

**MOBILE APPLICATION DEVELOPMENT AND IMPLEMENTATION
(MCAP 2202)**

Time Allotted : 3 hrs

Full Marks : 70

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 5 (five) from Group B to E, taking at least one from each group.*

Candidates are required to give answer in their own words as far as practicable.

**Group – A
(Multiple Choice Type Questions)**

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) In which of the following programming languages are Android's Native libraries typically written?
(a) Java (b) C/C++ (c) Python (d) Objective C.
 - (ii) Which one of the following statements about the Activity lifecycle is false?
(a) onCreate() is typically used to initialize an Activity
(b) onStop() will always be called when an Activity terminates
(c) Activities are in the resumed or running state when they are visible and the user is able to interact with them
(d) onRestart() is called when an Activity has been stopped and is about to be restarted.
 - (iii) Which among the following statements is FALSE?
(a) Activities can bind to a service
(b) Services can bind to a service
(c) Content providers can bind to a service
(d) Broadcast receivers can bind to a service.
 - (iv) What is a laptop that runs on Google's Chrome OS called?
(a) Chromebook (b) Chromebox
(c) ChromeLap (d) ChromeNote.
 - (v) Which of the following is not the name of an Android OS version?
(a) Lollipop (b) Jimjam (c) Kitkat (d) Jelly Bean.
 - (vi) Which file is used to declare app permissions in Android?
(a) AndroidManifest.xml (b) activity_main.xml
(c) restrict.xml (d) permission.xml.
 - (vii) Android is shipped with which of these built-in databases?
(a) Oracle (b) MySQL (c) Apache (d) SQLite.

- (viii) What is the purpose of a foreground service?
(a) To perform background tasks without UI
(b) To handle client-server communication
(c) To perform long-running tasks that require user attention
(d) To handle incoming calls and messages.
- (ix) Which of the following should be used to save the unsaved data and release resources being used by an Android application?
(a) Activity.onStop() (b) Activity.onDestroy()
(c) Activity.onPause() (d) Activity.onResume
- (x) To create an emulator, we need an AVD. What does it stand for?
(a) Application Virtual Display (b) Active Virtual Device
(c) Android Virtual Device (d) Android Virtual Display.

Group - B

2. (a) Identify the key differences between a mobile app and a mobile website. Which factors help to decide whether to develop a mobile app instead of a mobile website or vice versa? [[CO1](Analyse/IOCQ)]
(b) Identify the pros and cons of testing mobile applications using emulators instead of real devices. [[CO1](Analyse/IOCQ)]
6 + 6 = 12
3. (a) Describe the following callbacks related to an activity's lifecycle: onCreate(), onStart(), onResume() and onDestroy(). [[CO2](Understand/LOCQ)]
(b) Create an XML layout that uses a vertical *LinearLayout* to hold a *TextView* and a *Button* and load it for an activity of your app. [[CO2](Apply/IOCQ)]
6 + 6 = 12

Group - C

4. (a) What is an Android intent? Discuss three common use cases for using intents in Android. [[CO2](Understand/LOCQ)]
(b) Differentiate between explicit and implicit intent in Android. [[CO2](Analyze/IOCQ)]
(c) What is an Android Service? Why using an implicit intent to start a service is considered a security hazard? [[CO2](Analyze/IOCQ)]
4 + 4 + 4 = 12
5. (a) Differentiate among install time, run time and special permissions in Android. [[CO2](Analyze/IOCQ)]
(b) How does SQLite differ from a client-server database management system? [[CO2](Analyze/IOCQ)]
(c) While designing your app, what are the factors that decide whether there is an actual need for creating a content provider? [[CO2](Evaluate/HOCQ)]
4 + 4 + 4 = 12

Group - D

6. (a) What is a notification in Android? Illustrate the most common parts of a notification. [[CO3](Understand/LOCQ)]
 (b) Differentiate between an inexact alarm and an exact alarm. State any one method of setting an exact alarm. [[CO3](Analyse/IOCQ)]
 (c) Describe the steps in Wi-Fi scanning process (using *WifiManager* API) to get a list of Wi-Fi access points that are visible from the device. [[CO4](Apply/IOCQ)]
4 + (3 + 1) + 4 = 12
7. (a) State the permissions a manifest must include to perform network operations in an app. [[CO4](Remember/LOCQ)]
 (b) Discuss the steps to get information about the current network state in an Android-powered device. [[CO4](Understand/LOCQ)]
 (c) Briefly explain the functions of Android Telecom Framework. [[CO4](Understand/LOCQ)]
2 + 6 + 4 = 12

Group - E

8. (a) Explain with an example how Android sensors can be used in augmented reality applications. [[CO5](Apply/IOCQ)]
 (b) Analyse different aspects related to location gathering that affect battery performance. [[CO5](Analyse/IOCQ)]
 (c) What is the impact of setting *android:exported* attribute of an *<activity>* to (i) *true*, (ii) *false*? [[CO2](Analyse/IOCQ)]
4 + 6 + 2 = 12
9. (a) Differentiate between Spring animation and Fling animation. [[CO6](Analyse/IOCQ)]
 (b) Discuss the pros and cons of using *Exoplayer* with that of Android's built-in *MediaPlayer* for playing multimedia contents in mobile apps. [[CO6](Analyse/IOCQ)]
 (c) What is a *VectorDrawable*? [[CO6](Remember/LOCQ)]
4 + 6 + 2 = 12

<i>Cognition Level</i>	<i>LOCQ</i>	<i>IOCQ</i>	<i>HOCQ</i>
<i>Percentage distribution</i>	29.16	66.66	4.16

Course Outcome (CO):

After the completion of the course students will be able to

MCAP2202.1 Identify various concepts of programming mobile applications that make it unique from programming for other platforms.

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- MCAP2202.2 Demonstrate the interaction between different android components such as activities, services, broadcast receivers, and content providers.
- MCAP2202.3 Categorize the different types of notifications and alarms in mobile devices.
- MCAP2202.4 Compare the different ways of providing connectivity in android devices.
- MCAP2202.5 Categorize the different type of sensors and location data gathering techniques used in mobile devices to offer users contextual experience.
- MCAP2202.6 Illustrate the various graphics and multimedia techniques used in mobile devices.

**LOCQ: Lower Order Cognitive Question; IOCQ: Intermediate Order Cognitive Question; HOCQ: Higher Order Cognitive Question*