

# Model Paper – IT2010: Mobile Application Development

---

Time: 1.5 Hours

Total Marks: 75

Instructions: Answer all questions. All questions carry equal weight.

## Question 01 – UI/UX Design for a Mobile Health Assistant App (25 marks)

- a) You are designing the interface for a mobile health assistant app that reminds users to drink water and track medications. Identify and explain two important UI design concepts you would apply to the reminder screen to improve usability. Justify your choice.  
(5 Marks – Apply)
- b) Compare the following two UI layouts used in the medication log screen:
  - Layout A groups all medicines for the day in one scrollable card.
  - Layout B displays one medicine entry per full screen.Which layout is more effective for elderly users? Justify your answer using UI/UX concepts.  
(6 Marks – Analyze/Evaluate)
- c) Propose three UI improvements to make the app more accessible for users with color vision deficiency. Explain how each suggestion adheres to recognized design standards.  
(8 Marks – Apply)
- d) The app is to be deployed in multi-lingual regions. Suggest two UI-level design techniques and one app-level strategy to improve language adaptability.  
(6 Marks – Apply)

## Question 02 – Kotlin Development and Room Integration (25 marks)

- a) Define a Kotlin data class named Appointment with at least 4 properties that represent a medical appointment (e.g., patient name, time, type). Use appropriate data types.  
(5 Marks – Apply)
- b) Write the DAO interface with functions to:
  - Insert a new appointment
  - Delete an appointment
  - Retrieve all appointments sorted by dateInclude function headers only.  
(5 Marks – Apply)
- c) Implement a RecyclerView.Adapter class to display a list of appointments. The layout includes the patient name, type, and a delete icon.  
(10 Marks – Apply)
- d) Suppose the app should allow filtering appointments by type (e.g., Dental, Eye). How would you integrate this into your ViewModel and UI using Room and LiveData?  
(5 Marks – Apply)

### Question 03 – Kotlin Architecture and Design Patterns (25 marks)

- a) You are developing a Goal Settings App with features such as Goal Manager, Goal Progress, and Notification Scheduling. Your Team Lead has asked you to evaluate two architectural approaches: implementing each screen as a separate Activity or using Fragments within a single Activity.  
Critically evaluate both approaches and recommend the most suitable one for this app.  
Justify your recommendation  
(5 Marks – Evaluate)
- b) The app has 3 buttons to switch between Dashboard, Goal Manager, and Goal Progress screens implemented as fragments. Construct Kotlin code to handle this navigation.  
(5 Marks – Apply)
- c) The Goal Manager screen allows users to set a reminder date for each goal. Implement Kotlin code to show a DatePicker dialog and update the selected date on the UI.  
(5 Marks – Apply)
- d) Define a Kotlin sealed class to represent three different notification types in your app:
  - TimeBased (triggered by scheduled time)
  - LocationBased (triggered when entering a location)
  - DeadlineMissed (triggered when task deadline passes)Then, write a function `getNotificationMessage()` that returns a message string for each type.  
(10 Marks – Apply)