Reg. No.																

Question Paper Code	14077

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 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.	To save maximum energy the transceiver can be put in ----- mode (a) sleep mode (b) idle mode (c) transmit mode (d) receive mode	1	K1	CO1
2.	If it is possible to increase the number of nodes, then the characteristic of WSN is called (a) Mobility (b) scalability (c) Redundancy (d) Lifetime	1	K1	CO1
3.	The Flash memory is preferred over the other types as they have --------- (a) More capacity (b) Can be erased in block (c) Less latency (d) Low power	1	K1	CO2
4.	Which of the following components is essential in single-node architecture for data sensing? (a) Microcontroller (b) Display Unit (c) Speaker (d) Optical Sensor	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.	The communication between one source and one destination node is called ---------- (a) unicast (b) multicast (c) any cast (d) broadcast	1	K1	CO3
7.	The phase in which the data is communicated to the base station (Sink) is ------ (a) setup phase (b) steady state phase (c) collection phase (d) None of the mentioned	1	K1	CO4
8.	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
9.	Trilateration means (a) Distance calculation (b) Angle calculation (c) Both distance and Angle calculation (d) Neither distance nor Angle calculation	1	K1	CO5
10.	What is NS2 primarily used for? (a) Real-time sensor data processing (b) Network simulation and modeling (c) Data aggregation in sensor networks (d) GUI development	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	Differentiate between single hop and multi-hop networks.	2	K2	CO1
12.	What are the basic components of wireless sensor network?	2	K1	CO1
13.	Differentiate between sensor and actuator.	2	K2	CO2
14.	State the three types of mobility that can be experienced in the sensor nodes.	2	K1	CO2
15.	Bring out the importance of SMAC protocol.	2	K2	CO3
16.	Differentiate contention based MAC protocol and schedule based MAC protocol.	2	K2	CO3
17.	What do you mean by Low Duty cycle?	2	K1	CO4
18.	Outline the impact of clustering in WSN performance.	2	K2	CO4
19.	List out the various synchronization protocols.	2	K1	CO5
20.	Bring out the importance of post facto synchronization.	2	K2	CO5
21.	List some node level simulators in WSN.	2	K1	CO6

22.		State the significance of Event-based programming.	2	K2	CO6

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Discuss the required mechanisms to meet the different requirements in Wireless Sensor Networks and explain in detail.	11	K2	CO1
		OR			
	b)	Describe the types of wireless sensor networks with real life use cases.	11	K2	CO1
24.	a)	Classify the sensor network scenario with diagram and explain how mobility can appear in WSN?	11	K2	CO2
		OR			
	b)	Summarize the methods of Energy Scavenging used in wireless sensor network.	11	K2	CO2
25.	a)	With relevant examples explain any two MAC layer protocols in Wireless Sensor Networks.	11	K2	CO3
		OR			
	b)	Discuss in detail the address and name management in WSN.	11	K2	CO3
26.	a)	Describe the SPIN and PEGASIS routing with the help of a neat diagram. Give its advantages and disadvantages.	11	K2	CO4
		OR			
	b)	Briefly explain the Low-Energy adaptive clustering hierarchy.	11	K2	CO4
27.	a)	Explain any one time synchronization protocol in detail for WSN.	11	K2	CO5
		OR			
	b)	Discuss in detail the localization and positioning using Trilateration method.	11	K2	CO5
28.	a)	Explain how the TinyOS operating system supports resource constrained hardware platforms.	11	K2	CO6
		OR			
	b)	Describe the architecture of Berkeley Motes in detail with neat diagram.	11	K2	CO6