O.P.Code: 23CS1005	R23	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. III Year I Semester Regular Examinations December-2025
WIRELESS SENSOR NETWORKS
CSE (Internet of Things and Cyber security Including Block Chain Technology)

Time: 3 Hours **Max. Marks: 70**

PART-A
(Answer all the Questions **10 x 2 = 20** Marks)

1	a	Write two advantages of wireless sensor networks.	CO1	L1	2M
	b	Differentiate between homogeneous and heterogeneous sensor networks.	CO2	L2	2M
	c	Differentiate between MANET and WSN.	CO1	L2	2M
	d	Mention two challenges in implementing WSN in real-time applications.	CO2	L1	2M
	e	List the classifications of MAC protocols.	CO4	L1	2M
	f	Write the significance of IEEE 802.15.4 standard in WSN.	CO4	L1	2M
	g	What is data fusion in the context of WSN?	CO3	L1	2M
	h	Write two parameters that define the quality of a sensor network.	CO3	L1	2M
	i	State the need for gateway in WSN communication.	CO6	L1	2M
	j	What is TinyOS?	CO6	L1	2M

PART-B
(Answer all Five Units **5 x 10 = 50** Marks)

UNIT-I

2	a	Explain the fundamental concept of wireless sensor networks with neat diagrams.	CO1	L2	5M
	b	Examine the advantages of deploying WSNs over conventional wired networks.	CO1	L4	5M
		OR			
3	a	Compare the architectures of traditional networks and wireless sensor networks.	CO1	L4	5M
	b	Discuss how constraints such as energy, bandwidth, and scalability affect the design of wireless sensor networks.	CO2	L4	5M

UNIT-II

4	a	Discuss enabling technologies such as MEMS, low-power radios, and energy-efficient protocols in the development of WSNs.	CO2	L2	5M
	b	Describe how energy efficiency is addressed by enabling technologies in sensor networks.	CO2	L2	5M
		OR			
5		Design a conceptual framework that integrates MANET with WSN for disaster management.	CO1	L6	10M

UNIT-III

6	a	Explain the classification of MAC protocols in detail with suitable examples.	CO4	L2	5M
	b	Design a scenario using S-MAC for energy-efficient communication in a sensor network.	CO4	L6	5M
		OR			
7		Explain the working mechanism of IEEE 802.15.4 standard and its importance in WSN.	CO4	L2	10M

UNIT-IV

8	a	Explain the working principle of dissemination protocols for large sensor networks.	CO3	L2	6M
	b	Explain with examples how real-time traffic support is critical for missi applications.	CO3	L2	4M

		OR			
9	a	Create a conceptual model for secure data dissemination in healthcare sensor networks.	CO3	L6	
	b	Discuss the differences between data dissemination and data gathering with examples.	CO3	L2	

UNIT-V

10	a	Discuss the role of gateways in enabling WSN-to-Internet communication.	CO6	L2	
	b	Analyze the differences between WSN-to-Internet and Internet-to-WSN communication.	CO6	L4	
		OR			
11	a	Explain the design principles of wireless sensor networks with suitable examples.	CO6	L2	
	b	Illustrate the need for gateways with a real-world WSN application example.	CO6	L2	

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