# ECE8863: SENSOR NETWORKS
## SPRING 2006

### EXAM 1: February 16, 2006

**Dr. Ian F. Akyildiz**
**Ken Byers Distinguished Chair Professor in Telecommunications**
**Broadband and Wireless Networking Laboratory**
**School of Electrical and Computer Engineering**
**Georgia Institute of Technology; Atlanta, GA 30332**
**Tel.: 404-894-5141; Fax.: 404-894-7883; E_Mail: ian@ee.gatech.edu**

**THIS IS AN OPEN BOOK TEST!! EVERYTHING IS ALLOWED EXCEPT LAPTOPS.**
**ALL QUESTIONS HAVE THE SAME WEIGHT.**
**PLEASE WRITE YOUR NAME AND CODEWORD ON EVERY SHEET!!!**

**QUESTION 1.**
   a) **Why can't IP addressing mechanism be used for wireless sensor networks?**

   b) **What are the communication/protocol issues to be considered when you integrate/connect Internet (IP) as backbone to sensor networks?**

   c) **Why is there no existing reference protocol architecture for wireless sensor networks?**

**QUESTION 2.**
   a) **What are the shortcomings/disadvantages the PSFQ scheme?**

   b) **What is your criticism of the ESRT scheme?**

   c) **Does CODA address reliability aspect in sensor networks? If yes, what are the holes in the scheme?**

**QUESTION 3.**
   a) **What are the benefits of data aggregation?**

   b) **What are the issues to combat when you do data aggregation in sensor networks?**

**QUESTION 4.**

    a) **Directed diffusion has some overhead and the authors tried to rectify these problems by suggesting another solution. Explain the basic idea of this improvement.**

    b) **In LEACH we use signal strength to create clusters. Give two more ways how clusters could also be formed otherwise!**

    c) **What is your criticism of the Melodia/Pompili/Akyildiz geographical routing algorithm?**