

## BCA-5-02T-EC-A3: Introduction Mobile Architecture

Total Marks: 100  
External Marks: 70  
Internal Marks: 30  
Credits: 6  
Pass Percentage: 40%

### INSTRUCTIONS FOR THE PAPER SETTER/EXAMINER

1. The syllabus prescribed should be strictly adhered to.
2. The question paper will consist of three sections: A, B, and C. Sections A and B will have four questions from the respective sections of the syllabus and will carry 10 marks each. The candidates will attempt two questions from each section.
3. Section C will have fifteen short answer questions covering the entire syllabus. Each question will carry 3 marks. Candidates will attempt any ten questions from this section.
4. The examiner shall give a clear instruction to the candidates to attempt questions only at one place and only once. Second or subsequent attempts, unless the earlier ones have been crossed out, shall not be evaluated.
5. The duration of each paper will be three hours.

### INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt any two questions each from the sections A and B of the question paper and any ten short questions from Section C. They have to attempt questions only at one place and only once. Second or subsequent attempts, unless the earlier ones have been crossed out, shall not be evaluated.

<b>Course: Introduction Mobile Architecture</b>	
<b>Course Code: BCA-5-02T-EC-A3</b>	
<b>Course Outcomes (COs)</b> After the completion of this course, the students will be able to:	
CO1	Gain a foundational understanding of major mobile platforms (iOS, Android) and their architecture, including the key components and frameworks that enable mobile application development.
CO2	Learn the fundamental principles of designing mobile applications, considering factors such as user interface (UI), user experience (UX), and responsiveness across different devices.
CO3	Acquire knowledge of cross-platform development frameworks (e.g., React Native, Flutter) and understand how to create mobile applications that can run on multiple platforms with a single codebase.
CO4	Develop an awareness of mobile security concerns and best practices, including data encryption, secure authentication, and protection against common mobile app vulnerabilities.

CO5	Learn how mobile applications interact with backend services, including the use of APIs (Application Programming Interfaces) and understanding the role of backend architecture in supporting mobile functionality.
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### Detailed Contents:

Module	Module Name	Module Contents
<b>Section-A</b>		
<b>Module I</b>	<b>Introduction to Mobile App</b>	Introduction to Mobile App, Objectives of Mobile App, Considerations and Challenges for Mobile App, PC Based Applications, Web Based Applications, Evolution of Mobile Based Apps, Comparison of Mobile App with Web Application, Content and Protocol in Mobility, Trends in Mobility Space, Mobile App Platforms
<b>Module II</b>	<b>Components of a Mobile Application</b>	Components of a Mobile Application: Architecture of a Mobile Application, Architecture of a native Mobile App, Architecture of a hybrid Mobile App, Architecture of a Mobile Web App, Components of a Mobile Client Application, Components of Mobile Support Infrastructure, End to End Case Study of Android Mobile Architecture, Basics of Mobile Application Design: Design Considerations, User Interface Design for Mobile Apps, Deployment, Power Usage, Synchronization, Patterns and Design Elements, Security Standards and Best Practices, Mobile App Testing
<b>Module III</b>	<b>Introduction to Mobile Operating Systems</b>	Introduction to Mobile Operating Systems: Basic Functions of an Operating System, Mobile Operating Systems: Layer 0, Layer 1, Layer 2, Architecture of Android, Knowing the Operating System of a Mobile Phone, Discontinued Mobile Operating Systems, Existing Mobile Operating Systems, Types of Mobile Operating Systems, Basics of Android: Objectives, Interface, Applications, Memory Management, Virtual Reality
<b>Section-B</b>		
<b>Module IV</b>	<b>Basics of iOS</b>	Basics of iOS: Objectives , Accessibility, Multitasking, Siri, Setting up Siri, Launching Siri , Game Center, Basics of Windows Mobile: Evolution of Windows Phone, Features of Windows Phone, Virtual Private Networking, Windows Phone 7, Windows Phone , Windows 10 Mobile
<b>Module V</b>	<b>Mobile Processors</b>	Mobile Processors, ARM Processors, Features of ARM processor, ARM architecture, x86 Processors, Basic Design of x86 Processor, Instruction Execution Cycle, Differences Between x86 and

		ARM Processors, Memory in a Mobile Phone: Volatile Memory, Non-Volatile Memory, Memory Card, ROM, Flash Memory, Differences between NOR and NAND flash memories
<b>Module VI</b>	<b>Sensors</b>	Sensors: Gyroscope, Accelerometer, Types of Accelerometer, Specification of an Accelerometer, Output of an Accelerometer, Applications of an Accelerometer, Compass, Proximity Sensor, Input-Output: Display, Camera, Speakers, Active Speakers, Passive Speakers, Microphones, Types of Microphones, Native Development Tools: Native Development Tools: Development Tools for Android, Android Studio, Eclipse IDE, Development Tools for iOS, Xcode, Swift, Development Tools for Windows Based Mobiles, C#, XAML

## Books

<ol style="list-style-type: none"> <li>1. Brian Fling “Mobile Design and Development: Practical concepts and techniques for creating mobile sites and web apps”, O’Reilly</li> <li>2. Jim O’Donnell “Mobile Architecture: Patterns and Components for Enterprise Mobile Applications”</li> <li>3. David Thiel and Rich Mogull “iOS Application Security: The Definitive Guide for Hackers and Developers”</li> <li>4. Bill Phillips and Chris Stewart “Android Programming: The Big Nerd Ranch Guide”, Big Nerd Ranch Guides</li> <li>5. Nader Dabit “React Native in Action”, Manning</li> </ol>
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