SRM VALLIAMMAI ENGINEERING COLLEGE

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF INFORMATION TECHNOLOGY

QUESTION BANK

II SEMESTER

M-TECH DATASCIENCE

PDS102-MOBILE APPLICATION DEVELOPMENT

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SUBJECT CODE & NAME : PDS102-MOBILE APPLICATION DEVELOPMENT

SEM / YEAR: II Sem/ I Year

UNIT I - INTRODUCTION			
Mobile Applications – Characteristics and Benefits – Application Model – Infrastructure and Managing Resources – Mobile Device Profiles – Frameworks and Tools.			
PART A			
Q.No	**Questions**	**BT Level**	**Competence**
1.	Define mobile applications.	BTL-1	Remember
2.	List any four characteristics of mobile applications.	BTL-1	Remember
3.	State two benefits of mobile applications.	BTL-2	Understand
4.	What is an application model in mobile development?	BTL-1	Remember
5.	Why is resource management crucial in mobile applications?	BTL-2	Understand
6.	Mention two components of mobile application infrastructure.	BTL-2	Understand
7.	Define mobile device profiles.	BTL-1	Remember
8.	What is the significance of mobile device profiles?	BTL-2	Understand
9.	List two examples of mobile development frameworks.	BTL-1	Remember
10.	Name two popular tools used in mobile application development.	BTL-2	Understand
11.	What is the role of an application model in mobile applications?	BTL-1	Remember
12.	How do frameworks assist in mobile app development?	BTL-2	Understand
13.	Give two examples of resources managed in mobile applications.	BTL-2	Understand
14.	Differentiate between native and hybrid mobile applications.	BTL-2	Understand
15.	State any two advantages of using mobile frameworks.	BTL-2	Understand
16.	What are the key considerations for managing resources in mobile apps?	BTL-1	Remember
17.	List two factors that influence the design of mobile device profiles.	BTL-1	Remember
18.	What is the purpose of an integrated development environment (IDE) in mobile app development?	BTL-1	Remember
19.	Give two examples of platforms that support mobile app development.	BTL-2	Understand
20.	Mention two benefits of using mobile-specific frameworks.	BTL-1	Remember
21.	How does resource management improve mobile app performance?	BTL-2	Understand
22.	What is meant by infrastructure in mobile application development?	BTL-1	Remember
23.	List two characteristics of a well-designed mobile application.	BTL-1	Remember
24.	How do tools like Android Studio or Xcode aid in app development?	BTL-2	Understand

25.	What is the primary purpose of mobile application testing frameworks?	BTL-1	Remember
PART - B			
1.	Discuss the characteristics and benefits of mobile applications with examples.	BTL-5	Evaluate
2.	Explain the application model of mobile applications and its importance in development.	BTL-3	Apply
3.	Describe the infrastructure required for mobile application development and deployment.	BTL-3	Apply
4.	What is resource management in mobile applications? Explain its techniques and challenges.	BTL-3	Apply
5.	Discuss mobile device profiles, their significance, and their impact on application development.	BTL-3	Apply
6.	Explain the role of frameworks in mobile application development, with examples of popular frameworks.	BTL-4	Analyze
7.	What tools are commonly used for mobile application development? Compare any two tools.	BTL-4	Analyze
8.	Illustrate the relationship between mobile application infrastructure and resource management.	BTL-5	Evaluate
9.	Analyze the challenges of managing resources in mobile applications and propose solutions.	BTL-4	Analyze
10.	Explain how device profiles influence the design and development of mobile applications.	BTL-4	Analyze
11.	Compare native, hybrid, and web mobile applications, highlighting their pros and cons.	BTL-3	Apply
12.	Discuss the steps involved in creating a mobile application from an infrastructure perspective.	BTL-3	Apply
13.	Examine the significance of choosing the right framework for mobile application development.	BTL-5	Evaluate
14.	Discuss the advantages and disadvantages of popular mobile development tools like Android Studio and Xcode.	BTL-4	Analyze
15.	How does effective resource management impact the performance and user experience of a mobile application?	BTL-3	Apply
16.	What are the key considerations for creating mobile applications that are compatible with multiple device profiles?	BTL-3	Apply
17.	Critically Analyze the role of frameworks and tools in accelerating the mobile application development process.	BTL-5	Evaluate
UNIT II - MOBILE TRANSPORT AND APPLICATION LAYER			
Processes - Process Concept - Process Scheduling - Operations on Processes - Inter-process Communication; CPU Scheduling - Scheduling criteria - Scheduling algorithms: Process Synchronization - The Critical-Section problem –Semaphores, Deadlock - Methods for handling deadlocks, Deadlock prevention, Deadlock avoidance, Deadlock detection, Recovery from deadlock			
PART – A			
1.	What is Mobile TCP?	BTL-1	Remember
2.	State any two differences between TCP and Mobile TCP.	BTL-2	Understand
3.	What is WAP, and why is it significant in mobile communication?	BTL-2	Understand
4.	List the key components of the WAP architecture.	BTL-2	Understand
5.	What is the role of the Wireless Datagram Protocol (WDP) in WAP?	BTL-1	Remember
6.	Define WTLS and its purpose in WAP.	BTL-1	Remember

