

ECE6615: SENSOR NETWORKS  
WINTER 2009

EXAM 1: MARCH 11, 2009

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: infocom@ece.gatech.edu

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

Question 1.

- a) Why can PSFQ not solve the end-to-end reliability problem?
- b) What are the shortcomings of the ESRT scheme?
- c) Why would you use TCP/IP protocol stack for sensor networks?
- d) Why would you NOT use TCP/IP protocol stack for sensor networks?

Question 2.

- a) What are the PROs and CONs of single hop versus multi-hopping in sensor networks?
- b) Would you prefer to use SPIN or Directed Diffusion for routing in sensor networks? Why?
- c) What are the shortcomings of geographical routing algorithms?

Question 3.

- a) What are the differences between S-MAC and B-MAC?
- b) In B-MAC, what is the meaning of PREAMBLE SAMPLING?
- c) What is your criticism of CCMAC by Vuran/Akyildiz MAC protocol?

Question 4.

- a) Why ARQ is recommended as Error Control mechanism in case of Transmission Power Control when the objective function is the LATENCY?
- b) In case of HOP LATENCY EXTENSION HARQ 1 or 2 is recommended for MICA 2 while only HARQ 2 is recommended for MicaZ sensors for both energy and latency objective functions? Explain the reason.
- c) What is your criticism of the model and results of the PACKET SIZE OPTIMIZATION framework?