

## UNIT-1 INTRODUCTION

### 2-MARKS

#### 1.What is mobile computing.

Mobile Computing is a technology that allows transmission of data, voice and video via a computer or any other wireless enabled device without having to be connected to a fixed physical link. This tutorial will give an overview of Mobile Computing and then it will take you through how it evolved and where is the technology headed to in future along with the classifications and security issues involved.

#### 2.What are the various forms of wireless networking.

1. WLAN (Wireless Local Area Networking)
2. PAN (Personal Area Network)
3. Mobile Cellular Networks
4. Ad-hoc Networks

#### 3.What is Wireless Ad-hoc networks

A wireless ad hoc network (WANET) is a decentralized type of wireless network. The network is ad hoc because it does not rely on a pre existing infrastructure, such as routers in wired networks or access points in managed (infrastructure) wireless networks.

#### 4.What is Mobile Ad-hoc Networks

It is a collection of mobile nodes that forms a network on the fly without requiring any support of fixed infrastructure.it is also known as MANET.

#### 5.Application of Mobile Computing.

1. Emergency Services.
2. Stock information control.
3. Credit and Debit Card validation.
4. Remote Monitoring of Taxi.
5. Location Services (GPS,Maps).

#### 6.Characteristics of mobile computing.

1. Ubiquity
2. Location Awareness
3. Adoption

4. Broadcast
5. Personalization

### 7.What is Location Awareness?

Location awareness refers to devices that can passively or actively determine their location. Navigational instruments provide location coordinates for vessels and vehicles. Surveying equipment identifies location with respect to a well-known location and wireless communications device.

### 8.What are all the layers available in Mobile computing applications?

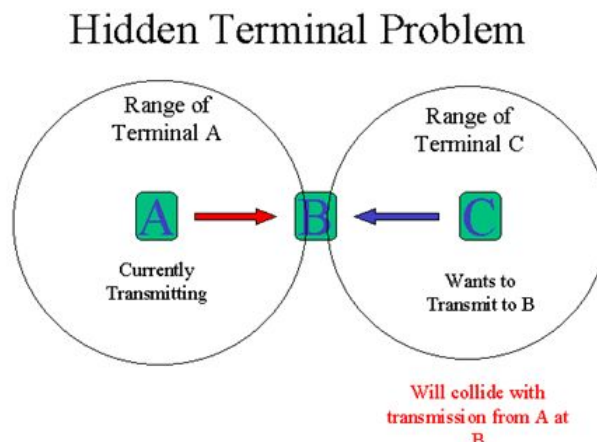
Presentation-Tier-1
Application-Tier-2
Data-Tier-3

### 9.What is MAC protocol?

The Medium Access Control (MAC) protocol is used to provide the data link layer of the Ethernet LAN system. The MAC protocol encapsulates a SDU (payload data) by adding a 14 byte header (Protocol Control Information (PCI)) before the data and appending an integrity checksum, The checksum is a 4-byte (32-bit) Cyclic Redundancy Check (CRC) after the data.

### 10.What is hidden terminal problem?

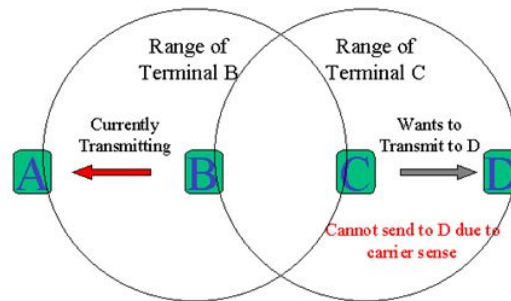
In wireless networking, the hidden node problem or hidden terminal problem occurs when a node is visible from a wireless access point (AP), but not from other nodes communicating with that AP. This leads to difficulties in media access control sublayer.



### 11. What is exposed terminal problem?

In wireless networks, the exposed node problem occurs when a node is prevented from sending packets to other nodes because of a neighboring transmitter.