7.	What is Wireless Transaction Protocol (WTP)?	BTL-1	Remember
8.	List two features of the Wireless Session Protocol (WSP).	BTL-2	Understand
9.	What is Wireless Application Environment (WAE)?	BTL-2	Understand
10.	Define WTA (Wireless Telephony Application) architecture.	BTL-1	Remember
11.	What is the significance of WML in mobile development?	BTL-1	Remember
12.	How does WML differ from HTML?	BTL-2	Understand
13.	What are the advantages of using Mobile TCP?	BTL-1	Remember
14.	Mention two uses of WAP in mobile communication.	BTL-2	Understand
15.	What is the role of gateways in WAP architecture?	BTL-1	Remember
16.	Explain the term "bearer independence" in the context of WDP.	BTL-2	Understand
17.	List two security features provided by WTLS.	BTL-2	Understand
18.	State any two advantages of WTP.	BTL-2	Understand
19.	What are the primary goals of WSP in mobile applications?	BTL-1	Remember
20.	Give two examples of applications that use WAE.	BTL-2	Understand
21.	Mention two limitations of WAP technology.	BTL-2	Understand
22.	What is the purpose of a deck in WML?	BTL-1	Remember
23.	List two benefits of using WTA architecture.	BTL-1	Remember
24.	What is the role of scripting in WML?	BTL-1	Remember
25.	Explain the relationship between WML and WAP	BTL-2	Understand
PART – B			
1.	Explain Mobile TCP, its working mechanism, and its advantages over traditional TCP in mobile environments.	BTL-4	Analyze
2.	Discuss the WAP architecture in detail, highlighting its key components and their roles.	BTL-4	Analyze
3.	Explain the function and significance of Wireless Datagram Protocol (WDP) in the WAP stack.	BTL-3	Apply
4.	What is WTLS? Discuss its features, working principles, and importance in providing security for WAP applications.	BTL-3	Apply
5.	Describe the Wireless Transaction Protocol (WTP) and explain its role in ensuring reliable communication in mobile networks.	BTL-3	Apply
6.	Discuss the Wireless Session Protocol (WSP), its features, and how it enhances session management in WAP.	BTL-3	Apply
7.	What is the Wireless Application Environment (WAE)? Explain its components and how it supports mobile application development.	BTL-4	Analyze
8.	Explain the WTA (Wireless Telephony Application) architecture and its role in integrating telephony features with WAP.	BTL-5	Evaluate
9.	Compare WML and HTML, focusing on their structure, use cases, and suitability for mobile applications.	BTL-3	Apply
10.	What are the advantages and disadvantages of using WAP for mobile communication? Provide real-world examples.	BTL-4	Analyze
11.	Analyze the challenges faced in implementing WAP and how these challenges can be mitigated.	BTL-5	Evaluate
12.	Describe the lifecycle of a WAP session and explain the roles of various protocols in the WAP stack during this process.	BTL-3	Apply
13.	How does WTLS ensure security in wireless communication? Discuss its features and limitations.	BTL-3	Apply
14.	Explain the structure and elements of a WML deck with a practical example.	BTL-6	Create

