Question Paper

Exam Date & Time: 10-May-2024 (02:30 PM - 05:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

MIT MPL and BLR - BTech VI Semester - End Semester Examination - Jan-Apr 2024

OPEN ELECTIVE-DESIGN AND DEVELOPMENT OF WEB APPLICATIONS [ICT4302]

Marks: 50 **Duration: 180 mins.**

Descriptive

Answer all the questions.

* Answer all questions.
* Assume the missing data suitably.
* Write neatly and legibly.
* Code must be correctly indented
* Give suitable examples wherever necessary.

1) Identify and discuss all the elements within the below URL by specifying their names and providing explanations. https://www.manipal.edu:8080/path/to/resource?param1=value1 & param2=value2#section3 (5)

2) Describe the functionality of a web server. Does it refer to only hardware or only software? (3)

3) What is hypertext? How is it different from hypermedia? (2)

4) Render the output of the provided HTML code in Figure 1 as your answer. Ensuring all elements and formatting within the code are considered. (5)

```
<!DOCTYPE html>
<html>
<head>
  <style>
    table, th, td {
      border: 1px solid black;
      border-collapse: collapse;
      padding: 8px;
    }
    .male {
      color: blue;
    }
    .female {
      color: red;
    }
    .active {
      color: green;
    }
    .inactive {
      color: gray;
    }
  </style>
```

```
<tr>
  <th rowspan="2">Name</th>
  <th colspan="2">Details</th>
  <th rowspan="2">Status</th>
</tr>
<tr>
  <th>Age</th>
  <th>Gender</th>
</tr>
<tr>
  <td>John Doe</td>
  <td>30</td>
  <td class="male">Male</td>
  <td class="active">Active</td>
</tr>
<tr>
  <td colspan="2">Jane Smith</td>
  <td class="female">Female</td>
  <td class="inactive">Inactive</td>
</tr>
</table>
</body>
```

```
</head>
<body>
  <h2>Table with Rowspan and Colspan</h2>
  <table>
```

```
</html>
```

Figure 2A

5) Differentiate between block-level and inline elements in HTML. Provide examples of each type of element and explain their typical behaviour in terms of rendering on a web page. (3)

6) Write complete indented HTML code that will render the below HTML output as shown in Figure 2C. (2)

Nested Mixed List for Fragrances

1. Floral
    - Rose
    - Lily
    - Jasmine
2. Woody
    - Sandalwood
    - Cedarwood
    - Patchouli
3. Citrus
    1. Lemon
    2. Orange
    3. Grapefruit

Figure 2C

7) Illustrate five common scenarios where JavaScript is utilized to enhance user interaction and functionality on websites. Provide examples for each scenario, detailing the specific functionalities enabled by JavaScript in each case. (5)

8) Explain the placement of JavaScript within an HTML file. Describe the different locations where JavaScript can be included and discuss the implications of each placement option on the behavior and performance of the web page. (3)

9) Describe the output of the code in Figure 3C as a sequence of steps. (2)

```
<!DOCTYPE html>
<html>
<head>
   <title>User Notification Example</title>

   <script>
   function showNotification() {
     alert("Your message has been successfully sent!");
   }
   </script>
</head>
<body>
 <h1>User Notification Example</h1>
<form>
   <button onclick="showNotification()">Send Message</button>
</form>
</body>
</html>
```

Figure 3C

10) Discuss the purpose of the onsubmit attribute (Figure 4A) in the < form> tag and how it interacts with the validateForm() function in the provided HTML code. Describe the behavior of the window.alert() method within the validateForm() function. (5)

```
<!DOCTYPE html>
<html>
```

```
<head>
<script>
function validateForm() {
  var x = document.forms["myForm"]["fname"].value;
  if (x == "") {
    window.alert("Name must be filled out");
    return false;
  }
}
</script>
</head>
<body>
<h2>JavaScript Validation</h2>
<form name="myForm" onsubmit="return validateForm()">
  Name: <input type="text" name="fname">
  <input type="submit" value="Submit">
</form>
</body>
</html>
```

Fig 4A

11) Discuss the potential drawbacks of relying solely on client-side validation, as demonstrated in the provided HTML code. What are some scenarios where server-side validation would be necessary, and how could it be implemented alongside client-side validation to enhance overall security and user experience? (3)

12) Discuss the concept of hex colour values in web development. Provide examples of how hex colour values are used to specify colours for elements on a webpage. Discuss the advantages of using hex colour values over other colour representation methods. (2)

13) Given the provided PHP code snippet in Figure 5A, write the output it would produce. (5)

```
<?php
$employees = array(
    array("name" => "John", "department" => "HR", "salary" => 50000),
    array("name" => "Jane", "department" => "Marketing", "salary" => 60000),
    array("name" => "Mike", "department" => "IT", "salary" => 70000)
);

$departmentTotalSalary = array();

echo "<h2>Employee Information:</h2>";
foreach ($employees as $employee) {
    $name = $employee["name"];
    $department = $employee["department"];
    $salary = $employee["salary"];
    echo "Name: $name | Department: $department | Salary: $salary <br>";
}

echo "<br><h2>Total Salary for Each Department:</h2>";
foreach ($employees as $employee) {
    $department = $employee["department"];
    $salary = $employee["salary"];
    if (array_key_exists($department, $departmentTotalSalary)) {
        $departmentTotalSalary[$department] += $salary;
    } else {
        $departmentTotalSalary[$department] = $salary;
    }
}

foreach ($departmentTotalSalary as $department => $totalSalary) {
```

```php
foreach ($departmentTotalSalary as $department => $totalSalary) {
    echo "Total salary for department $department: $totalSalary <br>";
}
?>
```

Fig 5A

14) Instead of calculating the total salary for each department, modify the second foreach loop (Refer Figure 5B) to display the highest salary among all employees, along with their respective names and departments. Implement this change and provide the output. (3)

```php
<?php
$employees = array(
    array("name" => "John", "department" => "HR", "salary" => 50000),
    array("name" => "Jane", "department" => "Marketing", "salary" => 60000),
    array("name" => "Mike", "department" => "IT", "salary" => 70000)
);

$departmentTotalSalary = array();

echo "<h2>Employee Information:</h2>";
foreach ($employees as $employee) {
    $name = $employee["name"];
    $department = $employee["department"];
    $salary = $employee["salary"];
    echo "Name: $name | Department: $department | Salary: $salary <br>";
}

echo "<br><h2>Total Salary for Each Department:</h2>";
foreach ($employees as $employee) {
    $department = $employee["department"];
    $salary = $employee["salary"];
    if (array_key_exists($department, $departmentTotalSalary)) {
        $departmentTotalSalary[$department] += $salary;
    } else {
        $departmentTotalSalary[$department] = $salary;
    }
}

foreach ($departmentTotalSalary as $department => $totalSalary) {
    echo "Total salary for department $department: $totalSalary <br>";
}
?>
```

Figure 5B

15) What is the purpose of the var_dump() function in PHP? Provide an example demonstrating the usage of var_dump() with a variable. (2)

-----End-----