MSc in Networks and Communications
8BM5И – Introduction to Wireless Communications Coordinator: Prof. Nalin D. K. Jayakody
Tutorial 1 (Assignment 3)   Due:07.11.2016

Q1. What is CDMA (explain with a sketch)?

Q2. Explain (step wise) the basic mechanism of CDMA in point form.

Q3. Explain the basic CDMA mechanism taking user 1 (a_1) and user 0 (a_0) wish to transmit at the same time using CDMA. Assume the chip codes for $C_0 = [1, -1, 1, -1]$ and $C_1 = [1, 1, -1, -1]$. Also show that the codes C_0 and C_1 are orthogonal to each other by computing the cross correlation function.

Q4. Assuming the spreading code length is N, verify that the CDMA increase the required bandwidth by a factor of N. Assume the symbol rate is 1 Kbs (use relevant data from Q. 3).

Q5. Compare the advantages and disadvantages of CDMA over GSM (min 3 points)

Q6. Briefly explain the near-far problem in CDMA. As a Radio designer, what are the possible solutions that you may suggest to overcome this issue?

Q7. Show that in a cellular system, CDMA increase the capacity by 4-7 fold over FDMA or TDMA technologies.