

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025

Fifth Semester

Electronics and Communication Engineering

CEC365 – Wireless Sensor Network Design

(Regulations – 2021)

Duration : 3 Hrs

Maximum : 100 Marks

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BLT	CO	Marks
1.	List the challenges of designing and deploying WSNs.	L1	1	2
2.	Compare the Adhoc networks with WSN.	L2	1	2
3.	Show the working principles of TDMA-based MAC Protocols.	L2	2	2
4.	Identify the parameters required for evaluating MAC Protocols.	L3	2	2
5.	Discuss the security considerations in 6LoWPAN networks.	L3	3	2
6.	Explain the techniques used to manage large-scale deployments and optimize network performance.	L2	3	2
7.	Discuss a scenario where end-to-end paradigm is highly relevant.	L2	4	2
8.	Define SNMP.	L1	4	2
9.	Define TinyOS, and what sets it apart from other operating systems in the context of wireless sensor networks (WSNs).	L1	5	2
10.	Show how contiki handle inter-process communication.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a Discuss the key challenges in the design and deployment of wireless sensor networks. Discuss considering the factors like energy efficiency, scalability and reliability impact WSNs.	L2	1	16
	Or			
	b Discuss WSNs often interact with external systems and applications. Describe the service interfaces used to connect WSNs with other systems, and how do they facilitate data exchange and control.	L2	1	16
12.	a Explain the key differences between MAC protocols for wired networks and wireless networks. What challenges do wireless MAC protocols address that are not present in wired network?	L3	2	16
	Or			
	b What specific challenges do MAC protocols need to address, and how do protocols like S-MAC and T-MAC optimize energy consumption and data communication?	L3	2	16

13.	a	Summarize the relationship between IPv6 and 6LoWPAN. How does 6LoWPAN extend IPv6 to address the unique requirements of low-power wireless networks?	L2	3	16
Or					
	b	Explain the advantages and challenges of building mesh networks with 6LoWPAN, and how it supports self-organizing and self-healing capabilities.	L2	3	16
14.	a	Explain the role of Real-time Transport Protocol (RTP) and Session Initiation Protocol (SIP) in enabling real-time communication and sessions in networks.	L3	4	16
Or					
	b	Explain the core components and messaging patterns used in MQTT-S, and provide examples of applications or scenarios where it is commonly deployed.	L3	4	16
15.	a	Outline the advantages and limitations of using TOSSIM for simulating sensor network applications compared to real-world deployments.	L2	5	16
Or					
	b	Summarize the contiki support framework to both low-power wireless technologies like 6LoWPAN and RPL and traditional Internet protocols such as TCP/IP and UDP, within its communication stack in detail.	L2	5	16