

SCAD ENGINEERING COLLEGE

Cheranmahadevi, Thirunelveli.

**DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
EC 2401 –WIRELESS COMMUNICATION QUESTION BANK****Semester VII****UNIT-I SERVICES AND TECHNICAL CHALLENGES****PART-A**

1. What are the types of Services?
2. What are the Requirements for the services?
3. What is a page?
4. What are the basic units of a Cellular system?
5. What is base station?
6. What is MSC?
7. What do you mean by forward and reverse channel?
8. Define cell
9. What is foot print?
10. What is channel assignment? What are the types?
11. What are the techniques used to expand the capacity of cellular system?
12. What is meant by frequency reuse?
13. What is Multiple Access?
14. What is co channel interference?
15. Define adjacent channel interference.
16. Define Grade of service.
17. What is blocked call clear system (BCC)?
18. What is blocked call delay system?
19. Define cell splitting.
20. What is sectoring?

PART-B

1. Discuss on various types of wireless services and its requirements.
2. (a) Explain in detail the evolution of wireless communication?
(b) Write short notes on different trends in cellular radio & personal communication
3. Enumerate on spectrum limitation
4. Explain about noise and interference limited system
5. Briefly explain the principle of cellular networks.
6. Compare FDMA, TDMA & CDMA.
7. Discuss and explain the multipath propagation
8. Describe in detail about the history of development of Paging and the future Trends of paging systems.
9. Explain in detail the different techniques used to improve coverage & capacity of cellular system.
10. Describe in detail about the Wireless Services and its types
11. Write short notes on frequency reuse & channel assignment.
12. Explain the Multiple Access methods with neat diagrams.

**UNIT-II WIRELESS PROPAGATION CHANNELS
PART-A**

1. What are the propagation mechanisms of EM waves?
2. What are the merits and demerits of Okumara's model?
3. List the advantages and disadvantage of Hata model?
4. What is propagation model?
5. What is the necessity of Link budget?
6. What is free space propagation model?
7. Define EIRP
8. What is path loss?
9. Define small scale fading?
10. What are the factors influencing small scale fading?
11. What flat fading?
12. What is frequency selective fading?
13. Define fast fading channel?
14. Define slow fading channel?
15. Define coherence time coherence bandwidth?
16. Define Doppler shift?
17. What is scattering?
18. Mention some indoor and outdoor propagation models?
19. What is Brewster angle?
20. Define large scale propagation model?

PART-B

1. Enumerate of propagation mechanism.
2. Discuss about propagation effects with mobile radio
3. Explain Rayleigh and Ricean fading.
4. Explain about channel classification.
5. Explain Time selective and frequency selective channels.
6. Describe WSSUS channels with suitable expressions.
7. Brief notes about link calculations for various applications
8. What are Narrow band models, explain the significance of each model
9. Explain Free space link budget.
10. Discuss Terrestrial link budget with suitable example.
11. Discuss on wide band models
12. Write short notes on diffraction and scattering.

**UNIT-III WIRELESS TRANSCEIVERS
PART-A**

1. Write the advantages of MSK over QPSK.
2. Define M-ary transmission system?
3. What is quadrature modulation?
4. What is QAM?
5. Define QPSK?
6. What is linear and non-linear modulation?
7. What is the need of Gaussian filter?
8. Mention some merits of MSK
9. Give some examples of linear modulation?
10. Define slow and fast fading channel?
11. List the advantages of digital modulation technique?
12. Define digital modulation?
13. What are the types of digital modulation technique?
14. Define Power efficiency?
15. Define constellation diagram? What do you infer from it?
16. Define offset QPSK, Differential QPSK.
17. List the salient features of MSK scheme.
18. Why GMSK is preferred for multiuser, cellular communications?
19. Define the term Bandwidth efficiency
20. What is up converter?

PART-B

1. Draw and explain the structure of wireless communication link
2. Explain the generation, detection and bit error probability of QPSK technique.
3. What are the salient features of Offset QPSK?
4. Explain the principle and operation of Differential QPSK transmission and reception.
5. What is BFSK? Derive the bit error probability of BFSK and also explain the constellation diagram of it.
6. Explain the generation, detection and constellation diagram of MSK scheme.
7. Enumerate on Gaussian MSK. Why we prefer it for wireless communication?
8. Discuss about the error performance of various modulation techniques in fading channels.
9. Describe in detail about the Digital modulation schemes DPSK and QPSK
10. Describe in detail about the Digital modulation schemes BPSK.
11. Explain in detail Error probability in flat fading channels
12. Explain in detail Error probability in delay- and frequency-dispersive fading channels.

**UNIT-IV SIGNAL PROCESSING IN WIRELESS SYSTEMS
PART-A**

1. What are the techniques used to improve the received signal quality?
2. What is the need of equalization?
3. What is diversity?
4. What is Macro and Micro Diversity?
5. Define STCM
6. Define adaptive equalization?
7. Define training mode & tracking mode in an adaptive equalizer?
8. Write a short note on linear equalizers and non linear equalizers?
9. Why non linear equalizers are preferred?
10. What are nonlinear equalization methods?
11. What are the factors used in adaptive algorithms?
12. Define MSE in equalizers
13. Write the advantages of LMS algorithm.
14. What are the advantages of RLS algorithm?
15. Define Transmit diversity.
16. Define capacity of cellular systems
17. Define forward channel interference
18. Define adaptive channel allocation
19. What are the two types of linear predictive coders?
20. What is the criterion for the selection of speech coders for mobile communication?

PART-B

1. Explain various diversity techniques used in wireless communication.
2. Compare the performance of signal combining techniques.
3. Explain about linear, non-linear equalization technique.
4. Explain the followings (i) Micro diversity (ii) Macro diversity
5. Explain the Transmit diversity and its types.
6. Explain Spatial and Temporal diversity
7. Explain Frequency, Angular and Polarization diversity.
8. Explain in detail the speech coding techniques.
9. Explain the working principle of Linear predictive coder
10. Explain the working principle of GSM codec with neat block diagram.
11. Explain the working principle of RAKE Receiver?
12. Explain the Linear Equalizers and Decision Feedback Equalizers.

UNIT-V ADVANCED TRANSCEIVER SCHEMES

PART A

1. Define spread spectrum technique.
2. What is multiple access?
3. List out the types of multiple access.
4. Define Power control in CDMA.
5. Why the second generation was developed?
6. What is multipath propagation?
7. Define multiplexing.
8. What is OFDM?
9. What are second generation are available?
10. Write advantages 2G over 1G.
11. What are services offered by GSM?
12. What is the function of NSS in GSM?
13. Define Abis Interface.
14. What is the function of VLR?
15. What are the basic channels available in GSM?
16. What is IS – 95?
17. Why we go for 3G?
18. What is IEEE 802.11 standard?
19. What is Bluetooth?
20. Define burst formatting in GSM.

PART-B

1. Explain spread spectrum systems with suitable examples.
2. Compare slow FH and fast FH scheme.
3. Explain about CDMA principle, power control
4. Discuss about effects of multipath propagation
5. Explain in detail the principle of OFDM
6. List out the benefits of cyclic prefix in OFDM
7. Detail notes about GSM – system overview, physical and logical channels.
8. Explain about AMPS with neat diagram.
9. Discuss about 3G standards – WCDMA/UMTS for wireless network.
10. Explain in detail the 1G, 2G, 3G generation systems & their standards.
11. Write a note on the Implementation of Transceivers
12. Explain forward & reverse channel parameters of IS-95 CDMA