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Total No. of Questions : 8

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M.Tech. (CSE Engg.)E-I (2018 Batch) (Sem.–1)

WIRELESS SENSOR NETWORKS

Subject Code : MTCS-106-18

Paper ID : [75156]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWELVE marks.**

1. a. What is the difference between passive sensors and active sensors? Explain.

   b. What are the main challenges that need to be considered while designing wireless sensor networks? Explain.

2. a. Describe sensor network architecture in detail.

   b. Write a short note on cross layer design.

3. a. What is the main purpose of the MAC layer? Why is this challenging in networks with shared media? Explain.

   b. Define discrete time Markov chain. Also explain its important properties.

4. Describe the CIA security model. Which services described in this model do you think are essential for the following scenarios? Justify your answers.

   a. A WSN that allows emergency response teams to avoid risky and dangerous areas and activities.

   b. A WSN that collects biometric information collected at an airport.

   c. A WSN that measures air pollution in a city for a research study.

   d. A WSN that alerts a city of an impending earthquake.

5. What is data -centric routing? Why is data-centric routing feasible (or even necessary) compared to routing based on identities (addresses)? Explain.

6. Write a short note on Network simulator 3 (ns-3). Explain simulation of ns3 with the help of an example.

7. Write a short note on recent development in WSN standard. Also briefly explain software applications.

8. Write a short notes on the following :

   a. Resource aware routing,

   b. Geographic routing.

   c. Opportunistic routing analysis.

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