

MOBILE APPLICATION DEVELOPMENT AND IMPLEMENTATION (MCAP 2202)

Time Allotted : 2½ hrs

Full Marks : 60

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 4 (four) from Group B to E, taking one from each group.*

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

Group – A

1. Answer any twelve:

12 × 1 = 12

Choose the correct alternative for the following

- (i) Which file is used to declare app permissions in Android?
(a) AndroidPermission.xml (b) Permissions.xml
(c) Manifest.xml (d) AndroidManifest.xml
- (ii) Which one among the following statements about Activity lifecycle is FALSE?
(a) onCreate() is typically used to initialize an Activity
(b) onStop() will always be called when an Activity terminates
(c) onStart() is called when an Activity is becoming visible to its user
(d) onRestart() is called when an Activity has been stopped and is about to be restarted.
- (iii) Android is shipped with which of these built-in databases?
(a) MySQL (b) SQLite (c) ORMLite (d) MongoDB
- (iv) The foreground lifetime of an activity happens between
(a) a call to onStart() until a corresponding call to onStop()
(b) a call to onStart() until a corresponding call to onPause()
(c) a call to onResume() until a corresponding call to onStop()
(d) a call to onResume() until a corresponding call to onPause()
- (v) Which among the following is NOT TRUE for battery usage while using location data?
(a) High accuracy usually requires more battery
(b) Low frequency usually requires less battery
(c) Low latency usually requires more battery
(d) High latency usually requires more battery.
- (vi) In which callback method should an Android developer write code to inflate an activity's User Interface?
(a) onStart() (b) onCreate()
(c) onResume() (d) onCreateView()

- (vii) Which pieces of information in an Intent are used for intent resolution?
 (a) Action, Data and Flags (b) Action, Data and Category
 (c) Action, Category and Flags (d) Action, Category and Component.
- (viii) The latency for location information gathering can be set using
 (a) setInterval() (b) setPriority()
 (c) setMaxWaitTime() (d) setFastestInterval()
- (ix) An exact alarm can be set with
 (a) set() (b) setAlarmClock()
 (c) setExactAlarm() (d) setPreciseAlarm()
- (x) How can an app access data from an Android content provider?
 (a) By binding to the provider's service
 (b) By sending an intent to the provider
 (c) By calling the provider's methods directly
 (d) By calling the query method of a content resolver.

Fill in the blanks with the correct word

- (xi) For native app development in iOS, both _____ and Swift are popular choices.
- (xii) The Intent field _____ contain key-value pairs that carry additional information required to accomplish the requested action.
- (xiii) The entire feature-set of the Android OS is available through APIs written in the _____ language.
- (xiv) For a streaming sensor, a call to getMinDelay() method of the Sensor class returns _____.
- (xv) _____ is a synonym for runtime permissions in the Android platform.

Group - B

2. (a) Differentiate among native, hybrid and cross platform development of mobile apps. State the advantages of one over the other. [[C01](Analyse/IOCQ)]
 (b) Define a menu in an XML file and show how that XML resource can be converted into a programmable object. [[C02](Apply/IOCQ)]

(4 + 3) + (4 + 1) = 12
3. (a) Differentiate between the visible lifetime and foreground lifetime of an activity. [[C02](Analyse/IOCQ)]
 (b) Why is it desirable to have fairly lightweight code in onResume() and onPause() callbacks of Activity in Android? [[C02](Analyse/IOCQ)]
 (c) Explain the role of Task Back Stack in managing the specific activities through which a user navigates. [[C02](Understand/LOCQ)]

5 + 2 + 5 = 12

Group - C

4. (a) How can you restrict other apps from interacting with your app's content provider? [[CO2](Apply/IOCQ)]
(b) Illustrate the lifecycle of a hybrid service, stating a relevant example. [[CO2](Apply/IOCQ)]
4 + 8 = 12
5. (a) Discuss the steps involved in retrieving data from a content provider. [[CO2](Apply/IOCQ)]
(b) Explain the workflow for declaring and requesting runtime permissions on Android. [[CO2](Understand/LOCQ)]
5 + 7 = 12

Group - D

6. (a) Explain the characteristics of a toast notification and show how to create one. [[CO3](Apply/IOCQ)]
(b) State and explain any three methods for setting an inexact alarm. [[CO3](Understand/LOCQ)]
(3 + 3) + 6 = 12
7. (a) Explain the role of Network, LinkProperties and NetworkCapabilities classes in reading the network state in an Android device. [[CO4](Understand/LOCQ)]
(b) Briefly discuss the functionalities of Android Telecom framework. [[CO4](Understand/LOCQ)]
6 + 6 = 12

Group - E

8. (a) Explain the different categories of sensors available in Android devices. [[CO5](Understand/LOCQ)]
(b) Evaluate the impact of location data usage on the battery life of an Android device and suggest ways to optimize the use of location data to conserve battery life. [[CO5](Evaluate/HOCQ)]
4 + 8 = 12
9. (a) Explain the role of media controller and media session in building a media player app. [[CO6](Understand/LOCQ)]
(b) Discuss how you can animate bitmaps with AnimationDrawable. [[CO6](Apply/IOCQ)]
6 + 6 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	41.67	50	8.33

Course Outcome (CO):

After the completion of the course students will be able to

- CO1: Identify various concepts of programming mobile applications that make it unique from programming for other platforms.
- CO2: Demonstrate the interaction between different android components such as activities, services, broadcast receivers, and content providers.
- CO3: Categorize the different types of notifications and alarms in mobile devices.
- CO4: Compare the different ways of providing connectivity in android devices.
- CO5: Categorize the different type of sensors and location data gathering techniques used in mobile devices to offer users contextual experience.
- CO6: 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.*