VALLIAMMAI ENGINEERING COLLEGE
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DEPARTMENT OF INFORMATION TECHNOLOGY

SUBJECT NAME : **Mobile Communication**
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UNIT – I

WIRELESS COMMUNICATION

PART- A

1. Draw the frequency assignment for radio transmission.
2. What is handoff? List out its characteristics.
3. Prove that Barker code has good auto correlation.
4. Calculate the channel capacity C, given a bandwidth B as 3100Hz and a number of discrete signals M as 8.
5. What is the motivation for the specialized MAC?
6. Draw a model to illustrate the effect of hand off.
7. Why baseband signal cannot be directly transmitted in wireless systems?
8. What is p-persistent CSMA?
9. What is meant by frequency reuse?
10. Differentiate between soft and hard hand off.
11. What do you mean by dropped call rate?
12. What is co-channel reuse ratio?
13. List out the various types of handovers available.
14. If a total of 33 MHz of bandwidth is allocated to a particular FDD cellular telephone system which uses two 25 kHz simples channel to provide full duplex channels, compute the number of channels available per cell if a system uses (a) 4 cell reuse (b) 7 cell reuse.
15. What are the disadvantages of small cells?
16. How are guard spaces realized between users in CDMA?
17. What is the main reason to use cellular systems over telephone systems?
18. Distinguish between TDMA and CDMA
19. What are the categories of Mobile services?
20. What are the information in SIM.

PART – B

1.What is a Cellular system? Give their advantages and disadvantages.
2.Explain in detail about the motivation of specialized MAC.
3.Compare the mechanisms of SDMA, TDMA, FDMA, and CDMA with their functions.
4.Discuss the principle and operation of cellular wireless networks in detail.
5.Explain clearly the various schemes for Medium access control with Time Division multiple access.
6.If a SIR of 15db is required for satisfactory forward channel performance of a cellular system, What is the frequency reuse factor and cluster size that should be used for maximum capacity if the path loss exponent is n=4? Assume that there are six co-channel cells in the first tier and all of them are at the same distance from the mobile. Use suitable approximations.
7.List the various performance metrics used to make the decision with reference to handoff.
8. i) Discuss on the frequency reuse concept.
   ii) Explain the concept of cell splitting in cellular system
9.Describe in detail for channel assignment and frequency management.

10. Consider three users and Barker code of six bits each for the users transmitting the signals, introduce noise and near/far problem while transmitting and reconstruct the data in the receiving side providing the proper countermeasures for the complications.(Note :use CDMA technologies).

UNIT- II

WIRELESS NETWORKS

PART- A

1. Give examples for Mobile adhoc networks.
2. Define adhoc wireless networks with example.
3. What are the three low power states of a Bluetooth state?
4. What is wireless local loop?
5. Why cannot wireless LANs implement CSMA/CD?
6. Why is WiMAX forum formed?
7. Differentiate between WiFi and WiMAX.
8. Why do hidden and exposed terminal problems arise?
9. Differentiate Broadcast from Multicast.
10. What are the main benefits of spread spectrum system?
11. Why is the physical layer in IEEE 802.11 subdivided?
12. What are the several versions of CSMA?
13. Compare infrared and radio transmission.
14. What are the 2 sub layers in DLC?
15. List any 2 disadvantage of WLAN.
16. Define random back off time.
17. Mention the design goals of WLANS?
18. What do you mean by polling?
19. Define frequency hopping spread spectrum.
20. What are fundamental difference existing between wired and wireless network?

PART – B

1. Explain in detail about the system and protocol architecture of IEEE 802.11.
2. Discuss the advantages and disadvantages of WLAN.
3. Explain the MAC Management 802.11.List the two MAC sublayers defined by IEEE 802.11.
4. Describe the functions of MAC and Physical Layer of IEEE 802.16 in detail.
5. Write short notes on wireless local loop.
6. With suitable diagram explain the extended service set.
7. Discuss the difference between IEEE 802.11a and IEEE 802.11b.
8. Explain WiFi and WiMax.
9. Write short notes on mobile ad hoc networks.
10. Explain MANET in detail.

