

**316205****May, 2019****M.Tech. CE/CSE/IT - II SEMESTER****Wireless Sensor Networks (MCS-18-211)**

Time : 3 Hours]

[Max. Marks : 75

*Instructions :*

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

**PART-A**

1. (a) What do you mean by Ambient Intelligence? (1.5)  
(b) List out various classifications of sensors? (1.5)  
(c) Differentiate between simple sensor node and complex sensor node. (1.5)  
(d) Write an equation to reflect relationship between received power & transmitted power? (1.5)  
(e) Differentiate between traditional networks and wireless sensor networks? (1.5)  
(f) List out various challenges of wireless sensor networks? (1.5)

- (g) Explain two types of data freshness? (1.5)
- (h) Explain security attacks on data link layer in WSN? (1.5)
- (i) How can we calculate duty cycle of a sensor node in WSN? How its value reflects the performance of sensor node? (1.5)
- (j) List out various Data centric and Hierarchical routing protocols. (1.5)

**PART-B**

- 2. (a) Draw and explain diagram for wireless sensor and actuator networks? (10)
- (b) How can we correlate human body with wireless sensor networks? (5)
- 3. (a) Differentiate between gossiping and flooding? (5)
- (b) List out various types of routing protocols in WSN? Explain in detail LEACH routing protocol with the help of an example? (10)
- 4. Explain in detail all components of SPINS protocols in wireless sensor networks? (15)
- 5. (a) In Wireless sensor networks, Self-management, Self-optimization and Self -protection is there? Justify this statement? (5)

- (b) Differentiate between hidden terminal problem and exposed terminal problem? (5)
- (c) Stations in pure ALOHA network send frames of size 1000 bits at the rate of 1 Mbps. What is the vulnerable time for this network? (5)

- 6. (a) Identify various reasons of energy consumption in Wireless sensor networks? (5)
- (b) Explain Adaptive Listening mechanisms of S-MAC? (5)
- (c) Explain Discrete time Markov Chain with the help of an example? (5)
- 7. Write a short notes on :
  - (a) Network Simulator 3. (Ns-3)
  - (b) Recent developments in WSN standards. (15)