Mobile Computing and Communication

Question Bank

UNITI INTRODUCTION

Introduction to Mobile Computing – Applications of Mobile Computing- Generations of Mobile Communication Technologies- Multiplexing– Spread spectrum- MAC Protocols –SDMA – TDMA – FDMA - CDMA

PART – A

1. What is Mobile Computing?

Mobile Computing is defined as the ability to compute remotely while on the move. It is a fast and emerging field that enables people to access information from anywhere at any time. Mobile computing is also known as Ubiquitous computing (or) Nomadic Computing.

2. Find out the characteristics while device can thus exhibit during communication.

- Fixed and Wired
- Mobile and Wired
- Fixed and Wireless
- Mobile and Wireless

3. What are applications of Mobile Computing?

- Vehicles
- Emergencies
- Business
- Replacement of wired networks
- Infotainment
- Location dependent services
- Mobile and wireless devices

4. What is Communication?

Communication is a two-way transmission and reception and reception of data streams. Transmissions are of two types,

Guided Transmission

Unguided Transmission

5. Give the difference between the network 1G,2G,2.5G,3G mobile communication?

1G - Voice-only communication.
2G – Communicate voice as well as data signals.
2.5G – Enhancements of the second generation and sport data rates up to 100 kpbs.
3G – Mobile devices communicate at even higher data rates and support voice, data , and multimedia streams. High data rates in 3G devices enable transfer of video clips and faster multimedia communication.

6. What are the Mobile Computing disadvantages?

- Interference is persisted in shielding.
- Inefficient bandwidth in transmission.
- Connection losses over entire network.
- Network stability.
- Interoperability problem.
- Protection constraints

7. Define Spread Spectrum.

A collective class of signalling techniques are employed before transmitting a signal to provide a secure communication, known as the **Spread Spectrum Modulation**.

8. What do you understand from the term MAC Protocol?

MAC protocol is a medium access arbitration scheme to regulate the user access to a shared medium / channel. It resolves the connection among the nodes/ users when they try to transmit data on the same shared channel at the same time.

9. What are the basic services provided by the MAC layer?

- Asynchronous data service (mandatory)
- Time-bounded service (optional)

10. What are the techniques used for MAC management?

- Synchronization
- Power management Roaming
- Management information base(MIB)

11. What are the features / objectives of MAC protocols?

- It should implement some rules that help to enforce discipline when multiple nodes contend for a shared channel.
- It should help maximize the utilization of the channel.
- Channel allocation needs to be fair. No node should be discriminated against at any time and made to wait for an unduly long time for transmission.
- It should be capable of supporting several types of traffic having different maximum and average bit rates.
- It should be robust in the face of equipment failures and changing network conditions.

12. List the techniques in Multiplexing.

- SDM
- FDM
- CDM
- TDM

13. What are the multiplexing techniques ?

The Multiplexing techniques are:

i)Space division multiplexing.
ii)Time division multiplexing.
iii)Frequency division multiplexing.
iv)Code division multiplexing.

14. Define Space Division Multiplexing Access?

Space division multiple access (SDMA) means division of the available space so that multiple sources can access the medium at the same time. SDMA is the technique in which a wireless transmitter transmits the modulated signals and accesses a space slot and another transmitter accesses another space slot such that signals from both can propagate in two separate spaces in the medium without affecting each other.

15. Define Code division multiplexing Access?

CDMA (Code Division Multiple Access) is an access method in which multiple users are allotted different codes (sequence of symbols) to access the same channel (set of frequencies).

16. Define Time division multiplexing Access?

Time division multiplexing (TDMA) is an access method in which multiple users, data services, or sources are allotted different time-slices to access the same channel. The available time-slice is divided among multiple modulated-signal sources. These sources use the same medium, the same set of frequencies, and the same channel for transmission of data.

17. Define Frequency division multiplexing Access?

Frequency division multiple access (FDMA) is an access method in which entails assignments of different frequency-slices to different users for accessing the same carrier.

PART – B

1. Discuss in detail about the Applications of Mobile Computing.

- Vehicle (3)
- Emergencies (3)
- Business (2)
- Infotainment(2)
- Location Dependent Services (3)

2. Explain in detail about Generations of Mobile Communication Technologies.

- 1G(4)
- 2G(3)
- 3G(3)
- 4G(3)

3. Explain the taxonomy of MAC Protocols. Differentiate various schemes.

4. Explain the distinguishing features of various generations of wireless networks.

PART – C

1. Explain in detail about the multiplexing techniques.

The Multiplexing techniques are:

i) Space division multiplexing.

ii) Time division multiplexing.
iii) Frequency division multiplexing.
iv) Code division multiplexing.

2. Define mobile computing. Explain its characteristics and applications.

Mobile Computing
Characteristics of Mobile Computing
Applications of Mobile Computing