**CS 5197/6097 Wireless and Mobile Networking**

**Homework No. 4 dated Wednesday September 13, 2017**

**P 5.9** For the following cell pattern,

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1. Find the reuse distance if radius of each cell is 2 km.
2. 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?
3. 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 6.8** Can we use CSMA/CD in cellular wireless networks? Explain your answer with solid reasonings.

**P 6.1** What in your opinion should be the criteria to select the value of the contention window? Also explain how you will decide the value of the time slot for CSMA/CA.

**P 7.2** A TDMA system uses 270.833 kbps data rate to support 8 users per frame.

* 1. What is the raw data rate provided for each user?
  2. If guard time and synchronization occupy 10.1 kbps, determine the traffic efficiency?
  3. If (7, 4) code is used for error handling, what is the overall efficiency?