#### Exposed Terminal Problem

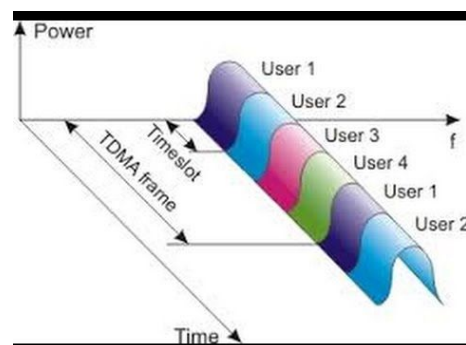


### 12. List the categories available in MAC protocols?

1. Fixed assignment schemes.
2. Random assignment schemes.
3. Reservation based schemes.

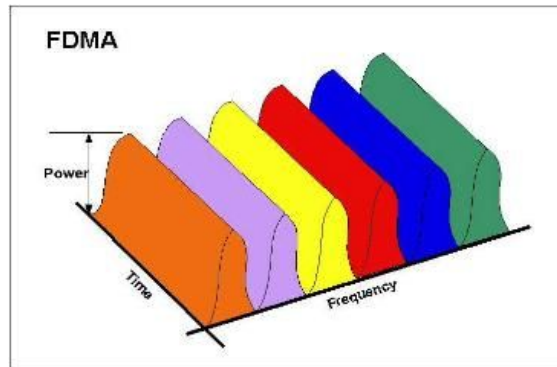
### 13. What is TDMA?

Time division multiple access (**TDMA**) is a channel access method for shared medium networks. It allows several users to share the same frequency channel by dividing the signal into different time slots. The users transmit in rapid succession, one after the other, each using its own time slot.



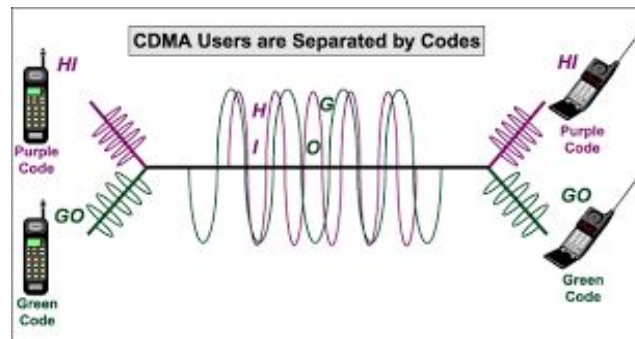
#### 14.What is FDMA?

Frequency Division Multiple Access or FDMA is a channel access method used in multiple-access protocols as a channelization protocol. FDMA gives users an individual allocation of one or several frequency bands, or channels. It is particularly commonplace in satellite communication.



#### 15.What is CDMA?

CDMA (Code-Division Multiple Access) refers to any of several protocols used in second-generation (2G) and third-generation (3G) wireless communications. As the term implies, CDMA is a form of multiplexing, which allows numerous signals to occupy a single transmission channel, optimizing the use of available bandwidth. The technology is used in ultra-high-frequency (UHF) cellular telephone systems in the 800-MHz and 1.9-GHz bands.



#### 16.List the Random Assignment Scheme?

1. ALOHA
2. Slotted - ALOHA
3. CSMA
4. CSMA/CD
5. CSMA/CA

**17.What is ALOHA?**

Aloha, also called the *Aloha method*, refers to a simple communications scheme in which each source (transmitter) in a network sends data whenever there is a frame to send. If the frame successfully reaches the destination (receiver), the next frame is sent. If the frame fails to be received at the destination, it is sent again. This protocol was originally developed at the University of Hawaii for use with satellite communication systems in the Pacific.

**18.What is slotted ALOHA?**

An improvement to the original ALOHA protocol was "Slotted ALOHA", which introduced discrete timeslots and increased the maximum throughput. A station can send only at the beginning of a timeslot, and thus collisions are reduced. In this case, only transmission-attempts within 1 frame-time and not 2 consecutive frame-times need to be considered, since collisions can only occur during each timeslot

**19.What is CSMA Scheme?**

Carrier sense multiple access (CSMA) is a probabilistic media access control (MAC) protocol in which a node verifies the absence of other traffic before transmitting on a shared transmission medium, such as an electrical bus, or a band of the electromagnetic spectrum.

**20.What is MACA?**

Multiple Access with Collision Avoidance (MACA) is a slotted media access control protocol used in wireless LAN data transmission to avoid collisions caused by the hidden station problem and to simplify exposed station problem.

The basic idea of MACA is a wireless network node makes an announcement before it sends the data frame to inform other nodes to keep silent. When a node wants to transmit, it sends a signal called *Request-To-Send* (RTS) with the length of the data frame to send. If the receiver allows the transmission, it replies the sender a signal called *Clear-To-Send* (CTS) with the length of the frame that is about to receive.

Meanwhile, a node that hears RTS should remain silent to avoid conflict with CTS; a node that hears CTS should keep silent until the data transmission is complete.