QP Code: RM23MTECH131 | Reg. No | | | | | | | | | | | AY 23

GIET UNIVERSITY, GUNUPUR – 765022

M. Tech (Second Semester) Examinations, May – 2024

MPEEC2034 - Wireless Sensor Networks

(ECE)

Time: 3 Hrs | Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A **(2 x 10 = 20 Marks)**

Q.1. Answer all questions	CO#	Blooms Level
a. Describe the architecture of a sensor node, including both hardware and software components.	CO1	K2
b. What are the key considerations when designing sensor network architectures for specific applications?	CO1	K1
c. Name four examples of hardware commonly used in sensor networks.	CO2	K2
d. What are some features of the tinyOS operating system?	CO2	K3
e. What is nesC, and how does it differ from traditional programming languages like C?	CO3	K2
f. Name two examples each of open-source and commercial platforms used for simulating wireless sensor networks.	CO3	K2
g. Name two important protocols used at the Physical layer in wireless sensor networks and briefly explain their functions.	CO4	K2
h. What are the key characteristics of MAC layer protocols in sensor networks, and why are they essential?	CO4	K1
i. How does data dissemination and processing in wireless sensor networks differ from traditional database management systems?	CO2	K2
j. What are some specialized features unique to wireless sensor networks, such as energy preservation and efficiency?	CO1	K3

PART – B **(10 x 5=50 Marks)**

Answer ***ANY FIVE*** questions	Marks	CO#	Blooms Level
2. a. Discuss the architecture of a typical sensor network, including its various components and their functions	5	CO1	K3
b. Compare and contrast sensor networks with Ad Hoc Networks in terms of their design, communication protocols, and applications.	5	CO1	K4
3.a. How have advancements in technology led to the development of platforms like micaZ, tmote, and btnode?	5	CO2	K5
b. Analyze the challenges associated with selecting hardware and software components for sensor network deployments.	5	CO2	K3
4. a. Compare and contrast the programming paradigms of C and nesC in the context of wireless sensor network development.	5	CO3	K3
b. Discuss the importance of performance evaluation in wireless sensor networks.	5	CO3	K4

5.a.	Explore the fundamentals of the 802.15.4 standard and its significance in wireless sensor networks.	5	CO4	K3
b.	How does UWB differ from traditional wireless communication technologies like Bluetooth and Wi-Fi?	5	CO4	K4
6. a.	Analyze the security challenges faced by wireless sensor networks, including threats such as eavesdropping, data tampering, and node compromise.	5	CO2	K5
b.	How do factors like node placement, transmission range, and network topology affect data collection, routing efficiency, and network robustness?	5	CO2	K3
7.a.	Compare the hardware features of sensor node platforms like TelosB and Sun SPOT.	5	CO1	K3
b.	Evaluate the strengths and weaknesses of operating systems used in wireless sensor networks, such as MANTIS and Contiki.	5	CO1	K4
8. a.	Explore the key protocols used at different layers of the OSI model in wireless sensor networks.	5	CO3	K3
b.	Investigate the characteristics and applications of wireless communication technologies such as Bluetooth and BLE.	5	CO4	K4

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