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

**Homework No. 8 dated Wednesday November 21, 2017**

**P13.3.** A given ad hoc network consists of 100 nodes, and the mobility of the nodes is such that every one second, two existing radio connections are broken, while two new radio links are established. Assuming each node is connected to exactly four adjacent nodes, find the total number of communications links in the network.

**P13.7.** A snapshot of an ad hoc network is shown in Figure 13.19.



Describe briefly the process taken to do the following:

1. You need to create a route from the source node 6 to the destination node 23 using the DSR algorithm.
2. Repeat part (a) using TORA routing.

**P15.8.** In a hypothetical wireless system, five adjacent frequency bands (, , , , ) are allowed for frequency hopping sequences. Enumerate how many different hopping sequences are possible and prove their correctness.

**P15.9.** In Problem P15.8, it was decided to add five additional channels, (, , , , ) while keeping the frequency hopping sequence to five bands. Is it advisable to maintain frequency hopping within each of the channels (, , , , ) and (, , , , ), or it is better to select five channels among the bands (,  , , , , , , , )? Explain your answer with some quantitative measures.