FUNDAMENTAL OF WEB TECHNOLOGY

WINTER PAPER SOLUTION-2024

Q.1 (a) Answer the following. (1 Mark Each)

1. What is a Web Browser? A web browser is a software application used to access, view, and browse web pages on the World Wide Web. Examples include Google Chrome or Firefox.

2. What is internet? The Internet is a global network of interconnected computers that communicate using standard protocols, allowing users to share information, access resources, and connect worldwide.

3. Give full form of CSS. CSS stands for **Cascading Style Sheets**.

4. Explain comment in html. Comments in HTML are used to insert notes in the source code that are not displayed by the browser. The syntax is ``. (Note: While the syllabus explicitly mentions JS comments, HTML comments are a fundamental part of the document structure).

5. Explain HTTP. HTTP stands for **HyperText Transfer Protocol**. It is a communication protocol used for transferring web pages from a web server to a web browser.

6. Write Full Form of: TCP/IP. Write Full Form of: DD.

- **TCP/IP:** Transmission Control Protocol / Internet Protocol (Standard Web Technology Protocol).
- **DD:** Definition Description (Used in Definition Lists <dl> to describe a term).

Q.1 (b) Do as directed. (1 Mark Each)

1. Is Java Script case sensitive? (TRUE/FALSE). TRUE. JavaScript is case-sensitive (e.g., Name is different from name).

2. WWW stands for

World Wide Web.

3. _____ attribute of <HR> tag specifies the width of a horizontal line.
width. (The <hr> tag creates a horizontal rule, and attributes generally include width to define size) .

4. The default color of a hyperlink on a webpage is _____.Blue. (Standard HTML behavior; visited links are typically purple).

5. Is CSS case sensitive? (TRUE/FALSE). FALSE. CSS is generally not case-sensitive for property names and values, although it is for class and ID names in HTML.

6. The <legend> tag within the fieldset tag is required (TRUE/FALSE).FALSE. While often used together to group form data, the <legend> tag is not strictly mandatory for the code to run.

7. External Java Script file has _____ extension.

.js (inferred from external file concepts in syllabus).

Q.2 (a) What is URL's? Explain basic structure of URL. (7 Marks)

Answer: Definition: A **URL (Uniform Resource Locator)** is the address used to locate and access a resource on the Internet.

Basic Structure of URL: A URL consists of the following main components:

Protocol: Defines the communication type (e.g., http, https, ftp).

- *Example:* https

Domain Name: The name of the website (server address).

- *Example:* www.google.com

Port Number (Optional): Specifies the gate for communication (e.g., :80, :443).

Path: The specific location or directory of the resource on the server.

- *Example:* /search or /products

Query Parameters (Optional): Sends extra information to the server, usually starting with ?.

- *Example:* ?q=chatgpt

Example:

https://www.example.com/page?id=10.

Q.2 (b) What is FTP? Explain types of FTP. (7 Marks)

Answer:Definition:

FTP (File Transfer Protocol) is a protocol used to upload and download files between a client and a server on the Internet.

How it works:

1. **Connection:** The client connects to the server.
2. **Authentication:** The user logs in with a username/password.
3. **Transfer:** Files are uploaded or downloaded via data channels.

Types of Transfer Modes (Types of FTP usage): According to the syllabus, FTP transfers occur in two main modes:

ASCII Mode:

- Used for transferring **text files** (e.g., .txt, .html).
- It ensures that line endings are processed correctly between different operating systems.

Binary Mode:

- Used for transferring **non-text files** such as images, videos, audio, and executable software.
- It transfers the file exactly as a sequence of bytes without modification.

OR

Q.2 (b) Explain iframe tag with example. (7 Marks)

Answer:

Definition: The <iframe> (Inline Frame) tag is used to embed another web page or document within the current HTML page.

Common Uses: It is frequently used for embedding maps, advertisements, videos (like YouTube), or external content.

Syntax and Attributes:

- src: The URL of the page to embed.
- width & height: Dimensions of the frame.
- frameborder: Specifies if the frame should have a border (0 for no border).

Example Code:

HTML

<!DOCTYPE html><html><body> <h2>Iframe Example</h2> <iframe src="https://www.wikipedia.org" width="500" height="300"> </iframe></body></html>

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Q.3 (a) Explain <input> tag with any five attribute with example. (7 Marks)

Answer: The <input> tag is used in HTML forms to collect data from the user. It is a versatile element that changes behavior based on the type attribute.

Common Attributes (Any Five):

type: Specifies the type of input control (e.g., text, password, radio).

- *Example:* <input type="text">.

name: Defines the name of the input field, which is sent to the server.

- *Example:* <input type="text" name="username">.

value: Specifies the initial value of the input field.

- *Example:* <input type="submit" value="Login">.

placeholder: Provides a hint to the user about what to type (e.g., "Enter Name").

checked: Used with radio buttons or checkboxes to select an option by default.

- *Example:* <input type="checkbox" checked>.

