

THE OPEN UNIVERSITY OF SRI LANKA
DEPARTMENT OF COMPUTER SCIENCE
B.Sc. DEGREE PROGRAMME 2025/2026
FINAL EXAMINATION CSU5302: WEB TECHNOLOGIES
DURATION: TWO HOURS ONLY (2 HOURS)



6th January 2026

Time: 9.30 a.m.- 11.30 a.m.

Answer FOUR Questions ONLY.

All questions carry equal marks. Each part of every question is allocated 5 marks.

- Q1). Client-server architecture defines web application behavior, using well-known and custom ports. Standard communication protocols enable data transfer between servers and clients worldwide.**
- Briefly explain the TCP/IP protocol.
 - Name five layers of the ISO/OSI 7-layer model that correspond directly to the TCP/IP protocol stack.
 - Describe the 3-tier client-server architecture and show its components with a labelled diagram.
 - Choose and explain two (2) key advantages of 3-tier architecture compared to 2-tier architecture.
 - What happens if two (2) different applications bind to the same port on a host but use different protocols?
- Q2). As the World Wide Web continues to expand, locating websites with information relevant to a Specific topics have become increasingly important. In this context, search engines play a crucial role.**
- Provide a brief explanation of web crawling and mention two (2) techniques that can improve its effectiveness.
 - Briefly describe how a search word index is created.
 - How are “Meta tags” used by search engines, and why are they important?
 - Explain what is meant by Search Engine Optimization (SEO) and why it is important.
 - How would you describe the future of search engine technologies based on current trends and developments?
- Q3). HTML, CSS, and JavaScript are considered the primary client-side web development languages and the foundational technologies behind modern web development frameworks.**
- Describe three (03) different methods of applying CSS to HTML documents in web design.
 - Describe the role of CSS pseudo-classes in web design and provide examples of at least two (2) commonly used pseudo-classes.
 - What is the main difference between HTML and JavaScript?
 - JavaScript offers many advantages as a client-side programming language, yet it also has several limitations. Discuss this statement with appropriate examples or facts.
 - Compare and contrast web design and web development, explaining their roles, responsibilities, and key differences. Provide suitable examples to support your answer.

Q4). PHP is a server-side scripting language that enables the creation of dynamic and interactive web pages, making it a powerful tool for web development.

- i. What is the “correct color name” you must use to fill in the blank in the code below to set the color of <h1> elements to red?

```
h1 { color: -----; }
```

Provide the other two values that can be used to fill in the blank above (use hexadecimal values and rgb-values).

- ii. Write the necessary PHP code to satisfy following requirements.

- Print “Hello World” on the output.
- Compare the values in two variables named A and B and, return True if A is less than B or False otherwise.

- iii. Create a PHP function named “Calculate” that accepts two numeric parameters and returns their sum. For instance, calling echo Calculate (32.13, 6.45) should output 38.58.

- iv. To access data in a MySQL database using PHP, you must first establish a connection to the MySQL server using the mysqli_connect() function. This function requires four parameters. Fill in the four (4) blanks below with the appropriate values for parameters.

```
mysqli_connect ( _____, _____, _____, _____ );
```

- v. Explain the advantages of using ASP.NET compared to PHP as a server-side programming language.

Q5). Web security and web hosting are essential components of web design and development, ensuring that a website or web application remains accessible to users while being safeguarded against potential threats and vulnerabilities.

- Discuss the significance of web security in web development.
- Differentiate between known and unknown web vulnerabilities and discuss their impact on web security.
- Why must web developers regularly update their knowledge of web security? Provide two (2) supporting reasons.
- Identify three (3) resources required for hosting a website and discuss how three (3) best practices can be used to enhance web security and performance.
- Define the Domain Name System (DNS) and analyze how it contributes to web hosting and user accessibility.

Q6). Advancements in markup and scripting languages aim to improve how websites and applications perform on mobile devices, including smartphones and e-readers.

- Compare desktop and mobile platforms in terms of functionality, user experience, and accessibility.
- Discuss one (1) important design factor and one (1) development factor to consider when building mobile-friendly websites.
- Explain the possibility of browsing desktop websites on mobile devices and provide two (2) reasons to support your explanation.
- Explain how HTML5 supports mobile-friendly web development and provides two (2) features that enhance mobile user experience.
- Identify three (3) structural elements in HTML5 and explain how each contributes to the overall formatting and organization of an HTML document.