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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: IV - THEORY EXAMINATION (2025 - 2026)

Subject: Mobile Application Development

Time: 3 Hours

Max. Marks: 100

General Instructions:

IMP: Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A

20

1. Attempt all parts:-

(1.1) Android Studio is used to (CO1, K1)

1

- (a) Develop applications
- (b) Store data
- (c) Manage networks
- (d) Design hardware

(1.2) Emulator is used for (CO1, K1)

1

- (a) Testing applications
- (b) Storing data
- (c) Networking
- (d) Security

(1.3) Identify the hardware sensor responsible for detecting device orientation changes.(CO2,K2)

1

- (a) Gyroscope
- (b) Accelerometer
- (c) GPS
- (d) Proximity Sensor

(1.4) Identify the appropriate purpose of `Logcat`(CO2,K1)

1

- (a) UI testing
- (b) Audio testing
- (c) Debug output
- (d) File sharing

- (1.5) Identify the layout that arranges elements vertically or horizontally. (CO3, K1) 1
- (a) RelativeLayout
 - (b) GridLayout
 - (c) LinearLayout
 - (d) ConstraintLayout
- (1.6) State the purpose of AndroidManifest.xml in Android development. (CO3, K1) 1
- (a) UI layout design
 - (b) Stores user data
 - (c) Defines app permissions and components
 - (d) Handles animations
- (1.7) Identify the file that typically contains the main() function in Flutter. (CO4, K1) 1
- (a) main.dart
 - (b) homedart
 - (c) start.dart
 - (d) scaffold.dart
- (1.8) Identify the widget that is immutable and does not store state. (CO4, K1) 1
- (a) StatefulWidget
 - (b) StatelessWidget
 - (c) Container
 - (d) Scaffold
- (1.9) Select the feature supported by SQLite. (C05,K2) 1
- (a) Multi-server sync
 - (b) Distributed queries
 - (c) ACID transactions
 - (d) Cloud replication
- (1.10) Among the following identify that the Data in Firestore is stored as: (C05,K2) 1
- (a) XML
 - (b) JSON-like format
 - (c) CSV
 - (d) Relational schema

2. Attempt all parts:-

- (2.1) Describe the purpose of Android Virtual Device in testing applications. (CO1, K2) 2
- (2.2) Describe two uses of a Robolectric and Mockito frameworks (CO2,K2). 2
- (2.3) List any two differences between Statefull and Statelss APIs. (CO3, K3) 2
- (2.4) Describe the purpose of installing Flutter SDK and setting up an IDE for development. (CO4, K2) 2
- (2.5) Explain the benefits of integrating flutter with firebase in comparison to SQLite database. (C05,K4) 2

SECTION-B

30

Answer any one of the following:-

(3.1)	Define selection controls such as Checkbox, RadioButton, and Spinner and describe their functionality. (CO1, K2)	6
(3.2)	Define views and layouts and describe their role in designing Android user interface with diagram. (CO1, K2)	6
Answer any one of the following:-		
(3.3)	Analyze the layered structure of software architecture and explain the role of linux kernal in Android Operating system .(CO2,K3)	6
(3.4)	Explain the relationship between Activities and Services in Android, and analyze the mechanisms through which they communicate and coordinate tasks.(CO2,K3)	6
Answer any one of the following:-		
(3.5)	Write the code snippet of intent and explain the use of intent in application development. (CO3, K3)	6
(3.6)	Define event handling in android application mention the functions that are used to handle events like tapping on screen or pressing a button. (CO3, K2)	6
Answer any one of the following:-		
(3.7)	Explain the use of AlertDialog in Flutter and demonstrate its implementation using a code snippet. (CO4, K3)	6
(3.8)	Wrie a code snippet of Scaffold class and demonstrate the uses of Stateless Widgets in flutter application development (CO4,K4)	6
Answer any one of the following:-		
(3.9)	Evaluate the role of AnimationController in managing animation behavior in Flutter applications. (C05,K5)	6
(3.10)	Justify the use of Firestore in real-time applications with suitable examples. (C05,K5)	6
<u>SECTION-C</u>		50
4. Answer any <u>one</u> of the following:-		
(4.1)	Explain Intent in Android and describe its role in navigation and communication between application components with suitable code snippet. (CO1, K2)	10
(4.2)	Explain Toast in Android and describe its purpose in displaying brief messages to users with suitable code snippet. (CO1, K2)	10
5. Answer any <u>one</u> of the following:-		
(5.1)	Explain the basic building blocks of Android applications: Activities, Services, Broadcast Receivers, and Content Providers and describe their roles in application development.(CO2,K2)	10
(5.2)	Explain the process of debugging Android applications. What tools and techniques can developers use to troubleshoot issues effectively during development?(CO2,K2)	10
6. Answer any <u>one</u> of the following:-		
(6.1)	Compare JSON and XML formats used in Android applications. Mention 5 uses of each fromats in Android Application development (CO3, K3)	10
(6.2)	Explain the role of NotificationCompat.Builder in Android and describe how it is used to create and manage notifications with appropriate features. (CO3, K2)	10
7. Answer any <u>one</u> of the following:-		

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| (7.1) | Analyze the advantages of Flutter's rendering approach compared to native UI development in terms of performance and consistency. (CO4, K4) | 10 |
| (7.2) | Compare Flutter-based cross-platform development with native development and analyze its impact on application performance and user experience. (CO4, K4) | 10 |
| 8. Answer any <u>one</u> of the following:- | | |
| (8.1) | Evaluate the advantages and limitations of SQLite. Discuss its suitability for different types of mobile applications. (C05,K5) | 10 |
| (8.2) | Explain Cloud Firestore as a NoSQL database. Discuss its architecture and differentiate it from traditional SQL databases. (C05,K2) | 10 |

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