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**MOBILE PROGRAMMING ASSIGNMENT 2**

1. Provide the definition of the following terms (10 Marks)

**i). Activity –** represents a single screen with a user interface in an Android app

**ii). Service -** is a background component that performs long-running operations without providing a user interface.

**iii).** **Broadcast receiver -** it responds to system-wide broadcast announcements.

**iv).** **Content provider -** manages access to a structured set of data.

**v).** **Intents -** is a messaging object used to request an action from another component.

2. List and explain any 5 features of the Android SDK (10 Marks)

**Emulator:** The SDK includes an Android Emulator for testing apps without using a physical device.

**Android Debug Bridge (ADB):** A versatile command-line tool that allows developers to communicate with a device or emulator, install APKs, debug apps, and access device logs.

**Android Studio:** The official IDE provided in the SDK includes code editing, debugging, performance tools, and testing frameworks.

**UI Design Tools:** SDK includes XML-based layout design tools and drag-and-drop visual tools for designing user interfaces.

**APIs and Libraries:** The SDK provides APIs for accessing device functions such as GPS, camera, Bluetooth, sensors, and more, allowing rich app development.

3. Using a well labeled diagram, explain the parts of the Android Software Stack (Android

Architecture)

**Linux Kernel:** Acts as the foundation. It manages hardware drivers, memory, power, device management, and basic system services.

**Libraries:** C/C++ libraries used by various components of the Android system, such as media, graphics (OpenGL), SQLite, and WebKit.

**Android Runtime (ART):**  
Executes the app’s bytecode. Includes the core libraries and the ART virtual machine that runs Android applications.

**Application Framework:** Provides higher-level services to applications such as Activity Manager, Notification Manager, Location Manager, and Content Providers.

**Applications:** The top layer where user-installed and built-in apps (like contacts, SMS, camera) reside. These apps interact with the system via the framework.

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ANDROID RUNTIME

APPLICATION FRAMEWORK

APPLICATIONS

ANDROID ARCHITECTURE