Example Code:

HTML

<form>

Name: <input type="text" name="fullname" placeholder="Enter Name">

Password: <input type="password" name="pass">

Gender: <input type="radio" name="gender" value="Male"> Male

<input type="submit" value="Register"></form>

.

Q.3 (b) Explain Formatting text, superscript, subscript tag with example. (7 Marks)

Answer: HTML provides various tags to format text and change its visual appearance.

1. Superscript (<sup>):

- This tag defines superscript text, which appears half a character above the normal line.
- **Use:** Mathematical formulas (e.g., X^2).
- **Example:** X² displays as X^2.

2. Subscript (<sub>):

- This tag defines subscript text, which appears half a character below the normal line.

- **Use:** Chemical formulas (e.g., H_2O).
- **Example:** H₂O displays as H_2O.

3. Other Formatting Tags:

- **<b> or :** Makes text **bold**. also implies importance.
- **<i> or :** Makes text *italic*.
- **<small>:** Makes the text smaller.
- **<mark>:** Highlights text.

Example Code:

HTML

This is Bold text. This is Italic text. Mathematical Formula: (a+b)² Chemical Formula: H₂O

OR

Q.3 (a) Explain table tag and basic attributes with example. (7 Marks)

Answer:

Definition: The <table> tag is used to create a table in HTML to arrange data in rows and columns.

Basic Tags:

- <table>: Container for the table.
- <tr>: Defines a Table Row.
- <th>: Defines a Table Header (bold and centered).
- <td>: Defines Table Data (standard cell).

Attributes:

- **border:** Specifies the width of the table border (e.g., border="1").
- **rowspan:** Merges cells vertically (across rows).
- **colspan:** Merges cells horizontally (across columns).

Example Code (Timetable):

HTML

```
<table border="1">
<tr>
<th>Day</th>
<th>Subject</th>
</tr>
<tr>
<td>Monday</td>
<td>Maths</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Computer</td>
</tr>
</table>
```

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Q.3 (b) Define List. Explain ordered list and unordered list with example. (7 Marks)

Answer: Definition: HTML lists are used to display a set of related items in a structured format.

1. Ordered List (<ol>):

- Displays items in a numbered sequence (1, 2, 3 or A, B, C).
- **Tag:** for the list, <li> for list items.

Example:

- HTML

  Apple

  Banana

2. Unordered List (<ul>):

- Displays items with bullet points (discs, circles, squares). The order does not matter.
- **Tag:** for the list, <li> for list items.

Example:

HTML

Pen

Pencil

Q.4 (a) Explain CSS selectors. Explain with example. (7 Marks)

Answer:

Definition: CSS Selectors are patterns used to select and style HTML elements on a webpage.

Types of Selectors:

Element Selector:

- Selects all elements of a specific tag name.
- *Example:* p { color: red; } (Styles all paragraphs red).

Class Selector:

- Selects elements with a specific class attribute. It starts with a dot (.).
- *Example:* .myClass { font-size: 20px; }.

ID Selector:

- Selects a unique element with a specific id. It starts with a hash (#).
- *Example:* #unique { background: yellow; }.

Universal Selector:

- Selects all elements on the page. It uses an asterisk (*).
- *Example:* * { margin: 0; padding: 0; }.

Q.4 (b) Explain CSS Box Model in detail. (7 Marks)

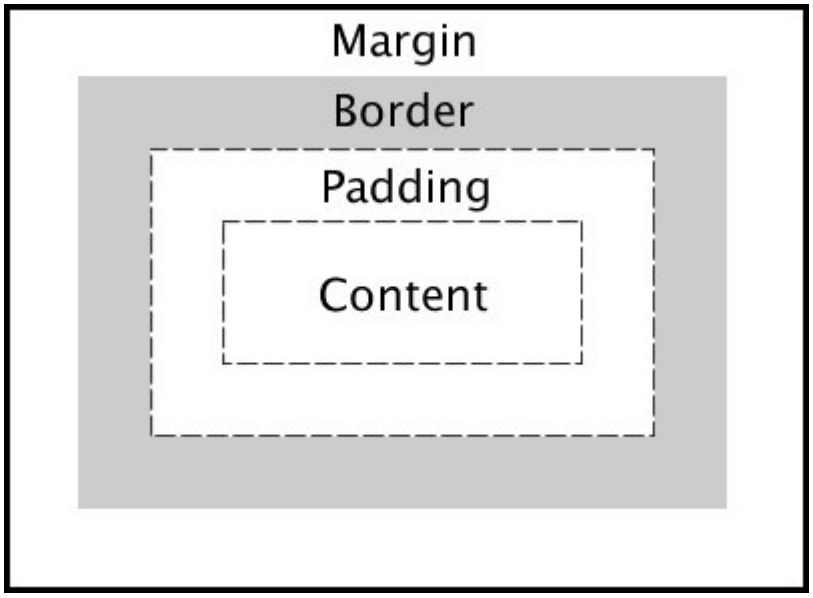
Answer:

Definition: The CSS Box Model is a container that wraps around every HTML element. It determines the spacing and layout of elements.

