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12SCN331

**Third Semester M.Tech. Degree Examination, Dec.2014/Jan.2015**  
**Wireless Sensor Networks**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions.**

1. a. Mention the unique constraints and challenges in wireless sensor networks. (04 Marks)
- b. Explain unique advantages of sensor network over traditional centralized approaches. (06 Marks)
- c. Briefly explain the applications of sensor networks. (10 Marks)
2. a. With respect to wireless sensor network define followings : i) Sensor node ii) network topology iii) collaborative processing iv) localization and tracking v) data – centric. (10 Marks)
- b. Explain CSIFS collaborative signal and information processing issues using a tracking scenario. (07 Marks)
- c. Briefly explain two reasons while tracking multiple objects over geo-graphical region is more challenging. (03 Marks)
3. a. Explain below mentioned types of sensors for tracking :  
      i) Acoustic amplitude sensor  
      ii) Direction of arrival (DOA) sensors. (10 Marks)
- b. Mention the several characteristics of MAC (medium access control) in wireless sensor network. Explain S-MAC protocol. (07 Marks)
- c. Mention IEEE 802.15.4 standard zigbee features. (03 Marks)
4. a. Briefly explain how to minimize energy consumption during broadcast. (07 Marks)
- b. With neat diagram, explain the directed diffusion protocols. (07 Marks)
- c. Explain clocks and communication delays. (06 Marks)
5. a. With algorithm and flow chart, explain IDSQ (Information driven sensor querying) algorithm for each sensors in the cluster leader based protocol. (10 Marks)
- b. With example explain the sensing global phenomena. (06 Marks)
- c. With neat diagram, explain collaborative processing in distributed group management. (04 Marks)
6. a. Explain different types of challenges available in sensor network data bases. (06 Marks)
- b. Explain how to save energy during sensing of aggregate queries in –network. (10 Marks)
- c. Mention the three goals to accomplish precise way of fractional cascading. (04 Marks)
- a. With neat block diagram, explain MICA mote architecture. (05 Marks)
- b. Explain PIECES (Programming and interaction environment for collaborative embedded system) framework. (05 Marks)
- c. Briefly explain several future are search direction that address the grand challengers for sensor network research. (10 Marks)
8. Write short notes on :  
   a. Collaborative processing  
   b. Data aging  
   c. Tiny OS  
   d. ns – 2 and its sensor network extensions. (20 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

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