Reg. No. | | | | | | | | | | | | | |

Question Paper Code	**13723**

M.E. - DEGREE EXAMINATIONS, APRIL / MAY 2025
Second Semester

M.E. - Embedded Systems Technologies
24PESPC202 - PERVASIVE DEVICES AND TECHNOLOGY
Regulations - 2024

Duration: 3 Hours   Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

		Marks	K-Level	CO
1.	List two key challenges in Wireless Sensor Networks.	2	K1	CO1
2.	Why WSNs are often deployed in harsh environments?	2	K2	CO1
3.	Name two hardware components of a typical sensor node.	2	K1	CO2
4.	Define receiver sensitivity.	2	K1	CO2
5.	Give two design principles for WSN.	2	K1	CO3
6.	Distinguish between flooding and gossiping in data dissemination.	2	K2	CO3
7.	What is HiperLAN?	2	K1	CO4
8.	Differentiate between WAN and MAN.	2	K2	CO4
9.	Define wakeup period.	2	K1	CO5
10.	Relate Zigbee communication with IEEE 802.15.4 MAC protocol.	2	K2	CO5

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

			Marks	K-Level	CO
11.	a)	Compare and contrast WSNs and ad hoc networks, focusing on their architecture, routing protocols, and application scenarios.	13	K2	CO1
		OR			
	b)	A WSN is to be deployed in a remote agricultural field to monitor soil moisture and temperature. Describe the characteristic requirements that this WSN must meet.	13	K2	CO1
12.	a)	Discuss the factors that contribute to energy consumption and propose strategies for minimizing it.	13	K2	CO2
		OR			
	b)	Explain the key factors influencing the design of an efficient operating system for sensor nodes.	13	K2	CO2
13.	a)	Explain the gateway concepts in detail.	13	K2	CO3

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **13723**

OR

b) Examine the different data dissemination techniques in sensor networks. *13 K2 CO3*

14. a) Explain the services provided by the IEEE 802.11 protocol architecture. How do these services ensure reliable and efficient communication in a Wireless LAN? *13 K2 CO4*

OR

b) Explain in detail about the Wireless Backbone Networks. *13 K2 CO4*

15. a) Discuss the key features and working principles of low duty cycle protocols in wireless sensor networks. *13 K2 CO5*

OR

b) Describe the basic principles of data transfer and energy management in SMAC. *13 K2 CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Design a Bluetooth-based smart home automation system and explain its working with a block diagram. *15 K3 CO6*

OR

b) Classify wireless networking devices based on their range, data rate, and application. Evaluate the advantages and disadvantages of each classification. *15 K3 CO6*