SRI LANKA INISTITUTE OF INFORMATION TECHNOLOGY
B.Sc IN INFORMATION TECHNOLGY
(Specialized in Information Systems Engineering)
IE3050 – Wireless Communication
Individual Assignment
(Due date: 31st May 2019 (mid night), Carries 20%)

NETWORK DIMENSIONING AND CELLULAR SYSTEM DESIGN

PART 1: NETWORK DIMENSIONING

Investigate Network Dimensioning and in particular Mobile Communication Network Dimensioning. You may build your essay presentation by seeking answers to questions such as;

(a) What is network dimensioning,
(b) Why is it necessary and what is its importance ,
(c) In what perspective would the network dimensioning play a part in system design,
(d) How would network dimensioning be impacted upon network operators and the network users,
(e) Does the network dimensioning pose a challenge in particular to mobile network operators,
(e What challenges would you envisage with regard to network dimensioning in the next phase of mobile communication system development, etc, etc.

PART 2: CELLUAR SYSTEM DESIGN

Consider a city of your choice which has a population of about 50,000 – 500,000. (Name this city.) Assume a suitable demography for the city to estimate the would be users of a mobile communication facility. Applying typical norms, obtain the demand on such facility in terms of offered traffic load.

Assume you have 5 MHz of spectrum in the GSM band. (900 MHz). Design a mobile communication system to cater for the city. You may base your design on the 2G GSM technology. Specify the parameters you will take as the basis for your system. These may include variables such as cluster size, cell sizes along with intended co-channel reuse distances, acceptable signal-to-noise ratio, aimed grade of service, etc.

You should be able to come up with the number of base stations required in your system as the absolute minimum.

As an extension to the assignment, you may consider estimating the cost of implementation of your system. Among the costs to consider would be items such as the license cost of spectrum hire, the equipment cost at base stations and the mobile switching centers, the lease cost of fixed network that connects base stations and the mobile switching centers, etc.

SUMBISSION:

Submit the assignment in the form a report that does not exceed 20 pages.