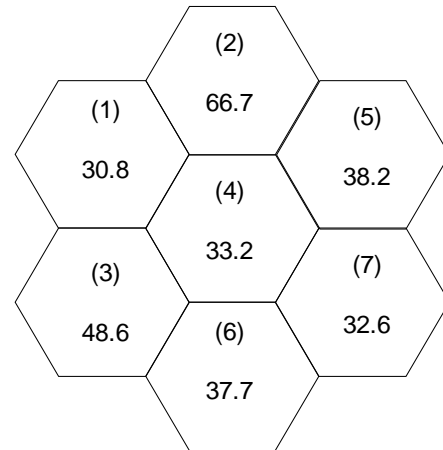


***KFUPM - COMPUTER ENGINEERING DEPARTMENT*****COE-543 – Mobile Computing and Wireless Networks****Quiz 2: Due Oct 31<sup>st</sup>, 2011.****Student Name:****Student Number:**

**Problem 1:** (30 points) The figure below shows the traffic in Erlangs for a seven-cell cellular system located in a busy metropolitan area. The total available channels in the system are 395. Assuming each subscriber in the system generates 0.03 Erlangs of traffic with an average call holding time of 120 seconds and the system covers an area of 1,200 square kilometers with cells designed for Grade-of-Service (GOS) of 2% blocking. Compute the following quantities:

- The number of channels required in each cell
- The number of subscribers served by the system
- The average number of subscribers per channel
- The number of calls supported by the system
- The subscriber density per square kilometer
- The call density per square kilometer
- The cell radius in kilometers
- The channel reuse factor

**Student must show the needed computations.**

**Problem 2 (10 points):**

Suppose the maximum fade duration over a radio channel is 0.001 msec. Assume that all the bits are in error when a signal encounters a fade. What is the maximum number of consecutive bits that are in error for a transmission through this channel if the data bit rate is 10 kb/s? Repeat the calculations for a bit rate of 11 Mb/s.