TDMA

• Time division multiple access (TDMA) is digital transmission technology that allows a number of users to access a single radio-frequency (RF) channel without interference by allocating unique time slots to each user within each channel.
• The TDMA digital transmission scheme multiplexes three signals over a single channel.
- The current TDMA standard for cellular divides a single channel into six time slots, with each signal using two slots, providing a 3 to 1 gain in capacity over advanced mobile-phone service (AMPS). Each caller is assigned a specific time slot for transmission.

How TDMA works?

TDMA relies upon the fact that the audio signal has been digitized; that is, divided into a number of milliseconds-long packets.

It allocates a single frequency channel for a short time and then moves to another channel.

The digital samples from a single transmitter occupy different time slots in several bands at the same time.

• The access technique used in TDMA has three users sharing a 30-kHz carrier frequency. •

The reason for choosing TDMA for all these standards was that it enables some vital features for system operation in an advanced cellular or PCS environment.

Advantages of TDMA

In addition to increasing the efficiency of transmission, TDMA offers a number of other advantages over standard cellular technologies. First and foremost, it can be easily adapted to the

transmission of data as well as voice communication.
TDMA offers the ability to carry data rates of 64 kbps to 120 Mbps (expandable in multiples of 64 kbps).
• It is the most cost effective technology for upgrading analog to digital.
• It provides the user with extended battery life and talk time.
• Dual band 800/1900 MHz.

Disadvantages of TDMA

•One of the disadvantages of TDMA is that each user has a predefined time slot. However, users roaming

from one cell to another are not allotted a time slot.
Another problem with TDMA is that it is subjected to multipath distortion.
A signal coming from a tower to a handset might come from any one of several directions. It might have bounced off several different buildings before arriving