



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS**

**DEPARTMENT OF INFORMATION SYSTEMS**

**UNIVERSITY EXAMINATION FOR THE DEGREE BACHELOR OF SCIENCE**

**BUSINESS INFORMATION SYSTEMS**

**YEAR THREE: SEMESTER ONE**

**4<sup>th</sup> YEAR 1<sup>ST</sup> SEMESTER 2024 ACADEMIC YEAR**

**MAIN CAMPUS**

---

**COURSE CODE: ITB 1405**

**COURSE TITLE: Web Application Technologies**

**DATE:14/1/25**

**TIME:2 HRS**

**EXAM SESSION:9-11.00 AM**

---

**INSTRUCTIONS**

- 1. Answer Question 1 (Compulsory) and ANY other TWO questions**
- 2. Candidates are advised not to write on the question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room**

## QUESTION ONE

- a) Define **Web Application Technologies** and discuss the role they play in today's digital landscape. (5 Marks)
- b) Differentiate between **Front-End** and **Back-End** web development. Provide examples of languages or frameworks commonly used for each. (5 Marks)
- c) Explain the following terms as they relate to web development:
  - i. **HTTP** (2 Marks)
  - ii. **HTTPS** (2 Marks)
  - iii. **DNS** (2 Marks)
- d) Write a basic HTML structure for a web page and include the essential elements of a document, such as `<html>`, `<head>`, `<title>`, and `<body>`. (5 Marks)
- e) What is **JavaScript**, and why is it commonly used in web development? Write a simple JavaScript code that displays "Hello, World!" in an alert box when a button is clicked. (6 Marks)
- f) Describe the **Three-Tier Architecture** commonly used in web applications, outlining the purpose of each tier. (3 Marks)

## QUESTION TWO (20MARKS)

- a) Discuss the importance of **HTML5** in modern web development. Mention at least three new features introduced in HTML5 compared to previous versions. (6 Marks)
- b) What is **CSS**? Describe the difference between **inline**, **internal**, and **external** CSS styles, and give an example of when each should be used. (8 Marks)
- c) Write an HTML and CSS code snippet to create a simple web page with a **blue header** and a **centered main content section** that has a **grey background**. (6 Marks)

## QUESTION THREE (20MARKS)

- a) Explain the term **Responsive Web Design** and why it is essential for modern web applications. (4 Marks)
- b) What are **media queries** in CSS, and how are they used to create responsive web designs? Provide a simple example. (6 Marks)

- c) Design a simple HTML form that allows users to subscribe to a newsletter. Include fields for **First Name**, **Last Name**, and **Email**. Use JavaScript to validate that the email field is not empty before submitting the form. (10 Marks)

#### QUESTION FOUR (20MARKS)

- a) Define **AJAX** and explain how it enhances the user experience in web applications. (5 Marks)
- b) Explain the difference between **GET** and **POST** HTTP methods. Provide an example of when each method would be appropriate in a web application. (6 Marks)
- c) Write a basic JavaScript and AJAX code snippet that retrieves data from a server and displays it on a web page without refreshing. Assume the server returns a plain text message. (9 Marks)

#### QUESTION FIVE (20MARKS)

- a) Describe **three types of databases** commonly used in web development, and mention one advantage for each type. (6 Marks)
- b) What is **SQL**, and how is it used in web application development? Provide an example of a basic SQL query that retrieves all records from a table called users. (6 Marks)
- c) Explain the concept of **Web Security** and discuss three security measures commonly implemented to protect web applications from attacks. (8 Marks)

#### QUESTION SIX (20MARKS)

- a) Discuss the difference between **Static Websites** and **Dynamic Websites**. Provide an example scenario where each type would be suitable. (5 Marks)
- b) What is **Bootstrap**, and how does it assist in web development? List two advantages of using a framework like Bootstrap in your web projects. (5 Marks)
- c) Using Bootstrap, write an HTML code snippet that creates a responsive navigation bar with links to **Home**, **About**, **Services**, and **Contact**. Include classes for mobile responsiveness. (10 Marks)