates the expression. If the argument represents one or more JavaScript statements, eval() evaluates the statements.

**Q.1. (c) Differentiate between SGML and HTML.**

(1)

**Ans. Comparison between SGML and HTML:**

	SGML	HTML
Full Form	It stands for the Standard Generalized Markup Language.	It stands for Hyper Text Markup Language.
Type	application/sgml, text/sgml	text/html
Type code	Text	Text
Uniform type	public.xml	public.html
Developed by	ISO	WWW Consortium
Format type	It is a mark up language.	It is a mark up language.

**Q.1. (d) What are sessions and cookies?**

(1)

**Ans.** A session as you probably mean it is a server-side object which stores state. You use it in servlets to store and retrieve data. You keep hearing people saying HTTP is a stateless protocol, right? They mean when you load a page, you're finished as far as the web server is concerned. If you reload a page, the new request isn't associated in any way with the previous one.

A cookie is a small piece of information a browser sends to a server with every request.

**Q.1. (e) Differentiate between indexOF() and last Index Of().**

(1)

**Ans.** The String class provides two methods that allow you to search a string for a specified character or substring:

- **indexOf()** Searches for the first occurrence of a character or substring.
  - **lastIndexOf()** Searches for the last occurrence of a character or substring.
- Q.1. (f) Write the names of two application server and two web server. (1)**

**Ans. WEB SERVERS:**

Apache web server – the HTTP web server

Apache Tomcat

**APPLICATION SERVER:**

**BASIC**

**C**

**Q.1. (g) Briefly describe WML and XML. (1)**

**Ans. XML** (Extensible Markup Language) is an increasingly popular format for sharing data that allows Web developers to create customized tags, as well as use predefined tags, used for developing a single Web site whose content can be formatted to display appropriately on various devices. Wireless devices use a subset of XML called WML. WML (wireless markup language) allows Web developers to design pages specifically for microbrowsers.

**Q.1. (h) Differentiate between JSP and Servlet. (1)**

**Ans.**

SERVLET	JSP
A servlet is a server-side program and written purely on Java.	JSP is an interface on top of Servlets. In another way, we can say that JSPs are extension of servlets to minimize the effort of developers to write User Interfaces using Java programming.
Servlets run faster than JSP	JSP runs slower because it has the transition phase for converting from JSP page to a Servlet file. Once it is converted to a Servlet then it will start the compilation

**Q.1. (i) Differentiate between Inline, External and Internal Style Sheets. (1)**

**Ans. External Style Sheet**

With an external style sheet, you can change the look of an entire website by changing just one file

**Internal Style Sheet**

An internal style sheet may be used if one single page has a unique style.

**Inline Styles**

An inline style may be used to apply a unique style for a single element.

**Q.1. (j) ....are the block of JavaScript code that performs a specific task and return a value. (1)**

**Ans. Functions**

**Q.2. (a) Explain any two Email protocols. (5)**

**Ans. E-mail Protocols** are set of rules that help the client to properly transmit the information to or from the mail server. Here in this tutorial, we will discuss various protocols such as **SMTP, POP, and IMAP**.

## SMTP

**SMTP** stands for It is a standard protocol

### Key Points:

- SMTP is applic
- SMTP is connec

## IMAP

**IMAP** stands for There exist versions o

1. Original IMAP
2. IMAP2

### Key Points:

- IMAP allows the without downloading the
- The e-mail is ho It enables us to take the mail. It enables us mail boxes.

**Q.2. (b) Write a create a table.**

**Ans.**

```
<table>
<thead>
<tr>
<th>Month
<th>Saving
</tr>
</thead>
<tbody>
<tr>
<td>Sun
<td>$18
</tr>
</tbody>
<tfoot>
<tr>
<td>Ja
<td>$
</tr>
</tfoot>
<tr>
<td>
<td>
</tr>
<tr>
<td>
<td>
</tr>
<tr>
<td>
<td>
</tr>
<tr>
<td>
<td>
</tr>
```

**IPTP**

**SMTP** stands for **Simple Mail Transfer Protocol**. It was first proposed in 1982. It is a standard protocol used for sending e-mail efficiently and reliably over the internet.

**Key Points:**

- SMTP is application level protocol.
- SMTP is connection oriented protocol.

