Reg. No. ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code | 13030

M.E. / M.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024
Third Semester
M.E. - Embedded Systems Technologies
20PESEL309 - EMBEDDED WIRELESS SENSOR NETWORKS
Regulations - 2020

Duration: 3 Hours   Max. Marks: 100

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

		Marks	K-Level	CO
1.	How does WSN transmit data?	2	K1	CO1
2.	List few characteristic requirement of WSN.	2	K1	CO1
3.	Define dynamic modulation scaling.	2	K1	CO2
4.	How to turn relatively inaccurate optimization goals into measurable figures of merit?	2	K2	CO2
5.	List the classes of MAC protocols.	2	K1	CO3
6.	Outline the uses of mediation device in MAC.	2	K2	CO3
7.	Define signal filtering.	2	K1	CO4
8.	What the need of amplifiers in sensing applications?	2	K1	CO4
9.	What is a Mica mote?	2	K1	CO5
10.	Outline the role of WSN in Body Area Networking.	2	K2	CO5

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

11.	a)	Describe the enabling technologies for wireless sensor networks.	13	K2	CO1
		OR			
	b)	Describe the energy consumption of a node with an appropriate diagram.	13	K2	CO1
12.	a)	Illustrate the RF front end of a transceiver and outline the behavior of operational states.	13	K2	CO2
		OR			
	b)	Explain Energy Scavenging is realized in wireless sensor network.	13	K2	CO2
13.	a)	Elaborate about the Physical layer design considerations of WSN.	13	K2	CO3

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   ***13030***

b) Explain the principle of S-MAC protocol and Mediation Device protocol with a neat sketch.   *13   K2   CO3*

14. a) Explain the working principle of a smart sensor with a neat block diagram.   *13   K2   CO4*

OR

b) Explain the block diagram of a DC signal conditioning system and explain the functions of each block.   *13   K2   CO4*

15. a) i) Elaborate the importance of wearable sensors.   *6   K2   CO5*

   ii) Compose the case study on sensors used in Structural engineering applications by giving its features and advantages.   *7   K2   CO5*

OR

b) i) Illustrate the importance of Environmental monitoring and explain the sensors involved in that.   *6   K2   CO5*

   ii) Explain in detail, the applications of various sensors used in Habitat monitoring.   *7   K2   CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Explain how to embed LEACH protocol on ARM7 TDM microcontroller using embedded C language.   *15   K2   CO6*

OR

b) Explain how to embed Cryptographic algorithms on ARM7TDMI microcontroller using embedded C language.   *15   K2   CO6*