

ECE8863: WIRELESS SENSOR NETWORKS

EXAM 2; SPRING 2007

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**Dr. Ian F. Akyildiz
Byers Chair Professor
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!!

THE EXAM DURATION IS 75 MINUTES.

EVERYTHING IS ALLOWED.

ALL QUESTIONS HAVE THE SAME WEIGHT.

PLEASE WRITE YOUR NAME AND CODEWORD ON EVERY SHEET!!!

QUESTION 1.

- a) Briefly explain the two Hybrid Error Control approaches in WSNs. What are the pros and cons of each approach?**
- b) What is Error Resiliency and how is it exploited in WSNs? Explain informally and briefly.**
- c) How is the Cross Layer analysis conducted in McVuran/Akyildiz error control paper? Explain informally and briefly.**
- d) Why is ARQ preferred compared to FEC and under which cases based on McVuran/Akyildiz paper?**

QUESTION 2.

- a) Why is Adaptive Packet Format not preferred in WSNs?**
- b) Explain the McVuran/Akyildiz approach how the packet size in WSN optimized? Explain briefly the optimization procedure.**
- c) What is the conclusion of the Optimal Packet Sizes for WSNs? What would you use as optimal packet sizes in WSNs?**

QUESTION 3.

- a) Why is there a high interest for Cross Layer solutions for WSNs?**
- b) How are the voids in WSNs handled by XLM?**
- c) Suppose we do not have location knowledge of WSNs. Can XLM still be used? Give your reason.**
- d) Can a WSN using XLM and another WSN using a classical layered network protocol suite communicate with each other? Explain your reasons for the compatibility problem!!**
- e) Do you think that XLM is a real simple communication module or is it still a hidden layered approach? Explain your reasons.**

QUESTION 4.

- a) What are the strengths of Su/Akyildiz scheme compared to other synchronization algorithms? Explain in your own words briefly.**
- b) What is your criticism of Su/Akyildiz synchronization scheme?**