Assignment -1 5G

**What is 5G NSA network architecture?**

Answer:

5G NSA (Non-Standalone) network architecture is an intermediate step in the evolution from 4G to 5G technology. It leverages existing 4G LTE infrastructure to facilitate the deployment and integration of 5G services. Here’s an overview of 5G NSA network architecture:

Key Components

1. Evolved Packet Core (EPC): This is the core network used in 4G LTE, which is also utilized in the NSA architecture. It handles the control plane and user plane functions.

2. Next Generation NodeB (gNB): This is the new radio access network (RAN) element specific to 5G. It provides higher data rates and improved efficiency compared to the 4G base station (eNodeB).

3. eNodeB (evolved NodeB): This is the 4G LTE base station, which continues to handle the control plane signaling in the NSA architecture.

Architecture Overview

• Dual Connectivity: In NSA, the user device (UE) is connected to both the 4G eNodeB and the 5G gNB simultaneously. This dual connectivity allows for the 4G network to manage control signaling while the 5G network delivers faster data speeds.

• Control and User Plane Separation: The 4G eNodeB is responsible for the control plane (C-plane) operations, such as mobility management and session management. The 5G gNB handles the user plane (U-plane), which includes the actual data transfer.

Benefits of NSA

1. Faster Deployment: Utilizing existing 4G infrastructure allows for quicker deployment of 5G services compared to a full standalone (SA) 5G deployment.

2. Cost Efficiency: By leveraging current 4G networks, operators can avoid the high costs associated with building a new 5G core network from scratch.

3. Smooth Transition: NSA provides a seamless transition for users and operators, as it integrates 5G capabilities without disrupting existing 4G services.

Use Cases

• Enhanced Mobile Broadband (eMBB): High-speed internet access for applications such as streaming, video conferencing, and online gaming.

• Internet of Things (IoT): Connecting a vast number of IoT devices with improved efficiency and lower latency.

Future Evolution

The eventual goal is to move towards a full 5G Standalone (SA) architecture, which will operate independently of the 4G infrastructure and fully utilize the 5G core network (5GC). This will enable advanced 5G features such as ultra-reliable low latency communication (URLLC) and massive machine-type communications (mMTC).