

DEPARTMENT OF ELECTRONICS AND COMMUNICATION
ENGINEERING

QUESTION BANK

SUBJECT CODE: EC1013 Year: IV

SUBJECT NAME: WIRELESS NETWORKS Sem: VIII

UNIT I

PHYSICAL AND WIRELESS MAC LAYER ALTERNATIVES

PART – A (2 Marks)

1. Name five design consideration in selecting a modulation scheme for a wireless networks.
2. Why is out of band of radiation an important issue in designing modulation scheme?
3. Why is PPM used with IR communication instead of PAM?
4. Name four space diversity techniques.
5. What are the advantages of high efficiency voice band modems?
6. Draw the structure of DFE.
7. Define ACI.
8. What are the types of diversity?
9. Draw the structure of adaptive MLSE receiver.
10. Draw the structure of linear transversal equalizer.
11. In an OFDM modem with 48 channels, each channel uses 16 QAM modulations. if the overall transmission rate is 10 Mbps. What is the symbol transmission rate per channel?
12. What are the sectored antennas? How they are useful in combating multipath?
13. What are the popular access schemes for data networks? Classify them.
14. What is the difference between the access technique of IEEE802.3 and IEEE802.11?
15. What is the difference between performance evaluations of voice oriented fixed assignment and data oriented random access?
16. What is the difficulty of implementing CSMA? CD in a wireless environment?
17. Explain about CSMA.
18. Explain about hidden terminal problem.
19. Explain about capture effect.
20. Write down the formula for Nidle.
21. Sketch the operation of CSMA protocol.
22. Define:
 - a. persistent
 - b. non persistent
 - c. 1-persistent
 - d. p-persistent
23. Draw the frame structure of movable boundary frame polling system
24. Difference between ALOHA and slotted ALOHA.
25. Explain about space diversity.

PART B

1. Explain the following: **(16)**
 - a. bandwidth efficiency
 - b. power efficiency
 - c. out of band of radiation
 - d. UWB pulse transmission
2. What is OFDM? Explain about multicarrier, multisymbol and multirate OFDM. **(16)**
3. Why we are going for diversity? Explain the time diversity using rake receiver and traditional modems & equalizers. **(16)**
4. Explain about space and frequency diversity. **(16)**
5. Explain about random access method? **(16)**
6. Explain about integration of voice traffic. **(16)**

UNIT II

WIRELESS NETWORK PLANNING AND OPERATION

PART –A (2 Marks)

1. Name any three advantages of an infrastructure topology over an adhoc network topology.
2. Compare single hop and multihop networks topologies.
3. Name the five different cell types in the cellular hierarchy and compare them in terms of coverage area antenna site.
4. Why is hexagonal cell shape preferred over square or triangular cell shape to represent the cellular architecture?
5. Name five architecture methods that are used to increase the capacity of an analog cellular system without increasing the number of antenna sites.
6. Explain the following:
 - a. Cell splitting
 - b. Cell sectoring
 - c. Cell partitioning
7. Explain how smart antennas can improve the capacity of cellular network.
8. What are channel allocation techniques?
9. Explain the terms FCA, DCA, HCA.
10. Compare FCA and DCA.
11. Define channel borrowing technique and give its types.
12. Define mobility management.
13. Name the two important issues in mobility management.
14. What is location management? What are the three components?
15. Name three paging mechanisms.
16. Explain about paging.
17. Explain three traditional handoff techniques?
18. Difference between mobile controlled and mobile assisted hand off?
19. Difference between centralized and distributed power control.

20. What are the two steps in hand off?
21. What are the privacy and authentication requirements of wireless networks?
22. How are public key and secret key algorithms different?
23. Explain the importance of key sizes in the security of an encryption algorithm?
24. What is challenge response scheme?
25. What are the parts in location management?

PART-B

1. Explain the two fundamental types topologies used in the wireless networks? **(16)**
2. Comparison of adhoc and infrastructure topologies. **(16)**
3. Explain the concept of cellular topology and cell fundamentals with examples. **(16)**
4. Explain in detail about capacity expansion technique. **(16)**
5. Explain in detail about channel allocation technique. **(16)**
6. Comparison of FCA and DCA. **(16)**
7. What are the parts available in location management and explain in detail. **(16)**
8. What is meant by handoff? What are the issues available in hand off management explains with neat diagram. **(16)**
9. Discuss about power control mechanism with example. **(16)**
10. Explain in detail about security in wireless networks. **(16)**

UNIT III - WIRELESS WAN

PART –A (2 Marks)

1. Difference between registration and call establishment?
2. What are the reasons to perform handoff?
3. Difference between network decided and mobile assisted handovers?
4. Difference between logical and physical channel?
5. Name five most important logical channels in GSM
6. What are the stack layers?
7. Three types of bursts.
8. Three types of control channels.
9. What is IS-95?
10. What are the bandwidth and chip rates used in WCDMA and how they compare with cdmaone?
11. How many physical channels are available in each IS-95 carrier? What type of coding separates these channels from one another?
12. Name the forward and reverse channels used in IS-95?
13. Difference between Walsh codes and cdmaone forward and reverse channels?
14. What are the bit rates of the data services supported by IS-95?
15. Why is power control important in CDMA?
16. What forward channels are involved in IS-95 for power control?

