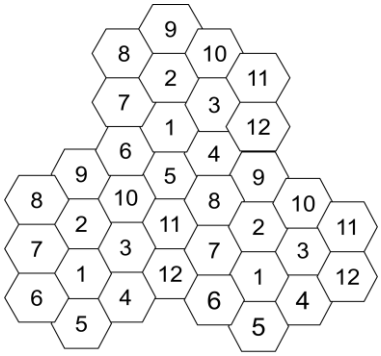
CS 6097 Wireless and Mobile Networking
Homework No. 3 dated Wednesday September 17, 2014
Due in one week in the class
(This is a voluntary homework and will be discussed in the class)

P 5.4 If each user keeps a traffic channel busy for an average of 5% time and an average of 60 requests per hour is generated, what is the Erlang value?

P 5.7 The size and shape of each cluster in a cellular need to be designed carefully so as to cover adjacent spoke in a non-overlapped manner. Define such patterns for the following cluster sizes:

(a) 4-cell
(b) 9-cell
(c) 13-cell
(d) 37-cell

P 5.9 For the following cell pattern,



(a) Find the reuse distance if radius of each cell is 2 km.
(b) If each channel is multiplexed among 8 users, how many calls can be simultaneously processed by each cell if only 10 channels per cell are reserved for control, assuming a total bandwidth of 30 MHz is available and each simplex channel consists of 25 kHz?
(c) If each user keeps a traffic channel busy for an average of 5% time and an average of 60 requests per hour are generated, what is the Erlang value

P 5.10 A TDMA-based system shown in the Figure has a total bandwidth of 12.5 MHz and contains 20 control channels with equal channel spacing of 30 kHz. Here, the area of each cell is equal to 8 km2, and cells are required to cover a total area of 3600 km2. Calculate the following:

(a) Number of traffic channels per cell
(b) Reuse distance