UNIT – III

MOBILE COMMUNICATION SYSTEMS

PART- A

1. What is mobile number portability?
2. Define VOIP.
3. What are the advantages of GPRS?

4. What are the types of handover in GSM?
5. List the standards similar to GSM.
6. Draw the GPRS transport plane.
7. What are the advantages of digital cellular systems over Analog cellular Systems?
8. What is PDP?
9. Name the speech coder types used in GSM and CDMA.
10. What is visitor Location Registers?
11. What are the reasons for delays in GSM for packet data traffic?
12. What is MTC and MOC?
13. What is meant by beacon?
14. What is meant by SIFS and PIFS?
15. What are the advantages of wireless LAN?
16. What are the advantages of DAB?
17. What is object repetition?
18. What is Active and passive scanning?
19. What are design goals of wireless LAN
20. Differentiate between 2.5 and 3G wireless networks.

PART – B

1. Explain in detail about the system architecture of Global System for Mobile communication.
2. Discuss in detail the various handover scenarios in GSM.
3. Describe the reliability and delay classes in GPRS. Also explain the GPRS procedures.
4. Explain the security services of GSM.
5. Explain the reference architecture of GSM.
6. Explain the network services of GPRS and mobility support in GPRS.
7. What are the functions of authentication, encryption in GSM? How is system security maintained.
8. Discuss the steps in Mobile terminated call and Mobile originated call.
9. Explain in detail (a) Attach and detach procedure (b) Combined RA/LA update.
10. Explain the following (a) PDP context procedures (b) GSM location update procedures.

UNIT- IV

MOBILE NETWORK AND TRANSPORT LAYERS

PART- A

1. Why does I-TCP isolate problems on the wireless link?
2. What is time- out freezing?
3. Differentiate types of care of address.
4. What is selective retransmission?
5. Write the merits of transaction oriented TCP.
6. How do you classify TCPs?
7. Define Tunnel.
8. What is snooping TCP.
9. What is a care of addressing in Mobile IP?
10. Write short notes on DSDV routing.

11. What are the advantages and disadvantages of the proactive protocols?
12. Define slow start?
13. Write the goal of M-TCP.
14. Write the advantages and disadvantages of mobile TCP.
15. Define fast retransmit.
16. What is the basic purpose of DHCP?
17. What led to the development of Indirect TCP?
18. What do you mean by persistent mode?
19. What are the configuration parameters to adapt TCP to wireless environment?
20. What do you mean by mobility binding?

PART – B

1. How can the tunneling and encapsulation be performed in mobile IP? Explain.
2. Describe the client server configuration of DHCP.
3. Discuss how snooping TCP acts as a transparent TCP and explain the role of foreign agent in it in detail.
4. What happens in the case of I-TCP if the mobile is disconnected? Discuss.
5. What is Mobile IP? Explain agent discovery, registration and encapsulation.
6. Write brief note on Fast Retransmit/ Fast Recovery.
7. Discuss in detail Indirect and Snooping TCP and differentiate them.
8. What are the three TDMA upgrade options for evolution of 2.5G TDMA standards? Explain and distinguish between them.
9. List the steps for TCP adaptation.
10. Explain the following
    i) DSDV
    ii) DSR
    iii) Ad-hoc DSR.

UNIT-V

APPLICATION LAYER

PART- A

1. Mention the primary goals of WAP.
2. What is the role of the WTA server?
3. What is syncML?
4. List features of WML.
5. When is one environment said to be application oriented?
6. What does WAP specification include?
7. What is iMode?
8. Write a note on WAP.
9. List the goals of WAE.
10. Define WML script.
11. What are push access protocol?
12. What are the components of WAP2.0?

13. What is WTP? What are its classes?
14. What is WSP?
15. Name the libraries specified by WML script.
16. Name some ICMP messages.
17. Name some features of WSP adapted to Web browsing.
18. What are the advantages of WML script over WML?
19. What is WML?
20. What are the elements of WAP?

PART – B

1.Explain in detail the components and interfaces of the WAP architecture.

2. Discuss the architecture of wireless telephony application in detail.

3.Describe the several standard libraries for WML script specified by WAP

4.Write short notes on the following

i) i-mode

ii) Wireless Markup language.

5.Explain the parameters of transaction and session protocols.

6.Explain in detail about mobile location based services.

7.Write a detailed note on WAP &WAP 2.0.

8.Explain about WML & WML script.

9.What are the enhancements of WAE to the classic client/server model of the web?

10. List out the important features of WAP .How is WAP used as a gateway? Discuss various protocols under WAP.