15.	Discuss the role of scripting in WML and how it enhances the functionality of WAP applications.	BTL-3	Apply
16.	Examine the evolution of WAP technology and its relevance in modern mobile communication systems.	BTL-3	Apply
17.	Critically Analyze the advantages and limitations of WTA architecture in integrating mobile applications with telephony services.	BTL-5	Evaluate
UNIT III - USER INTERFACE			
Generic UI Development – Designing the Right UI – Multimodal and Multichannel UI – Gesture Based UI – Screen Elements and Layouts – Voice XML.			
PART - A			
1.	What is generic UI development?	BTL-1	Remember
2.	List two goals of designing the right UI for mobile applications.	BTL-1	Remember
3.	What is a multimodal UI?	BTL-1	Remember
4.	Define a multichannel UI and give an example.	BTL-1	Remember
5.	State the gesture-based UIs?	BTL-2	Understand
6.	Name two common gestures used in mobile applications.	BTL-2	Understand
7.	Give the importance of screen elements in UI design?	BTL-2	Understand
8.	List two types of layouts commonly used in mobile UI design.	BTL-2	Understand
9.	What is Voice XML?	BTL-1	Remember
10.	State two advantages of using Voice XML in mobile applications.	BTL-2	Understand
11.	What are the key considerations for designing a generic UI?	BTL-1	Remember
12.	Mention two benefits of using a multimodal UI.	BTL-2	Understand
13.	Differentiate the multimodal and multichannel UIs?	BTL-2	Understand
14.	State two challenges in designing gesture-based UIs.	BTL-2	Understand
15.	What are the essential components of a mobile screen layout?	BTL-1	Remember
16.	How does Voice XML support voice-based interactions?	BTL-1	Remember
17.	List two tools used for UI design in mobile applications.	BTL-1	Remember
18.	What is the role of visual hierarchy in UI design?	BTL-1	Remember
19.	Mention two advantages of designing a multichannel UI.	BTL-2	Understand
20.	Define the term "usability" in the context of UI design.	BTL-1	Remember
21.	List two accessibility features that can be integrated into mobile UIs.	BTL-2	Understand
22.	What is the significance of responsive design in UI development?	BTL-1	Remember
23.	Name two types of voice commands supported by Voice XML.	BTL-2	Understand
24.	What is the primary purpose of gesture-based UIs?	BTL-1	Remember
25.	Mention two examples of devices that utilize multimodal UIs.	BTL-1	Remember
PART - B			
1.	Analyse the concept of generic UI development and discuss its significance in mobile application design.	BTL-4	Analyze
2.	Evaluate the principles of designing the right UI? Discuss the factors influencing good UI design.	BTL-5	Evaluate
3.	Define multimodal UI and explain its advantages, challenges, and examples in mobile applications.	BTL-3	Apply
4.	What is a multichannel UI? Discuss its relevance in ensuring seamless user experiences across devices.	BTL-5	Evaluate