**IAP**

**IMAP** stands for **Internet Mail Access Protocol**. It was first proposed in 1986. There exist versions of IMAP as follows:

1. Original IMAP
2. IMAP2

**Key Points:**

- IMAP allows the client program to manipulate the e-mail 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 download, delete the mail without reading the mail. It enables us to create, manipulate and delete remote message folders called mail boxes.

**Q.2. (b) Write a program to show the use of all tags and attributes used to create a table.** (5)

Ans.

```
<table>
<thead>
<tr>
  <th>Month</th>
  <th>Savings</th>
</tr>
</thead>
<tfoot>
<tr>
  <td>Sum</td>
  <td>$180</td>
</tr>
</tfoot>
<tbody>
<tr>
  <td>January</td>
  <td>$100</td>
</tr>
<tr>
  <td>February</td>
  <td>$80</td>
</tr>
```

```
</tbody>
</table>
```

**Q.3. (a) What are the types of Pop-up boxes supported by JavaScript. Explain them with the help of a program.** (5)

**Ans.** JavaScript has three kind of popup boxes: Alert box, Confirm box, and Prompt box.

### Alert Box

An alert box is often used if you want to make sure information comes through to the user.

When an alert box pops up, the user will have to click "OK" to proceed.

### Syntax

```
window.alert("sometext");
```

The `window.alert()` method can be written without the window prefix.

### Example

```
alert("I am an alert box!");
```

### Confirm Box

A confirm box is often used if you want the user to verify or accept something.

When a confirm box pops up, the user will have to click either "OK" or "Cancel" to proceed.

If the user clicks "OK", the box returns true. If the user clicks "Cancel", the box returns false.

### Syntax

```
window.confirm("sometext");
```

**Q.3. (b) Explain the types of selectors used in CSS with example.** (5)

**Ans.** CSS selectors are the part of CSS rules that determine what HTML elements that are affected by the CSS rule. Here is an example CSS rule:

```
div {
    border: 1px solid black;
```

}

The CSS selector part of the above CSS rule is this:

div

This selector means that all div elements should be targeted by the CSS rule.

There are several different types of CSS selectors. Both CSS 1.0, CSS 2.1 and CSS 3.0 added selectors to the CSS standard. The rest of this text will go through these CSS selectors.

**Element Selector**

The element selector is the most basic CSS selector. It selects all the HTML elements of the same type. For instance, all div elements or p elements.

With the element CSS selector you simply write the element name of the elements to apply the CSS rule to. Here are three examples:

```
div {
    border: 1px solid black;
}

p {
    font-size: 18px;
}

input {
    border: 1px solid #cccccc;
}
```

These three CSS rules each have a selector that selects all of a certain type of HTML elements. The first CSS selector selects all div elements. The second CSS selector selects all p elements. The third CSS selector selects all input elements.

You can select any HTML element using the element selector. All elements of that type / name will be affected by the CSS rule having the element selector.

**Q.4. (a) Write a program to accept an Email address from the user in an HTML form and then validates it.** (6)

Ans.

- <form>
- <input type="email" placeholder="Enter your email">
- <input type="submit" value="Submit">
- </form>
- <input
- type="text"
- pattern="/^([a-zA-Z0-9.!#\$%&\*+/=?^\_{|}~-]+@[a-zA-Z0-9-]+(?:\.[a-zA-Z0-9-]+)\*\$/"
- required
- >

**Q.4. (b) Explain the lifecycle and architecture of a Servlet.** (4)

Ans. A servlet life cycle can be defined as the entire process from its creation till the destruction. The following are the paths followed by a servlet.

- The servlet is initialized by calling the **init()** method.
- The servlet calls **service()** method to process a client's request.
- The servlet is terminated by calling the **destroy()** method.
- Finally, servlet is garbage collected by the garbage collector of the JVM.

**The init() Method**

- The init method is called only once. It is called only when the servlet is created, and not called for any user requests afterwards. So, it is used for one-time initializations, just as with the init method of applets.

**The service() Method**

- The service() method is the main method to perform the actual task. The servlet container (i.e. web server) calls the service() method to handle requests coming from the client (browsers) and to write the formatted response back to the client.

**The destroy() Method**

- The `destroy()` method is called only once at the end of the life cycle of a servlet. This method gives your servlet a chance to close database connections, halt background threads, write cookie lists or hit counts to disk, and perform other such cleanup activities.

