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**KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR**  
**SECOND YEAR, SECOND SEMESTER EXAMINATION**  
**FOR THE DIPLOMA IN BUSINESS & INFORMATION TECHNOLOGY**  
**DIT 1012 INTERNET BASED PROGRAMMING**

Date: 15<sup>TH</sup> AUGUST 2024  
Time: 11:30AM – 1:30PM

**INSTRUCTIONS TO CANDIDATES**

**ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS**

**QUESTION ONE (30 MARKS)**

- a) Explain the concept of Internet-Based Programming and its significance in modern web development. (2 Marks)
- b) Explain two primary differences between client-side and server-side programming? Provide examples. (4 Marks)
- c) Describe the basic workflow of using Git for version control. (6 Marks)
- d) Write the HTML code to create a simple web page with a header, a paragraph, and a link to another webpage. (4 Marks)
- e) Write a JavaScript function named `calculateAverage` that takes an array of numbers as an argument and returns the average (mean) of the numbers in the array. (6 Marks)
- f) Illustrating with examples, explain the role of Active Server Pages (ASP) in web development and stating the difference between JavaScript and ASP. (5 Marks)
- g) What is RESTful web service and how is it used in web programming? (3 Marks)

**QUESTION TWO (20 MARKS)**

- a) How does Git facilitate version control (2 Marks)
- b) State four key advantages of Git over traditional version control systems. (4 Marks)
- c) Discuss three Git best practices and strategies for maintaining a clean and efficient version control process in a large-scale software project. (6 Marks)
- d) Describe a hypothetical scenario where a team of developers is working on a web application project using Git and GitHub. (8 Marks)

**QUESTION THREE (20 MARKS)**

- a) Explain the difference between **let**, **const**, and **var** in JavaScript. Provide examples of when you would use each declaration keyword. (3 Marks)
- b) Write a JavaScript function **calculateBMI** that takes two parameters: **weight** (in kilograms) and **height** (in meters), and returns the Body Mass Index (BMI) calculated as weight divided by the square of height. Provide an example of how you would call this function with sample data. (5 Marks)

- c) Describe the concept of lexical scope in JavaScript. (2 Marks)
- d) Create an array **fruits** containing the names of three fruits. Use JavaScript array methods to add two more fruits to the array and then remove the last fruit. Finally, print the updated array to the console. (3 Marks)
- e) Explain the difference between JavaScript objects and arrays. Provide an example of when you would use each data structure in a web development scenario. (4 Marks)
- f) Describe the concept of event bubbling in JavaScript. Provide an example scenario where event bubbling might be beneficial and explain how it works in that context. (3 Marks)

#### **QUESTION FOUR (20 MARKS)**

- a) Explain the difference between **<div>** and **<span>** tags in HTML. Provide an example scenario for each where you would use them in webpage development. (4 Marks)
- b) Describe the purpose of the **href** attribute in HTML **<a>** (anchor) tags. Provide an example of how you would use it to link to an external website. (4 Marks)
- c) Create a CSS rule that styles all **<p>** (paragraph) elements to have a font size of 16px, a line height of 1.5, and a margin of 10px. Apply this rule to the basic HTML structure (6 Marks)
- d) Discuss the CSS box model and its components. (3 Marks)
- e) Write a CSS media query that applies styles to change the background color of the **<header>** element to red when the viewport width is less than 600px. Explain how this media query affects the webpage layout. (3 Marks)

#### **QUESTION FIVE (20 MARKS)**

- a) Define web security and explain why it is essential for modern web applications. (6 Marks)
- b) Discuss with examples four emerging trends in internet-based programming. (8 Marks)
- c) Explain the concept of HTTPS and how it helps in securing web communications. (6 Marks)