ECE6615: Sensor Networks
Spring 2014
MIDTERM EXAM SOLUTIONS: MARCH 26, 2014

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*** PUT A CODEWORD NEXT TO YOUR NAME!!!**
*** THIS IS AN OPEN BOOK EXAM (EVERYTHING ALLOWED EXCEPT LAPTOPS AND CELL PHONES)**
*** DURATION 75 MINUTES**
*** ANSWER THE QUESTIONS RIGHT TO THE POINT;**
*** AVOID LONG EXPLANATIONS; COUPLE SENTENCES WILL BE ENOUGH AS LONG AS THEY ARE CORRECT!!**
*** EACH QUESTION IS WORTH OF 5 POINTS !**

QUESTION 1.

Can we use the communication protocols we covered in the class for wired sensor networks? (Why and Why not?)

QUESTION 2:

How can you prolong the lifespan of the sensors? Give 3 possible solutions.

QUESTION 3:

How can we solve the energy consumption in IDLE state?

Question 4:
What is the problem of Dynamic Voltage Scaling?

QUESTION 5:
Why is there no closed form solution for energy consumption in case of sensing?

QUESTION 6:
Why can't we use solar cells for sensors and solve the power problem for good?

QUESTION 7:
What are the two main differences between BMAC and SMAC?

QUESTION 8:
What does the Adaptive Listening Feature of SMAC achieve?

QUESTION 9:

How is the addressing problem solved in sensor networks?

QUESTION 10:
When we connect sensor networks with Internet, what will be the major problem? How will you solve the problem?

QUESTION 11:
Does the SPIN algorithm have ROUTING TABLES? Why and why not?

QUESTION 12:
Why would you not use Directed Diffusion algorithm for mobile sensor networks?

QUESTION 13:
What does the Negative Reinforcement help for Directed Diffusion Algorithm?

QUESTION 14.
What are the two major problems of geographical routing algorithms?

QUESTION 15.
What is the main contribution of the Partial Knowledge Range geographical routing algorithm?

QUESTION 16.

What is the relationship of the DISTORTION FUNCTION D(M) and ESRT?

QUESTION 17.

Why would you not use the TCP/IP protocol stack for wireless sensor networks?

QUESTION 18.

What happens if the Initiative Concept in X-Layer Protocol not satisfied?

QUESTION 19:

Why is KEEP ALIVE message is sent?

QUESTION 20:

What is the major obstacle that we cannot use Xlayer Protocol (Cross Layer Protocol) for IP-Sensor networks? How can we overcome it?