



UNIVERSITY EXAMINATIONS

FIRST SEMESTER 2025/2026 ACADEMIC YEAR

**SECOND YEAR EXAMINATION FOR THE DEGREE OF
BACHELOR OF SCIENCE IN INFORMATION
COMMUNICATION AND TECHNOLOGY**

BICT 216: WEB SYSTEMS AND TECHNOLOGIES II

STREAM: R

TIME: 2 HRS

DAY: THURSDAY [11.30 – 13.30 P.M]

DATE: 29/01/2026

THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.

Instructions:

1. Answer question ONE (compulsory) and any other TWO
2. Begin each question on a new page

QUESTION ONE (30 MARKS)

- a) Define PHP and explain its role in web development. (2 Marks)
- b) Differentiate between GET and POST methods in PHP. (4 Marks)
- c) What is the purpose of the \$_SESSION superglobal in PHP? (2 Marks)
- d) Explain the difference between include and require in PHP. (4 Marks)
- e) List any two advantages of using PHP over client-side scripting languages. (2 Marks)
- f) Differentiate between SQL and NoSQL databases with examples. (4 Marks)
- g) What are ACID properties in relational databases? Why are they important? (4 Marks)
- h) List three types of NoSQL databases and explain one use case for each. (4 Marks)
- i) Write a SQL query to select all records where 'status' = 'active' from a table named 'users'. (4 Marks)

QUESTION TWO (20 MARKS)

- a) Describe the process of connecting a PHP application to a MySQL database. (6 Marks)
- b) What is database normalization? Why is it important? (4 Marks)
- c) Write SQL statements to create a table product with fields: id (primary key), name (varchar), price (decimal). (6 Marks)
- d) Explain how transactions are handled in PostgreSQL. (4 Marks)

QUESTION THREE (20 MARKS)

- a) Compare PHP, Python, and Node.js in terms of server-side development advantages and typical use cases. (4 Marks)
- b) Write a simple PHP script that handles form submission and inserts data into a MySQL database. (6 Marks)
- c) Explain asynchronous programming in Node.js and its benefits. (4 Marks)
- d) Provide a basic Python Flask app that responds to a GET request at '/hello'. (6 Marks)

QUESTION FOUR (20 MARKS)

- a) Explain the difference between authentication and authorization. **(4 Marks)**
- b) How do sessions and cookies work together to manage user authentication **(4 Marks)**
- c) What is JWT? Describe its structure and how it is used for stateless authentication. **(8 Marks)**
- d) Write a sample Node.js middleware that verifies a JWT token in the request header.

(4 Marks)

QUESTION FIVE (20 MARKS)

- a) Write a PHP script that accepts a user's name and age via a form, and then displays a personalized message:
 - I. If age < 18 → "Hello <name>, you are a minor."
 - II. Otherwise → "Hello <name>, you are an adult."**(10 Marks)**
- b) Assume you have a MySQL database named library with a table books (id, title, author, year).
Write PHP code to:
 - i. Connect to the database
 - ii. Retrieve all books
 - iii. Display them in an HTML table**(10 Marks)**