Course Code : CST 309 **CXDW/RW – 18 / 5506**

Sixth Semester B. E. (Computer Science and Engineering) Examination

INTRODUCTION TO WIRELESS COMMUNICATION SYSTEM

Time : 3 Hours] [Max. Marks : 60

Instructions to Candidates :—

(1) All questions carry marks as indicated against them.
(2) Due credit will be given to neatness and adequate dimensions.
(3) Assume suitable data and illustrate answers with neat sketches wherever necessary.

1. (a) Discuss the architecture of Cellular network with the role of different components with neat diagram. 7 (CO 2)

(b) Differentiate between simple and composite signal. Show the representation of these signals. 3 (CO 2)

OR

(c) Define wave length and bit length. Which factors are important in calculation of bit rate in digital communication system ? 3 (CO 1)

2. (a) List the examples of the wireless communication systems. Clearly mentioned the standards, structure and components involved in each wireless communication system. 5 (CO 1,4)

OR

(b) What is LMDS? Write the features of LMDS along with its merits. 5 (CO 4)

(c) Explain the concept of frequency reuse? How is it used to improve the cellular capacity ? 5 (CO 3)

3. (a) A certain city has an average area of 1300 sq.miles and is covered by a cellular system using a 7 cell reuse pattern. Each cell has a radius of 4 miles and the city is allocated 40 MHz of spectrum with a full duplex channel bandwidth of 60 kHz, Calculate :

(a) No. of cells in the service area.

(b) System capacity

(c) If splitting is applied on the same system new radius becomes half of the old one, calculate the total no. of cells and no. of channels per cell.

(d) Calculate the required transmission power for new cell (after split) if the transmission power of old cell is 80 W. Assume path loss exponent is n = 4. 6 (CO 2)

OR

(b) What do you mean by Cellular System ? Explain in short following terms related to it.

(a) Frequency Reuse

(b) Capacity

(c) Channel Interference

(d) Cluster

(e) Channel Assignment strategies

(f) Sectoring. 6 (CO 3)

(c) What is Handoff ? What is the significance of Handoff Threshold in Wireless Cellular Network ? List the possible methods used for Handoff Decision. Explain any one in detail. 4 (CO 2)

4. (a) What is the need of multiplexing ? How analog multiplexing is different from Digital multiplexing ? Classify the techniques and explain any one in detail how it is used for Bandwidth utilization. 6 (CO 1, 3)

OR

(b) Determine the maximum throughput that can be achieved using ALOHA and slotted ALOHA protocols. 6 (CO 3)

(c) Explain carrier sense multiple access (CSMA) protocol. 4

5. (a) Illustrate the working of Cellular Digital Packet Data (CDPD) network with different components involved in the communication. 5 (CO 4)

OR

(b) How many components involved in GSM architecture? What is their role of operation ? 5 (CO 4)

(c) Differentiate between fixed and wired network. 5 (CO 4)

6. (a) Draw and explain the Wireless Application Protocol (WAP) protocol stack. 7 (CO 5)

OR

(b) Write a WML script to accept a number and print the square using function. 7 (CO 5)

(c) How frequency Hopping is implemented in Bluetooth for Multiple Access. ? 3 (CO 5)