5.	Describe the components and implementation of a gesture-based UI with examples of common gestures.	BTL-3	Apply
6.	Analyze the challenges and considerations involved in designing gesture-based interfaces.	BTL-4	Analyze
7.	Explain the importance of screen elements and layouts in creating intuitive user interfaces.	BTL-4	Analyze
8.	Discuss the different types of layouts used in mobile applications and their suitability for various use cases.	BTL-3	Apply
9.	What is Voice XML? Explain its architecture, working, and applications in voice-based interfaces.	BTL-3	Apply
10.	How does Voice XML support accessibility in mobile applications? Provide examples.	BTL-3	Apply
11.	Compare multimodal and multichannel UIs, highlighting their differences and use cases.	BTL-4	Analyze
12.	Discuss the role of user-centered design in creating effective mobile user interfaces.	BTL-4	Analyze
13.	Demonstrate the concept of responsive design and its importance in modern mobile UIs.	BTL-3	Apply
14.	Discuss the integration of accessibility features in UI design, focusing on gesture and voice controls.	BTL-3	Apply
15.	Explain the process of designing and optimizing a mobile screen layout with examples of effective designs.	BTL-3	Apply
16.	Analyze the challenges faced by developers in implementing multimodal UIs and propose solutions.	BTL-4	Analyze
17.	Critically evaluate the role of Voice XML in the evolution of voice-controlled mobile applications.	BTL-5	Evaluate
UNIT IV - APPLICATION DESIGN			
Memory Management – Design Patterns for Limited Memory – Work Flow for Application development – Java API – Dynamic Linking – Plugins and rule of thumb for using DLLs – Concurrency and Resource Management.			
PART – A			
1.	What is memory management in mobile application development?	BTL-1	Remember
2.	List two techniques used for efficient memory management in mobile apps.	BTL-1	Remember
3.	What are design patterns for limited memory environments?	BTL-1	Remember
4.	Name two common design patterns used for limited memory management.	BTL-2	Understand
5.	Show the workflow for mobile application development.	BTL-2	Understand
6.	Mention two essential steps in the application development workflow.	BTL-2	Understand
7.	Outline the Java API?	BTL-2	Understand
8.	List two advantages of using Java API in mobile application development.	BTL-1	Remember
9.	What is dynamic linking in the context of mobile applications?	BTL-1	Remember
10.	State two benefits of using dynamic linking in application development.	BTL-1	Remember
11.	What is a plugin in mobile application design?	BTL-2	Understand
12.	List two advantages of using plugins in mobile applications.	BTL-1	Remember
13.	What is a DLL (Dynamic Link Library)?	BTL-1	Remember

14.	Mention two rules of thumb for using DLLs in mobile applications.	BTL-2	Understand
15.	Define concurrency in the context of mobile application design.	BTL-2	Understand
16.	List two challenges of managing concurrency in mobile apps.	BTL-1	Remember
17.	What is resource management in mobile applications?	BTL-1	Remember
18.	Mention two types of resources commonly managed in mobile applications.	BTL-2	Understand
19.	What is the purpose of garbage collection in memory management?	BTL-1	Remember
20.	List two ways to optimize memory usage in mobile applications.	BTL-1	Remember
21.	Give the role of APIs in resource management?	BTL-1	Remember
22.	State two benefits of using Java for developing mobile applications.	BTL-2	Understand
23.	Show the difference between static and dynamic linking?	BTL-2	Understand
24.	List two examples of scenarios where plugins are essential in mobile app development.	BTL-1	Remember
25.	How does concurrency improve the performance of mobile applications?	BTL-2	Understand
	PART - B		
1.	Analyse the memory management in mobile application development. Discuss techniques for optimizing memory usage.	BTL-4	Analyze
2.	Evaluate the design patterns for limited memory environments? Explain any three patterns with examples.	BTL-5	Evaluate
3.	Demonstrate the workflow for mobile application development, highlighting each phase with its significance.	BTL-3	Apply
4.	Explain the Java API and discuss its importance in mobile application development.	BTL-3	Apply
5.	What is dynamic linking? Explain its advantages and disadvantages in mobile application design.	BTL-3	Apply
6.	Discuss the role of plugins in mobile application development. Highlight their benefits and challenges.	BTL-3	Apply
7.	What are DLLs (Dynamic Link Libraries)? Discuss the rules of thumb for effectively using DLLs in mobile apps.	BTL-3	Apply
8.	Explain concurrency in mobile application development. Discuss its advantages and challenges.	BTL-3	Apply
9.	What is resource management? Explain strategies for managing resources in mobile applications.	BTL-4	Analyze
10.	Illustrate the importance of memory management in mobile applications. Provide examples of tools or methods used.	BTL-3	Apply
11.	Analyse the impact of poor resource management on the performance and usability of mobile applications.	BTL-4	Analyze
12.	Compare static linking and dynamic linking. Discuss their use cases in mobile application design.	BTL-4	Analyze
13.	Explain how Java APIs simplify mobile application development with examples.	BTL-3	Apply
14.	Discuss how design patterns for limited memory environments can improve application performance. Provide examples.	BTL-4	Analyze
15.	Analyse the challenges in implementing concurrency in mobile apps and propose solutions to address them.	BTL-4	Analyze
16.	Explain the workflow of mobile application development, focusing on the importance of testing and deployment phases.	BTL-3	Apply
17.	Critically evaluate the role of dynamic linking and plugins in enhancing the modularity and flexibility of mobile applications.	BTL-5	Evaluate

