

Exam.Code:0938
Sub. Code: 6998

1058
B.E. (Electrical and Electronics Engineering)
Eighth Semester
EE-809: Wireless Communication

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Part.

x-x-x

- Q1a) How is LTE different from VoLTE network? (1 Marks)
- b) What are the factors that affect the small scale fading? (1 Marks)
- c) List the advantages of CDMA over FDMA and TDMA. (1 Marks)
- d) Why trunking efficiency is reduced in cell sectoring? (1 Marks)
- e) How the values of cluster size affect the cochannel interference? (1 Marks)
- f) Why is rectangular octagon shaped cell not used for design of cellular pattern? (1 Marks)
- g) What are criteria to choose minimum threshold level for implementing proper handoff in GSM system? (1Marks)
- h) How interleaving is different from error controlling codes? (1 Marks)
- i) What is signaling system 7 (SS7) protocol? (1Marks)
- j) What are the air interfaces used in GSM? (1Marks)

Part-A

- Q2a) Give the detailed radio Access Network overview. Explain in detail functions of Node B and RNC also draw UTRAN logical architecture? (5 Marks)
- b) What is cochannel reuse ratio? Derive the relation between cochannel reuse ratio and cluster size? (5 Marks)
- Q 3a) Compare IEEE 802.16, 802.11a and 802.11b standard in terms of application, radio technology adopted, bandwidth, modulation used and range? (5 Marks)

b) Assume a cellular system of 32 cells with a cell radius of 1.6 km a total spectrum allocation that support 336 traffic channels and a reuse pattern of 7? Calculate the total service area covered with this configuration, the number of channel per cell and a total system capacity? (5 Marks)

Q 4 a) What are the drawbacks of 180 degree phase shift in QPSK modulation? How it can be overcome? (5 Marks)

b) Differentiate between PN spreading codes and orthogonal codes? Also explain the working of direct sequence spread spectrum modulation technique? (5 Marks)

Part-B

Q5a) What is linear transversal filter? Prove with the help of communication system that the transfer function of equalizer is inverse of transfer function of the channel? (5 Marks)

b) Why maximal ratio combining is termed as best space diversity technique? Derive an expression for signal to noise ratio improvement provided by adopting maximal ratio combining diversity technique? (5 Marks)

Q6a) Explain how syndrome decoder is used to detect and correct errors on reception? Consider a (6,3) linear block code whose generator matrix is given by $\begin{bmatrix} 1 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 0 & 1 & 1 \end{bmatrix}$ Find the parity check matrix. (5 Marks)

b) Explain the following terms

i) ISDN ii) Orthogonal frequency division multiplexing (OFDM) ?

(5 Marks)

Q7a) What is the difference between a physical channel and logical channel? Describe the important functions of various types of logical channels in GSM? (5 Marks)

b) Why are Walsh codes preferred over m-sequences in practical CDMA Channels? Draw the block diagram of processing of IS-95 forward channels ? (5 Marks)