

**ELECTIVE: IV**  
**BEIT804T4**

**WIRELESS SENSOR NETWORKS**  
**(Theory Credit: 05)**

**Teaching Scheme:**

**Lecture: 4 Hours/week**

**Tutorial: 1 Hour/week**

**Examination Scheme:**

**Theory: T (U): 80 Marks T (I): 20 Marks**

**Duration of University Exam. : 03 Hours**

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**UNIT I:**

**Introduction to wireless Sensor Network:**

Network Characteristics, Network application, Network design challenges, Sensor network architectural elements, WSN standards, IEEE 802.15.4, Zig-bee

**UNIT II:**

**Basic Wireless Sensor Technology:**

Sensor node structures, Sensor network architecture, Classification of WSN, Protocol Stack for WSN.

**UNIT III:**

**Medium Access Control:**

Fundamental MAC Protocol, MAC design for WSN, S-MAC, DS-MAC, MS-MAC, Traffic adaptive medium access, Self organizing MAC.

**UNIT IV:**

**Routing in WSN:**

Data dissemination and gathering, Routing challenges and design issues in WSN, Routing strategies, Flooding and its variants, Low energy adaptive clustering, Geographical routing.

**UNIT V:**

**Transport Protocol:**

Traditional transport protocol, Transport protocol design, Authenticity: Message authentication code, Signature, Authenticating public key, Broadcast and Multicast authentication.

**UNIT VI:**

**Network Management and Operating System for WSN:**

Traditional network management models, network management design issues, Example of management architecture: MANNA, Operating system design issues, Operating System: Tiny OS, Mate OS, Magnet OS.

**Text Books:**

1. Kazem Sohraby, Daniel Minoli, Taieb Znati, "Wireless Sensor Networks Technology, Protocols & Application", Wiley Student Edition
2. Jun Zheng, Abbas Jamalipour, "Wireless Sensor Network, A Network Perspective", Wiley Student Edition.

**References Books:**

1. Waltenegus Dargie, Christian Poellabauer, "Fundamentals of Wireless Sensor Networks, Theory and Practice", Wiley Student Edition.