



**University of Ruhuna- Faculty of Technology**  
**Bachelor of Information & Communication Technology Honours Degree**  
**Level 1 (Semester I) Examination, June/July 2025**  
**Academic year 2023/2024**

**Course Unit: ICT1153 Web Technologies (Written)**

**Duration: 2 hours**

.....  
**Answer all four (04) questions.**

1.  
a. Compare the three generations of the World Wide Web - Web 1.0, Web 2.0, and Web 3.0 by describing one key characteristic and one user interaction feature for each. **[24 marks]**

b. Consider the following two websites:  
• <http://www.food.lk>  
• <https://www.bank.lk>  
Identify three (03) key differences in how a web browser interacts with each of these websites. **[12 marks]**

c. Complete the following sentences:  
i. The href attribute in an anchor (<a>) tag specifies \_\_\_\_\_.  
ii. A hyperlink with target="\_blank" will \_\_\_\_\_.  
iii. The correct tag to link to an email is \_\_\_\_\_.  
iv. To create a bookmark link, the target section must have an attribute called \_\_\_\_\_.  
v. The protocol used to create file download links is usually \_\_\_\_\_. **[10 marks]**

d. Identify whether the following statements are TRUE or FALSE:  
i. A web client sends a request to a web server using FTP.  
ii. Web servers only support HTML content.  
iii. A single server can serve multiple clients simultaneously.  
iv. Chrome and Firefox are examples of web clients.  
v. A web server stores and delivers website files. **[10 marks]**

e. Write the complete HTML code to design **ABC Residences** webpage that meets the following requirements:  
i. Set the background color of the page to red using a HEX color code.

- ii. Add a centered <h1> heading with blue text that displays: ABC Residences.
- iii. Add a short paragraph describing the residence (you may use dummy text).
- iv. Insert a horizontal line below the paragraph.
- v. Create an unordered list of three facilities offered (e.g., Free Wi-Fi, Ocean View, Breakfast Included).
- vi. Add two hyperlinks:
  - I. An absolute link to <https://www.booking.com> with the link text "Book Now", which should open in a new tab.
  - II. A relative link to [contact.html](#) with the link text "Contact Us", which should open in the same tab.

[44 marks]

2.

- a. The following Figure 1 shows an energy usage report.

**Energy Use Report (Sample Table)**

Region	Customer Type			Total Use	
	Residential		Business	Expenditure	Units
	Urban	Rural			
North	2,500	1,800	4,200	8,500	MWh
	Summary Row: Combined Use				

Figure 1: Energy Usage Report

The following HTML code segment is used to create the above table displaying an energy usage report. However, several key attribute names and values have been removed and replaced with numbered blanks.

Fill in the 12 blanks with the correct attribute names or values only to complete the table structure accurately.

```
<table <!-- BLANK 1 --> cellpadding="8" <!-- BLANK 2 -->
  <caption>Energy Use Report (Sample Table)</caption>
  <thead>
    <tr>
      <th <!-- BLANK 3 -->>Region</th>
      <th <!-- BLANK 4 -->>Customer Type</th>
      <th <!-- BLANK 5 --> <!-- BLANK 6 -->>Total Use</th>
    </tr>
    <tr>
      <th <!-- BLANK 7 -->>Residential</th>
      <th <!-- BLANK 8 -->>Business</th>
    </tr>
    <tr>
      <th>Urban</th>
      <th>Rural</th>
```

```

        <th>Expenditure</th>
        <th>Units</th>
    </tr>
</thead>
<tbody>
    <tr>
        <td <!-- BLANK 9 -->>North</td>
        <td>2,500</td>
        <td>1,800</td>
        <td>4,200</td>
        <td rowspan="2">8,500</td>
        <td <!-- BLANK 10 -->>MWh</td>
    </tr>
    <tr>
        <td <!-- BLANK 11 --> <!-- BLANK 12 -->>Summary Row:
        Combined Use</td>
    </tr>
</tbody>
</table>

```

**[36 marks]**

b. CSS (Cascading Style Sheets) is used to define the presentation and layout of web pages.

i. Differentiate between the following types of CSS with one advantage and one disadvantage for each:

- I. Inline CSS
- II. Internal CSS
- III. External CSS

**[12 marks]**

ii. You are required to design a web page for an e-learning platform named "LearnNow". The HTML code below provides the basic layout of the homepage.

```

<html>
  <head>
    <link rel="stylesheet" type="text/css" href="style.css">
    <title>LearnNow - Home</title>
  </head>
  <body>
    <h1>Welcome to LearnNow</h1>
    <p class="tagline">Empower your future with online
learning.</p>
    <h2>Available Courses</h2>
    <ul>
      <li>Web Development</li>
      <li>Data Science</li>
      <li>Digital Marketing</li>
    </ul>
  </body>
</html>

```

Write the required CSS code in an external file named style.css to apply the following styles:

- I. Apply a blue background, white text color, and center alignment to the <h1> element.
  
- II. Style the paragraph with class tagline to have:
  - Italic font style
  - Font size of 20px
  - Padding of 10px
  - A light grey background
  
- III. For the <h2> element, apply:
  - Underline text decoration
  - Bold
  - Heading color to dark green
  
- IV. Style the unordered list to:
  - Remove bullet points
  - Add a 1px solid grey border
  - Set width to 300px
  - Center the list

[32 marks]

c. Meta tags are elements in HTML that provide metadata about the web page.

- i. List two (02) uses of meta tags. [04 marks]
  
- ii. Briefly explain the purpose of the following *name* attributes used in meta tags with suitable examples for each value.
  - I. description
  - II. keyword
  - III. author
  - IV. viewpoint

[16 marks]

3.

