M.Sc.(CA&IT)-II
P22A3IAD -IOS APPLICATION DEVELOPMENT
**Question List**

## Unit-1

### iOS Basics & Xcode Playground

1. What is iOS, and how does it differ from other mobile operating systems?
2. What is the purpose of Xcode in iOS development?
3. What is a playground in Xcode, and how is it useful for Swift development?
4. What is the iOS Simulator, and how does it help in app development?
5. What is the Interface Builder (IB) in Xcode?
6. What are NIB files, and how do they differ from Storyboards?
7. State the difference between App ID and Bundle ID?

### Swift Language Basics

8. What is the difference between `var` and `let` in Swift?
9. What are Swift's basic data types?
10. What are type safety and type inference in Swift?
11. How does Swift handle optional values?
12. What are tuples in Swift, and how are they used?
13. What are collection types in Swift? Name and explain each.

### Control Flow in Swift

17. How do `if` and `switch` statements work in Swift?

### Loops & Control Transfer Statements

20. What are the different types of loops available in Swift?
21. How does the `fallthrough` keyword work in a `switch` statement?

### Swift in Playgrounds

25. What are the benefits of using Playgrounds for learning Swift?

## Unit-2

### Classes, Objects & Methods

1. What is a class in Swift, and how is it different from a struct?
2. How do you create an object of a class in Swift?
3. What are instance methods and type methods in Swift?
4. How does inheritance work in Swift?
5. What is method overriding, and how do you prevent it?

### Optional Chaining & Type Casting

7. What is optional chaining in Swift, and how does it work?
8. What is type casting in Swift?
9. What is the difference between upcasting and downcasting?

### Error Handling

12. What are `do`, `try`, `catch`, and `throw` used for in Swift error handling?

### Extensions & Protocols

16. What are extensions in Swift, and how are they useful?
17. What is a protocol, and how does it differ from a class?
18. How do you declare a protocol, and how do classes or structs conform to it?

### Access Control

23. What are the different access control levels in Swift?

### Automatic Reference Counting (ARC) & Memory Management

26. How does ARC help in memory management?

## Unit-3

### UIKit Framework & Application Components

1. What is the UIKit framework, and why is it important in iOS development?
2. What are the key components of an iOS application?

### Design Patterns in iOS

5. How does the Delegate Pattern work in iOS?

6. What is the Singleton pattern, and where is it commonly used in iOS development?

## App Delegate & iOS App Lifecycle

10. What is the `AppDelegate`, and what is its role in an iOS application?
11. What are the different states in the iOS app lifecycle?
12. What are the key methods of the `AppDelegate` and `SceneDelegate`?

## UI Elements & Interface Development

15. What are some common UI elements in UIKit?
16. How do you create and connect UI elements to a ViewController in Interface Builder?
17. How does Auto Layout work in iOS?
18. What is a Size Class, and why is it useful in designing adaptive layouts?
19. What is a Stack View, and how does it help in managing layouts?

## View Controllers & Navigation

21. What is a `UIViewController`, and what are its key lifecycle methods?
22. What are different types of ViewControllers in UIKit?
23. What is the difference between `UINavigationController` and `UITabBarController`?
24. What is the role of a `UITableViewDelegate` and `UITableViewDataSource`?
25. How do you implement a dynamic TableView with custom cells?