

## **AS PER AP-CBCS SYLLABUS 2023-2024**

### **COMPUTER APPLICATIONS(MAJOR/MINOR)**

#### **3<sup>RD</sup> YEAR – SEMESTER - V**

## **MOBILE APPLICATION DEVELOPMENT USING ANDROID**

**(Common to All Universities in AP)**

### **UNIT I: INTRODUCTION TO ANDROID**

Overview, History, Features of Android, The Android Platform, Understanding the Android Software Stack - Android Application Architecture -The Android Application Life Cycle - The Activity Life Cycle, Creating Android Activity -Views-Layout Android SDK, Android Installation, Building you First Android application, Understanding Anatomy of Android Application, Android Manifest file.

Case Study:

1. Give a brief description of Android Architecture and its parts.
2. List out the challenges we face while using Android?
3. List the new features of Android in the latest version.

### **UNIT – II: ANDROID APPLICATION DESIGN ESSENTIALS**

Anatomy of an Android applications, Android terminologies, Creating User Interfaces with basic views- Application Context, Activities, Services, Intents, linking activities with Intents,, Receiving and Broadcasting Intents, Android Manifest File and its common settings, Using Intent Filter, Permissions.

Case Study:

1. Present an idea that you would like to convert it into an application in the future.

### UNIT-III: ANDROID USER INTERFACE DESIGN ESSENTIALS

User Interface Screen elements, Designing User Interfaces with Layouts, Drawing and Working with Animation. Layouts, RecyclerView, ListView, GridView and WebView  
Input Controls: Buttons, Checkboxes, Radio Buttons, Toggle Buttons, Spinners, Input Events, Menus, Toast, Dialogs, Styles and Themes, Creating lists, and Custom lists.

Case Study:

1. Present detail report on the features of Check Boxes, Radio Buttons and Toggle Buttons.

### UNIT-IV: TESTING ANDROID APPLICATIONS

Publishing Android application, Using Android preferences, Managing Application resources in a hierarchy, working with different types of resources.

Case Study:

1. List out the special features of Android with its counterparts.

### UNIT-V: USING COMMON ANDROID APIS

Internal Storage, External Storage, SQLite Databases, Managing data using SQLite, Sharing Data between Applications with Content Providers, Using Android Networking APIs, Using Android Web APIs, JSON Parsing, Using Android Telephony APIs, Deploying Android Applications to the World. Google Maps, Using GPS to find the current location, Sensors, and Bluetooth / Wi-Fi Connectivity.

Case Study:

1. List out the points to keep in mind to make your application more attractive.
2. List the controls that make your application attractive.



# IMPORTANT QUESTIONS

## LEVEL – 1

### UNIT-I: INTRODUCTION TO ANDROID

- ❖ Define Android and discuss its evolution, key features, and the significance of its open-source nature. .... 1
- ❖ Explain the Android software stack, detailing each layer from the Linux kernel to the application layer. .... 3
- ❖ Describe the Android application architecture and the roles of its core components: Activities, Services, Broadcast Receivers, and Content Providers. .... 5
- ❖ Illustrate the Android application lifecycle, emphasizing the Activity lifecycle and its various states. .... 7
- ❖ Outline the steps involved in creating an Android activity, including the use of Views and Layouts. .... 9
- ❖ Discuss the process of setting up the Android development environment, including the installation of Android SDK and necessary tools. .... 12
- ❖ Explain the structure and purpose of the Android Manifest file in an Android application. .... 14
- ❖ Analyze the importance of understanding the anatomy of an Android application for efficient app development. .... 17

### UNIT-II: ANDROID APPLICATION DESIGN ESSENTIALS

- ❖ Define the anatomy of an Android application and explain the roles of its core components: Activities, Services, Broadcast Receivers, and Content Providers. .... 44
- ❖ Discuss key Android terminologies such as Application

- Context, Activity, Service, Intent, and Broadcast Receiver, highlighting their significance in application development. ....46
- ❖ Explain the process of creating user interfaces in Android using basic views and layouts, and describe how these contribute to user interaction. ....48
  - ❖ Describe the concept of Application Context in Android and its importance in managing application-level resources and information. ....50
  - ❖ Illustrate how Activities and Services are linked using Intents, and discuss the mechanism of receiving and broadcasting Intents within an application. ....52
  - ❖ Analyze the structure and purpose of the Android Manifest file, detailing common settings and their impact on application behavior. ....54
  - ❖ Explain the use of Intent Filters in Android, including how they enable components to respond to specific types of Intents. ....57
  - ❖ Discuss the role of permissions in Android applications, including how they are declared in the Manifest file and their implications for application security. ....59

