This question paper contains **12** printed pages]

S. No. of Question Paper : **5708**

Unique Paper Code : **2343012008**

Name of the Paper : **Introduction to Web Programming**

Name of the Course : **Computer Science Elective**

Semester : **IV**

Duration : **3 Hours**   Maximum Marks : **90**

(Write your Roll No. on the top immediately on receipt of this question paper.)

This question paper has *two* sections A and B.

Question No. **1** in Section A is compulsory.

Attempt any **4** questions from Section B.

Parts of a question must be attempted together.

Section A carries **30** marks and each question

in Section B carries **15** marks.

Section A

1. (*a*) Write HTML code to create a navigation bar with the links : Home, About, Services, and Contact. Style the bar using an external CSS file named "styles.css".   2

(b) For a website http://www.abc.com write two HTML statements to display the logo image "mylogo.jpeg" saved in a sub folder "images" using absolute and relative paths.   2

(c) Write HTML code to display an ordered list as shown below :   4

    (1) Programming Languages

        (A)   Python

        (B)   JavaScript

        (C)   Java

    (2) Web Development Frameworks

        (A)   React

        (B)   Angular

        (C)   Vue.js

(d) Write CSS code to create a hover effect on a button such that the background colour of the button is changed to red when the user hovers mouse over it.   4

(e) Write a JavaScript code that accepts two numbers from the user and displays their sum, difference, multiplication and division.   4

(f) Write jQuery code that changes the background colour of the webpage to a random colour every time the user clicks a button. 4

(g) Design a dropdown menu in HTML that displays a list of country names. Using JavaScript, display an alert showing the name of the selected country whenever the user makes a selection. 4

(h) Explain the following tags with an example : 6

(i) <section>

(ii) <nav>

(iii) <figure>

Section B

2. (a) Define a paragraph containing the text "Work Hard, Dream Big". Using jQuery *this* object change the text colour to blue whenever the text is clicked. 3

(b) What is the role of JSON.parse( ) and JSON.stringify( ) in web APIs ? Given the following JSON string, parse it into a JavaScript object : 6

```
const jsonString = ' {"name": "Alice", "age": 25, "city":

"New York"}';

const jsonObject = JSON.parse(jsonString);

console.log(jsonObject);
```

- Determine the output obtained on the console.

- Print each of the properties (name, age, and city) from the parsed object.

(c) Define a JavaScript function average( ) that calculates and returns the average of the numbers passed to it. The function average( ) should accept variable number of arguments. Call this function to calculate average of 45, 60, 72, 39 and 68. Print the final answer inside a <div> tag. 6

3. (a) How is event handling performed in JavaScript ? Write a script that handles the click event on a button and performs the following actions when the button is clicked :   5

 • Change the text of a paragraph element

 • Toggle the visibility of an image

 • Close the current window

 (b) Draw the sitemap of an online language learning website that offers courses to learn English, French and German. The website offers two to three courses for these languages. Use hierarchical website structure.   5

 (c) Write the appropriate HTML code snippets to perform the following tasks :   5

 (i) Emphasize the word "essential" in the sentence : "Teamwork is essential to success."

 (ii) Create a drop-down menu with options : "Red," "Blue," "Green," and "Yellow."

 (iii) Create a checkbox that says "Accept Terms and Conditions."

(*iv*) Add an image with the filename "banner.jpg" that is 600px wide with alternative text "Website Banner."

(*v*) Display the number 5×10^6 using HTML superscript tag.

4. (*a*) Write the HTML code to create the table given below : 5

A	C	F	H	
	D	G	I	K
B	E		J	

(*b*) Design an HTML page with two input boxes : one for a number and one for a divisor. Define a JavaScript function `isMultiple( )` that checks if the first number is a multiple of the second number. The function should be called when the second input box loses focus. Display the result in an alert box. 5

(*c*) Create an HTML page with a text input box. Write a jQuery function to validate that the input is not empty when the user leaves the field. If the input is left empty, display a red border around the text box and an error message below the field. 5

5. (*a*) Determine the output of the following code given below :   4

```
<html>

<body>

    <div id="content">Hello</div>

    <script>

        let div = document.getElementById("content");

        div.innerHTML += " World!";

        console.log(div.innerHTML);

    </script>

</body>

</html>
```

(*b*) Consider the script given below and explain the working of each line of code :   6

```html
<html>
    <body>
        <div  id="box">Box</div>
        <button  id="button1">Click  Me!</button>
        <script>
            let  box  =  document.getElementById("box");
            let  btn1 = document.getElementById("button1");
        btn1.addEventListener('click',  function(  )  {
            if  (box.style.width  ===  '200px')  {
              box.style.width  =  '100px';
              box.style.height  =  '100px';
            }
            else  {
              box.style.width  =  '200px';
              box.style.height  =  '200px';
            }
        });
        </script>
    </body>
</html>
```

(c) Using a diagram, explain the difference between padding and margin. Write their syntax and usage with the help of a suitable example.　　　　5

6. (a) What are the *two* ways to wait for a web page to load in jQuery? Write script to print "Hello World" on a web page after the document has finished loading through both ways.　　　　4

(b) What will be the output of the JavaScript code given below ? Give reason :　　　　4

```
for (let i = 1; i <= 10; i++)

{

    if (i > 5) break;

    if (i%2 === .0) continue;

    document.writeln(i);

}
```

(c) Create an HTML document with a form containing the following

fields : Full Name, Date of Birth, Phone Number and Email Address.

Write jQuery code to perform the following tasks .:   7

- When the "Full Name" textbox receives focus, change its background

  colour to light yellow.

- If the "Full Name" textbox is left blank upon losing focus, change

  the background colour to light coral; otherwise, reset it to

  white.

- If the "Phone Number" textbox contains an invalid phone

  number (less than 10 digits or not numeric), change its

  background colour to light red and display an error message

  below it.

- When the "Email Address" textbox receives focus, check if

  the email address is valid or not. If @ symbol is missing,

  change its background colour to light pink and show an error

  message.

7. (a) Identify and explain the error in the code. How can it be fixed ?   5

```
1    function outerFunction( ) {

2        var outerVar = "I am outer";

3    function innerFunction( ){

4        document.write (outerVar);

5        var innerVar = "I am inner";

6    }

7    innerFunction( );

8    document.write (innerVar);

9    }

10   outerFunction( );
```

(b) Create a simple external CSS file *green.css* that turns all paragraphs green and center aligns them. Write the HTML to link and apply that stylesheet to a paragraph element.   5

(c) Design an HTML page with embedded CSS to create a table with 3 rows and 2 columns with formatting as given below : 5

- Background color of the header row is "blue".

- Header text color is "white".

- The table border color is "black" and should be "2px" thick.

- Alternate rows of the table should have a light blue background color.