Reg. No.															

Question Paper Code	13503

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Sixth Semester

Electronics and Communication Engineering

20ECEL602 - WIRELESS SENSOR NETWORKS

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Which of the following are the applications of WSN? (a) Health Monitoring (b) Industrial process monitoring and control (c) Military (d) All the above	1	K1	CO1
2.	A sensor network in WSN can be of _____ topology. (a) Star (b) Multi-hop wireless mesh (c) Advanced multi-hop wireless mesh (d) All the above	1	K1	CO1
3.	Which of the following is NOT a component of WSN architecture? (a) Sensor nodes (b) Base station (c) Routers (d) Satellites	1	K1	CO2
4.	Which technology is commonly used for sensor nodes in WSN? (a) Wi-Fi (b) Bluetooth (c) Zigbee (d) NFC	1	K1	CO2
5.	The Mediation Device Protocol is primarily used for -------- (a) Addressing data collisions (b) Energy harvesting (c) Coordinating communication among multiple sensor nodes (d) Ensuring secure data transmission	1	K1	CO3
6.	WSN uses_____ to address self-configuration issue. (a) Algorithms (b) Protocols (c) Both a and b (d) None of the above	1	K1	CO3
7.	The ratio of the listen period length to the wakeup period length is also called as ---- (a) wake up cycle (b) duty cycle (c) listening cycle (d) transmission cycle	1	K1	CO4
8.	Lifetime maximization is represented as _____ ratio. (a) Energy/power (b) Power/energy (c) Power (d) Energy	1	K1	CO4
9.	Tree topology is also called as_____. (a) Cascaded star (b) Star (c) Un-cascaded star (d) None of the above	1	K1	CO5
10.	NS2 comprises of _____ key languages? (a) 13 (b) 3 (c) 2 (d) 4	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

		Marks	K – Level	CO
11.	What are some common applications of WSNs?	2	K1	CO1
12.	Categorize the topologies used in WSN.	2	K2	CO1
13.	Differentiate between sink and node mobility.	2	K2	CO2
14.	List any two suggestions to maximize the lifetime of WSN.	2	K2	CO2
15.	What is the function of physical layer?	2	K2	CO3
16.	Justify the statement ”Idle Listening is an energy problem”	2	K2	CO3
17.	Examine the differences between energy efficient and geographic routing protocols.	2	K2	CO4
18.	Define clustering.	2	K1	CO4
19.	Discuss on the parameters defined by the homogenous topology control .	2	K2	CO5
20.	Explain how clustering solves the issue of scalability on WSN.	2	K2	CO5

21.	Explain about node-level simulators.		*2*	*K2*	*CO6*
22.	Why is TinyOS suitable for WSNs?		*2*	*K2*	*CO6*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Define wireless Sensor network. Explain in brief about the challenges in designing a wireless Sensor network.	*11*	*K2*	*CO1*
		OR			
	b) (i)	Explain in detail the topologies of WSN.	*5*	*K2*	*CO1*
	(ii)	Explain Energy Scavenging in WSN with examples.	*6*	*K2*	*CO1*
24.	a)	Discuss the Modeling of energy consumption of a transceiver during transmission and reception.	*11*	*K2*	*CO2*
		OR			
	b)	Describe the Transceiver characteristics and structure used in the sensor node.	*11*	*K2*	*CO2*
25.	a)	Describe in detail the classes of MAC protocols for WSN.	*11*	*K2*	*CO3*
		OR			
	b)	Outline the low energy adaptive clustering hierarchy (LEACH) protocol for wireless sensor networks.	*11*	*K2*	*CO3*
26.	a)	Explain the energy efficient routing in wireless sensor networks.	*11*	*K2*	*CO4*
		OR			
	b)	Describe the various challenges in WSN routing protocols.	*11*	*K2*	*CO4*
27.	a)	With a neat flow diagram explain any one sender / receiver time synchronization protocol in detail for WSN.	*11*	*K2*	*CO5*
		OR			
	b)	Discuss in detail any two localization and positioning algorithms.	*11*	*K2*	*CO5*
28.	a)	Explain about the characteristics of the embedded sensor nodes family with the help of MICA mote architecture.	*11*	*K2*	*CO6*
		OR			
	b)	Discuss in detail the characteristics and components of a node-level simulator with necessary functions.	*11*	*K2*	*CO6*