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- ❖ Define the key components of Android user interface screen elements and explain their roles in application development. ....80
- ❖ Discuss various Android layouts such as LinearLayout, RelativeLayout, ConstraintLayout, and FrameLayout, highlighting their differences and use cases. ....83
- ❖ Explain the implementation and advantages of using RecyclerView over ListView in Android applications. ....85
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❖ Discuss the creation and management of menus, toast messages, and dialogs in Android applications. ....	92
❖ Explain the concepts of styles and themes in Android and how they contribute to consistent UI design. ....	93
❖ Evaluate the role of animations in Android UI design and how they enhance user experience. ....	98

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❖ Define mobile application testing and discuss its various types, including functional, performance, and usability testing. ....	122
❖ Explain the process of publishing an Android application, detailing the steps involved from development to deployment on the Google Play Store. ....	125
❖ Describe the use of Android preferences in application development and how they contribute to user experience. ....	127
❖ Discuss the organization of application resources in a hierarchy within an Android project and the benefits of this structure. ....	129
❖ Illustrate the role of the Android Manifest file in declaring application components and permissions, and its significance in the application lifecycle. ....	135
❖ Examine the use of the Resource Manager in Android Studio for managing UI resources and how it facilitates efficient resource handling. ....	137



- ❖ Propose best practices for testing Android applications to ensure quality and performance across various devices and configurations. .... 140
- ❖ Compare and contrast SharedPreferences with other data storage options in Android, highlighting scenarios where each is most appropriate. .... 142

### **UNIT-V: COMMON ANDROID APIS**

- ❖ Define Android's internal and external storage mechanisms and discuss their differences, use cases, and best practices for data storage. .... 160
- ❖ Explain the role of SQLite databases in Android applications, including how to create, manage, and interact with them for data persistence. .... 162
- ❖ Describe the purpose and implementation of Content Providers in Android, and how they facilitate data sharing between applications. .... 164
- ❖ Discuss the various Android Networking APIs available for handling network operations, including HTTP requests and data retrieval. .... 166
- ❖ Illustrate the process of parsing JSON data in Android applications and how it is used in conjunction with web APIs. .... 168
- ❖ Analyze the Android Telephony APIs, detailing how they can be used to access and manage telephony services within an application. .... 169
- ❖ Explain the steps involved in deploying Android applications to the world, including signing, building, and publishing to app stores. .... 172
- ❖ Describe how Android applications can utilize GPS to determine the current location, and discuss the considerations for accuracy and power consumption. .... 175

- ❖ Discuss the use of sensors in Android devices, including how to access sensor data and implement sensor-based features in applications. .... 177

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- ❖ Evaluate the advantages and challenges of building your first Android application, considering best practices and common pitfalls. .... 20
- ❖ Compare and contrast the roles of different layout types in Android and their impact on user interface design. .... 23
- Case Study:
- ❖ Give a brief description of Android Architecture and its parts. .... 25
- ❖ List out the challenges we face while using Android? .... 26
- ❖ List the new features of Android in the latest version. .... 30
- ❖ Evaluate the lifecycle of an Activity in Android, outlining the key states and corresponding callback methods. .... 61
- ❖ Propose best practices for managing Intents and Intent Filters to ensure efficient communication between components in an Android application. .... 64
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- ❖ Analyze the handling of input events in Android and their significance in enhancing user interaction. .... 91
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- Case Study:
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  - ❖ List the controls that make you application attractive. .... 183





# List of Questions

## UNIT-I: INTRODUCTION TO ANDROID

### LONG ANSWER QUESTIONS

1. Define Android and discuss its evolution, key features, and the significance of its open-source nature. ....1
2. Explain the Android software stack, detailing each layer from the Linux kernel to the application layer. ....3
3. Describe the Android application architecture and the roles of its core components: Activities, Services, Broadcast Receivers, and Content Providers. ....5
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8. Analyze the importance of understanding the anatomy of an Android application for efficient app development. ....17

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10. Compare and contrast the roles of different layout types in Android and their impact on user interface design.	23
Case Study:	
11. Give a brief description of Android Architecture and its parts.	25
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### LONG ANSWER QUESTIONS

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2. Discuss key Android terminologies such as Application Context, Activity, Service, Intent, and Broadcast Receiver, highlighting their significance in application development. ....46
3. Explain the process of creating user interfaces in Android using basic views and layouts, and describe how these contribute to user interaction. ....48
4. Describe the concept of Application Context in Android and its importance in managing application-level resources and information. ....50
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2. Discuss various Android layouts such as LinearLayout, RelativeLayout, ConstraintLayout, and FrameLayout, highlighting their differences and use cases. ....83
3. Explain the implementation and advantages of using RecyclerView over ListView in Android applications. ....85
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  9. Demonstrate the process of creating standard and custom lists in Android, including the use of adapters .....95
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2. Explain the process of publishing an Android application, detailing the steps involved from development to deployment on the Google Play Store. ....125
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