Components of the Box Model:

1. **Content:** The actual content of the box, where text and images appear.
2. **Padding:** The transparent area around the content (inside the border). It clears an area around the content.
3. **Border:** A line that goes around the padding and content.
4. **Margin:** The transparent area outside the border. It creates space between this element and other elements.

Visual Representation:



OR

Q.4 (a) List out types of style sheets. Explain External Style Sheet with example. (7 Marks)

Answer:

Types of Style Sheets:

1. **Inline CSS:** Written inside the HTML tag using the style attribute.
2. **Internal CSS:** Written inside the <style> tag within the <head> section.
3. **External CSS:** Written in a separate file with a .css extension.

External Style Sheet (Detailed): An external style sheet is ideal when the style is applied to many pages. It allows you to change the look of an entire website by changing just one file.

- **How to create:** Save the CSS code in a file named style.css.
- **How to link:** Use the <link> tag in the HTML <head> section.

Example:

- **File: style.css**
- CSS
- body { background-color: lightgray; } h1 { color: blue; }
- **File: index.html**

HTML

<head>

<link rel="stylesheet" href="style.css">

</head>

Q.4 (b) What is DOM in JavaScript? Explain in detail. (7 Marks)

Answer: Definition: DOM (Document Object Model) is a standard interface that represents an HTML document as a tree structure. It allows JavaScript to access and manipulate the content, structure, and style of a webpage.

Key Features:

Accessing Elements: JavaScript can find elements using methods like document.getElementById() or document.querySelector().

Changing Content: You can modify the HTML inside an element using the innerHTML property.

- *Example:* document.getElementById("demo").innerHTML = "Hello";.

Changing Styles: You can dynamically change CSS styles.

- *Example:* element.style.color = "red";.

Tree Structure: The DOM views the HTML as a tree where document is the root, <html> is a node, and tags like <body>, <h1>, and <p> are child nodes.

Q.5 (a) Explain the types of operators available in JavaScript. (7 Marks)

Answer: JavaScript includes several types of operators to perform operations on variables and values.

Arithmetic Operators:

- Used for mathematical calculations.
- Symbols: +, -, *, /, % (Modulus).
- *Example:* let x = 10 + 5; (Result: 15).

Relational (Comparison) Operators:

- Used to compare two values. Returns true or false.
- Symbols: >, <, >=, <=, == (Equal), != (Not Equal).
- *Example:* x > y.

Logical Operators:

- Used to combine boolean logic.
- Symbols: && (AND), || (OR), ! (NOT).
- *Example:* (age > 18 && age < 60).

Assignment Operators:

- Used to assign values to variables.
- Symbols: =, +=, -=, *=.
- *Example:* x += 5; (Same as x = x + 5).

Q.5 (b) List out types of JavaScript loop. Explain any one with example. (7 Marks)

Answer: Types of Loops: Loops are used to execute a block of code repeatedly. The main types in JavaScript are:

1. **For Loop**
2. **While Loop**
3. **Do-While Loop**

Explanation of For Loop: The for loop is the most commonly used loop. It repeats a block of code a specific number of times.

Syntax:for (initialization; condition; increment/decrement) { code... }

Example:

JavaScript

```
// This loop prints numbers from 0 to 4for (let i = 0; i < 5; i++)
{    console.log(i); }
```

- **Initialization:** let i = 0 starts the counter.
- **Condition:** i < 5 runs the loop as long as i is less than 5.
- **Increment:** i++ increases the value of i by 1 after each loop.

OR

Q.5 (a) Explain JSON Object in detail with example. (7 Marks)

Answer: Definition: A **JSON Object** is a collection of key-value pairs enclosed in curly braces { }. It is used to store data describing an entity.

Characteristics:

- Keys must be **strings** written in double quotes (e.g., "name").
- Values can be any valid JSON data type (String, Number, Array, Boolean, etc.).
- Data is separated by colons (:), and pairs are separated by commas (,).

Structure:

JSON

```
{    "key1": "value1",    "key2": "value2" }
```

Example:

JSON

```
{    "id": 101,    "name": "Atul",    "isStudent": true,    "skills": ["HTML", "CSS", "JS"],    "address": {        "city": "Delhi",        "pincode": 110001    } }
```

This example shows a student object containing a number (id), string (name), boolean (isStudent), array (skills), and a nested object (address).

Q.5 (b) Explain data type of JSON in detail. (7 Marks)

Answer: JSON supports 6 specific data types that must be used for valid JSON structure.

String:

- A sequence of characters enclosed in double quotes.
- *Example:* "name": "Atul".

Number:

- Integers or floating-point numbers. (No distinction between int and float).
- *Example:* "age": 20 or "price": 99.99.

Boolean:

- Represents true or false values.
- *Example:* "isVerified": true.

Null:

- Represents an empty or non-existent value.
- *Example:* "middleName": null.

Array:

- An ordered list of values enclosed in square brackets [ ].
- *Example:* "colors": ["Red", "Blue", "Green"].

Object:

- A set of key-value pairs enclosed in curly braces { }.
- *Example:* "user": { "id": 1, "login": "admin" }.