



# COMSATS University Islamabad, Attock Campus

## Mid Term Examinations (Fall 2024)

Department of: COMPUTER SCIENCE

Class/Program: BS(CS)-6/BSE(SE)-6 Date: December 2, 2024  
Subject: Mobile Application Development (CSC-303) Instructor: Mr. Kamran/Mr. M Kamran  
Total Time Allowed: 3.0 Hrs. Maximum Marks: 50  
Student Name: \_\_\_\_\_ Registration #: \_\_\_\_\_

**Attempt all questions from the following.**

**[50 Marks]**

**Q#1:** How does React Native achieve cross-platform compatibility?

**[CLO -1: Summarize the concepts of mobile application development technologies. Marks: 5]**

**Q#2:** i. Demonstrate the differences between `var`, `let`, and `const` in JavaScript with examples, highlighting their scope, re-declaration and re-assignment behavior.  
ii. Apply your knowledge of ES6 arrow functions to create a function that takes an array of numbers (e.g., [22, 33, 44, 55]) as input, adds all the numbers in the given array, and outputs the sum to the console.

**[CLO -2: Illustrate the concepts of Java Scripting for mobile applications. Marks: 6+4]**

**Q#3:** Create a React Native application using Stack Navigation with HomeScreen and DetailsScreen. On HomeScreen, add a form for users to input their name, email, and age. Send the data to DetailsScreen using route parameters and display it.

**[CLO -2: Construct attractive front-end for mobile applications using latest technologies. Marks: 4 + 4]**

**Q#4:** i. Describe the concept of 'props drilling' in React Native and suggest at least two strategies to solve it?  
ii. Design a simple React Native app that uses Redux to manage a counter value. Implement the actions to increment, decrement, and reset the counter

**[CLO -3: Demonstrate the concepts of React Native & React Navigation in the context of mobile application development. Marks: 6 + 6]**

**Q#5:** Design a React Native application that interacts with an API to retrieve a family tree. The application should meet the following requirements:

API Endpoint Integration: Implement an API call to retrieve a family tree based on a provided CNIC (e.g., /api/family-tree?cnic=<cnic>). The API should return a JSON response with details about family members, including attributes like name, age, and relationship.

JSON Structure: The JSON response should represent the family members and their attributes in a structured format, similar to:

```
{
  "family": [
    { "name": "John Doe", "age": 45, "relationship": "Father" },
    { "name": "Jane Doe", "age": 43, "relationship": "Mother" },
    { "name": "Emily Doe", "age": 18, "relationship": "Daughter" }
  ]
}
```

**[CLO -3: Demonstrate the concepts of React Native & React Navigation in the context of mobile application development. Marks: 10]**

**Q#6:** Create a detailed step-by-step guide for building a React Native application with Firebase Realtime Database integration. The guide should cover:

- i. Configuring Firebase in React Native
- ii. CRUD Operations on a specific database table (e.g., "Users"). Include code snippets for each operation and explain the logic behind them.

**[CLO -3: Demonstrate the concepts of React Native & React Navigation in the context of mobile application development. Marks: 1+4]**

**Best of Luck**