

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2013

Subject code: 725307

Date: 07-06-2013

Subject Name: Wireless Sensor Networks

Time: 10.30 am – 01.00 pm

Total Marks: 70

Instructions:

1. Attempt to question 1 is compulsory and answer any five questions from the rest.
2. Make suitable assumptions wherever necessary.
3. Figures mentioned on the right hand side of each questions indicate marks.

Q. No. 1

[2 Marks * 10 = 20 Marks]

- a. Explain strong and weak duplicate address detection.
- b. Explain shortest path tree
- c. Why lifetime of WSN is an important design consideration?
- d. Explain steiner tree
- e. What is black hole and misdirections in the context of security in wireless sensor networks?
- f. Why generally only half-duplex operation is realized in wireless medium?
- g. What is Event detection/reporting probability
- h. What do you mean by accuracy of localization algorithm?
- i. Differentiate between flooding and gossiping
- j. Explain the advantages of wireless multicast

Q. No. 2

- a. What are the key design challenges of wireless sensor network **[5 Marks]**
- b. Explain advantages of simultaneous transmissions over multiple paths **[5 Marks]**

Q. No. 3

- a. Discuss why routing protocols for fixed network cannot be used for wireless Sensor network and explain any two flat routing protocols used for sensor Networks. **[10 Marks]**

Q. No. 4

- a. What are the main components of sensor node? Show how they are connected with each other. **[4 Marks]**
- b. Explain Directed diffusion protocol with suitable example. **[6 Marks]**

Q. No.5

- a. Describe data centric addressing showing different types of messages being used during communication [7 Marks]
- b. What are the main tasks handled by coordinator in IEEE 802.15.4? [3 Marks]

Q. No. 6

- a. Explain iterative multilateration in multihop environment. [7 Marks]
- b. Differentiate between id-centric, data-centric and geographic addressing in Wireless Sensor Network [3 Marks]

Q. No. 7

- a. Explain Light weight Time Synchronization algorithm and derive equation to find offset between two clocks. [7 Marks]
- b. Explain cross layer optimization in sensor network [3 Marks]

Q. No. 8

- a. Refer the Figure 1 given below, find the path from T to sink using: [10 Marks]
 - I. Maximum Total Available Battery
 - II. Minimum Battery Cost Routing (MBCR)
 - III. Min-Max Battery Cost Routing (MMBCR)

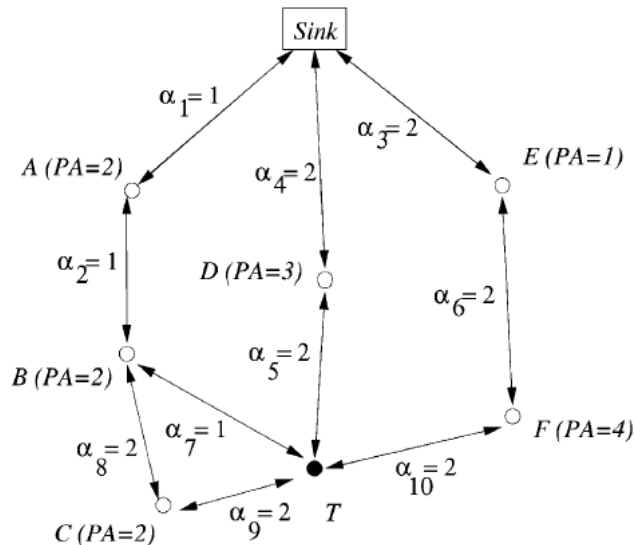


Figure: 1