- a. You are required to design a registration form for a university event website as shown in Figure 2. The form should collect the following details from the user:
  - Full Name (text input)
  - Age (number input)
  - Email Address
  - Preferred Event (dropdown list with the options: "Workshop", "Seminar", "Competition")
  - Agree to terms (checkbox)
  - Button to register

# University Event Registration Form

Full Name:

Age:

Email Address:

Preferred Event:

I agree to the terms and conditions

Figure 2: University Event Registration Form

- i. Write the complete HTML code to create the form described above. [22 marks]
  
- ii. It is also required to write a JavaScript function named "validateForm" to perform client-side validation with the following rules:
  - I. The Full Name field must not be empty.
  - II. Age must be 18 or above.
  - III. A valid event option must be selected from the dropdown.
  - IV. The user must agree to the terms by checking the checkbox.
  - V. Based on the selected event type, display a unique message using an if-else statement.
    - "Workshop" → "Bring your laptop."
    - "Seminar" → "Arrive 10 minutes early."
    - "Competition" → "Don't forget your ID."
  - VI. You should prevent submission if any validation fails.

[52 marks]

- b. Write the expected output of the following JavaScript code snippets.

```
i. let num = 10;
   let sum = 0;

   do {
       sum += num;
       num -= 2;
   } while (num > 3);

   console.log(sum);
```

[07 marks]

```
ii. let output = "";

for (let i = 1; i <= 8; i++) {
  if (i % 2 === 0) {
    continue;
  }
  if (i === 2) {
    break;
  }
  output += i + " ";
}

console.log(output);
```

[07 marks]

- c. Objects in JavaScript are used to store keyed collections of data and represent more complex entities.

Define a JavaScript object named Vehicle with the following attributes:

- model
- chassisNumber
- manufacturedYear

In addition, include a method named serialNumber() that returns a concatenated string of model and chassisNumber (i.e., model + chassisNumber).

Note: You may assign any suitable values for the attributes.

[12 marks]

- 4.
- a. It is required to create a notification feature for a chat application.

As illustrated in Figure 3, when the "Show Notification" button is clicked, a hidden panel should appear using a sliding animation. Once the panel is visible, a message inside it should fade in smoothly, as shown in Figure 4. When the user clicks the "Close Message" button, the message should fade out, as demonstrated in Figure 5.

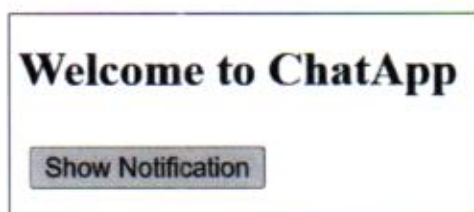


Figure 3: Initial View



Figure 4: View after clicking the "Show Notification" button



Figure 5: View after clicking the "Close Message" button

The following jQuery code segment is partially completed to implement this behavior.

Fill in the missing parts of the code, labeled 1, 2, etc., to complete the functionality as described.

Use the provided comments as guidance for each missing line.

```
<!DOCTYPE html>
<html>

<head>
  <title>jQuery Notification Panel</title>
  <script src="https://code.jquery.com/jquery-3.6.0.min.js"></script>
  <style>

    #notificationPanel {
      display: none;
      width: 300px;
      padding: 15px;
      border: 1px solid black;
      margin-top: 10px;
    }
  </style>
</head>

<body>
  <div>
    <button type="button">Show Notification</button>
  </div>
  <div id="notificationPanel">
    <div>
      <img alt="bell icon" data-bbox="250 145 270 160"/> You have a new message!
    </div>
    <button type="button">Close Message</button>
  </div>
</body>
</html>
```

```

    #message {
        display: none;
        padding: 10px;
        margin-bottom: 10px;
    }
</style>
</head>

<body>
    <button id="toggleBtn">Show Notification</button>
    <div id="notificationPanel">
        <div id="message">✉ You have a new message!</div>
        <button id="closeBtn">Close Message</button>
    </div>

    <script>
        $(document).ready(function() {

            // When the "Show Notification" button is clicked...
            $("#_1_")._2_(function() {

                // Slide down the notification panel
                $("#_3_")._4_(500);

                // Fade in the message inside the panel
                $("#_5_")._6_(800);
            });

            // When the close button is clicked...
            $("#_7_")._8_(function() {

                // Fade out the message
                $("#_9_")._10_(600);
            });
        });
    </script>
</body>
</html>

```

**[30 marks]**

- b. Extensible Markup Language (XML) is a markup language designed to describe and structure data, rather than format it for display as in HTML.
- i. Write XML code to represent the following information about a movie.

Movie  
 Title: Inception  
 Director: Christopher Nolan  
 Genre: Science Fiction  
 Year: 2010

**[15 marks]**

- ii. Write down an external CSS file to add the following styles to the XML elements created in part b) i).
- Make <Movie> a block-level element with a 2px solid navy border, 10px padding, and 15px space below the element.
  - Set the <Title> element to have a font size of 20px, dark red color, and underline the text.
  - Set <Director>, <Genre>, and <Year> elements as block-level elements and give each a left margin of 10px.
  - Display the <Genre> element in uppercase letters and use a light gray background.

[30 marks]

- c. A Document Type Definition (DTD) defines the structure and rules of an XML document to ensure it is both valid and well-formed. For the XML given below, write an external DTD named 'library.dtd' that defines the structure and rules for that XML.

```
<library>
  <books>
    <book isbn="978-1234567890">
      <title>The Silent Patient</title>
      <author>Alex Michaelides</author>
      <year>2019</year>
    </book>
    <book isbn="978-0987654321">
      <title>Atomic Habits</title>
      <author>James Clear</author>
      <year>2018</year>
    </book>
  </books>
</library>
```

[25 marks]

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**End of the Paper**

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