17. Why are several pilot channels monitored in IS95? When does a pilot channels from a base station move from an active set to a candidate set?
18. Sketch handoff threshold in WCDMA?
19. What are the new elements added to the GSM infrastructure to support GPRS?
20. How does GPRS provides a variety of data rates?
21. Name the connectionless and connection oriented services provided by the GPRS.
22. What is GPRS-136? How does it differ from GPRS?
23. What is the importance of the framing structure in GSM?
24. What is the difference between registration and call establishment?
25. Name three sub systems in the GSM architecture.
26. What are VLR and HLR and why we need them?

PART –B

1. What are the mechanisms available to support mobile environment? **(16)**
2. Draw the protocol architecture of GSM and explain in detail. **(16)**
3. Explain in detail about IS-95 CDMA forward channels? **(16)**
4. Explain in detail about IS-95 CDMA reverse channels? **(16)**
5. Explain in detail about IMT-2000. **(16)**
6. What is GPRS? Explain in detail about GPRS. **(16)**
7. Explain in detail about SMS and mobile application protocol. **(16)**

UNIT IV - WIRELESS LAN

PART –A (2 Marks)

1. What is the difference between nomadic access and adhoc networking?
2. Name three categories of unlicensed bands used in U.S and compare them in terms of size of the available band coverage.
3. Explain the difference between WLAN and PAN.
4. Name the five major challenges for implementation of wireless LANs compare with one another.
5. Explain the difference between wireless inter-LAN bridges and WLANs
6. What are the differences between IEEE802.11 and HIPERLAN standards?
7. Compare WCAN and WHAN.
8. Why does the military show how much of interest in wireless ATM approach?
9. Name three military projects related to broadband wireless local access.
10. Name different alternatives for internet access to the home and different medium for home distribution.
11. What are the difference between LAN and HAN?
12. Explain the specific challenges for the design of HAN.
13. Name the classes of home appliances that are emerging in the networking market.
14. Compare wireless and wired solution for home access and in home distribution.

15. Name four major transmission technique considered for WLAN standards and give the standard activity associated with each of them.
16. Compare OFDM and spread spectrum technology for the WLAN application.
17. Give the physical specification summary of the DSSS and FHSS used by the IEEE 802.11.
18. Difference between probe and beacon signal in 802.11
19. Difference between power control in 802.11 and power control in cellular system.
20. Why an AP in the 802.11 also acts as a bridge.
21. What are the responsibilities of the MAC management sub layer in 802.11?
22. What are the difference between the 802.11a and HIPERLAN-2?
23. Compare packet form ATM and WATM.
24. What are the similarities between HIPERLAN -1 and HIPERLAN-2
25. What are the purpose of scrambler and interleaver in the HIPERLAN-2 modem?
26. What is the purpose of guard time?
27. Similarities between the Medium access control of the HIPERLAN-2 and DECT.
28. How many transport channels and logical channels are implemented in the HIPERLAN-2 DLC layer?
29. Why do we need HAN?
30. Explain briefly about HYPERLAN-2.

PART –B

1. What are the layers available in HYPERLAN-2? explain each layer with suitable diagram. **(16)**
2. What is HYPERLAN? Explain in detail about HYPERLAN-1. **(16)**
3. Explain in detail about wireless ATM. **(16)**
4. Explain in detail about overview, reference architecture, layered architecture of IEEE802.11? **(16)**
5. Explain in detail about three choices of PHY layer. **(16)**
6. Explain in detail about MAC sub layer with suitable diagram. **(16)**
7. What is HAN? Explain about HAN technologies? **(16)**
8. Explain the following:
 - a. Overview of the LAN industry **(8)**
 - b. Evolution of the WLAN industry **(8)**

UNIT-V

WPAN AND GEOLOCATION SYSTEMS

PART –A (2 Marks)

1. What is home RF?
2. What is the IEEE 802.15 and what is the relation to the Bluetooth and homeRF?
3. Name the four states that a Bluetooth terminal.

4. Name the three classes of application that are considered for Bluetooth technology?
5. Difference between 802.11 and 802.15.
6. How many different voice services does Bluetooth support?
7. How many different symmetric and asymmetric data services does Bluetooth support?
8. What is the maximum data rate of an overlay bluetooth network?
9. Difference between the implementation of paging and inquiry algorithms in bluetooth?
10. What are the two standard MAC protocols that are combined in the home RF SWAP protocol?
11. Difference between GPS, wireless cellular assisted GPS, and indoor geolocation systems.
12. Differentiate between remote and self positioning systems.
13. Compare mobile centric and network centric geolocation technique in terms of complexity and accuracy.
14. Give some examples of location dependent services.
15. What are the E-911 services and who has mandated these services?
16. What are the basic elements of a wireless geolocation system?
17. Name three major metrics used for location finding.
18. Why are AOA techniques not popular in indoor geolocation applications?
19. Why is RSS not a very good measure of the distance between a transmitter and a receiver?
20. What is Bluetooth?

PART –B

1. Explain in detail about geolocation standards for E.911 services **(16)**
2. What are the technologies available for wireless geo location? And explain **(16)**
3. What is geolocation? And give the architecture of geolocation. **(16)**
4. Explain about bluetooth technology. **(16)**
5. Explain in detail about interface between Bluetooth and 802.11. **(16)**
6. Explain about IEEE 802.5 WPAN and home RF. **(16)**