UNIT V - APPLICATION DEVELOPMENT			
Mobile OS: Android, iOS – Android Application Architecture – Android basic components – Intents and Services – Storing and Retrieving data – Packaging and Deployment – Security and Hacking.			
PART – A			
1.	Define mobile operating systems and give two examples.	BTL-2	Understand
2.	What is the primary difference between Android and iOS?	BTL-2	Understand
3.	Explain the term "open-source" with respect to Android OS.	BTL-1	Remember
4.	What is the role of the iOS App Store?	BTL-1	Remember
5.	Mention two unique features of iOS.	BTL-2	Understand
6.	List the four main components of Android application architecture.	BTL-1	Remember
7.	Explain the role of the "Activity" component in Android.	BTL-2	Understand
8.	Show the purpose of the "Content Provider" in Android architecture?	BTL-2	Understand
9.	Describe the "Broadcast Receiver" in Android applications.	BTL-1	Remember
10.	Why is the "Application Context" important in Android?	BTL-2	Understand
11.	Name the basic components of an Android application.	BTL-2	Understand
12.	What is an Android manifest file?	BTL-1	Remember
13.	How is an Android Activity lifecycle managed?	BTL-2	Understand
14.	Define Fragments in Android.	BTL-1	Remember
15.	Outline the role of Layouts in Android development?	BTL-2	Understand
16.	Differentiate between explicit and implicit intents in Android.	BTL-2	Understand
17.	What is an intent filter, and why is it used?	BTL-1	Remember
18.	Define Android Services.	BTL-1	Remember
19.	How is a Bound Service different from a Started Service?	BTL-2	Understand
20.	Explain the role of Broadcast Intents in Android.	BTL-2	Understand
21.	What are SharedPreferences in Android?	BTL-2	Understand
22.	Name two database systems used for data storage in Android.	BTL-2	Understand
23.	How does Android's SQLite database function?	BTL-2	Understand
24.	What is the difference between internal and external storage in Android?	BTL-1	Remember
25.	Explain the concept of content resolvers in Android.	BTL-1	Remember
PART - B			
1.	Compare and contrast Android and iOS in terms of architecture, development, and market impact.	BTL-5	Evaluate
2.	Explain the development lifecycle of mobile applications on Android and iOS platforms.	BTL-3	Apply
3.	Discuss the components of Android application architecture and explain how they interact with one another.	BTL-3	Apply
4.	Illustrate the role of the Android runtime (ART) in application execution.	BTL-4	Analyze
5.	Explain the Activity lifecycle in Android with a neat diagram.	BTL-3	Apply
6.	Discuss the role of fragments in modern Android development and compare them with activities.	BTL-4	Analyze
7.	Describe different types of layouts in Android and their respective use cases.	BTL-3	Apply

8.	Differentiate between Intent and Service in Android. Provide examples of how each is used.	BTL-4	Analyze
9.	Explain the concept of inter-process communication (IPC) in Android using Intents and Services.	BTL-5	Evaluate
10.	Discuss the various types of services in Android with examples.	BTL-3	Apply
11.	Explain the data storage options available in Android. Compare SharedPreferences, SQLite, and external storage with examples.	BTL-3	Apply
12.	Discuss how the ContentProvider mechanism enables data sharing between applications in Android.	BTL-4	Analyze
13.	Explain the Android application packaging process. Discuss the role of the APK file in deployment.	BTL-4	Analyze
14.	Outline the steps involved in deploying an Android application to the Google Play Store.	BTL-4	Analyze
15.	Explain the security model of Android. Discuss how permissions and sandboxing protect applications.	BTL-3	Apply
16.	Discuss common security vulnerabilities in Android applications and suggest ways to mitigate them.	BTL-3	Apply
17.	Explain the role of secure coding practices and encryption in protecting Android applications from hacking threats.	BTL-5	Evaluate