

STELLA MARIS COLLEGE (AUTONOMOUS)-CHENNAI 86  
DEPARTMENT OF COMPUTER SCIENCE  
END SEMESTER EXAMINATION NOV-2019

SUB CODE : 15CS/UI/WN23

SUBJECT : Wireless Sensor Networks

DURATION: 3 HRS

MAX. MARKS: 100

Section A

Answer ALL the Questions:

20X1=20

- In network configuration factor, Deployment distribution of sensor nodes implies \_\_\_\_\_.  
a) Effort required    b) Amount of Intelligence    c) Design    d) Hops
- \_\_\_\_\_ systems are designed to produce temperature gradient in commercial buildings.  
a) UFAD    b) HVAC    c) RFID    d) EKG
- Radars and Sonars are \_\_\_\_\_ sensors.  
a) Passive    b) Active    c) low-energy    d) Both a & b
- The signal-to-noise ratio is usually between \_\_\_\_\_.  
a) 1 and 10    b) 1 and 30    c) 1 and 15    d) 1 and 20
- LLC is \_\_\_\_\_.  
a) Logical layer control    b) Logical link control    c) Link Layer control  
d) Logical link center
- \_\_\_\_\_ information is known to all communicating nodes.  
a) Predetermined    b) Global    c) Dynamic Global    d) Local
- \_\_\_\_\_ routing strategies establish routes to a limited set of destinations on demand.  
a) Proactive    b) Table Driven    c) Reactive    d) Hybrid
- A common technique frequently used for path discovery and information dissemination in wired and wireless ad hoc networks is \_\_\_\_\_.  
a) Routing    b) Traffic implosion    c) Gossiping    d) Flooding
- Communication between applications uses \_\_\_\_\_ naming.  
a) Low-level    b) Mid-level    c) High-level    d) Hybrid
- \_\_\_\_\_ is a commercially available sensor node that can perform generic sensing tasks.  
a) iMote    b) Stargate    c) Spec    d) Berkeley mote
- \_\_\_\_\_ applications tend to use point-to-point (sometimes star-based) topologies.
- \_\_\_\_\_ are small wireless sensors (motes) based on TinyOS that self-organize into networks for collecting real-time data in wildfire environments.
- A sensor supports a \_\_\_\_\_ link in which the "reader" end is attached to a wireline network.
- The electromagnetic spectrum provides an \_\_\_\_\_ medium for radio transmission.

15. \_\_\_\_\_ is defined as the rate at which messages are serviced by a communication system.
16. Random access MAC-layer protocols, also known as \_\_\_\_\_.
17. Elasticity in a protocol means that the \_\_\_\_\_ can be adjusted by the sender.
18. Reliable Multisegment Transport guarantees successful transmission of packets in the upstream direction.
19. A node in a networked system is identified through \_\_\_\_\_.
20. \_\_\_\_\_ nodes know their own locations, and they periodically broadcast a control message with their location information.

#### Section – B

**Answer ALL the Questions:**

**5 X 2 = 10**

21. List the components of a (remote) sensing node?
22. What are the typical sensor parameters?
23. What are the two types of delays?
24. List the main objectives of LEACH.
25. What are the advantages of Low-level naming?

#### Section – C

**Answer any EIGHT of the following Questions:**

**8 X 5 = 40**

26. Discuss about the Categorization of Issues Related to Sensors and their Communication / Computing Architecture
27. Write a short note on Home Control applications.
28. What are the five basic software subsystems of Sensors?
29. Explain the three basic physical mechanisms that affect radio propagation.
30. Discuss about fairness and energy efficiency with respect to design of MAC protocols.
31. Explain about schedule-based protocols
32. Write a short note on connection-oriented and Connectionless TCP.
33. Explain the problems that make either TCP or UDP unsuitable for implementation in WSNs.
34. Discuss about Localization of sensor nodes.
35. Write short note on TinyOS.

#### Section – D

**Answer any THREE of the following Questions:**

**3 X 10 =30**

36. Explain about routing protocols utilized in WSN?
37. Explain 3GPP and differentiate it from 3GPP2 service.
38. Explain the common protocols proposed to solve shared medium access problem.
39. Explain about the Routing challenges and design issues in wireless sensor networks.
40. Discuss in detail about Operating System Design issues.