

**GUJARAT TECHNOLOGICAL UNIVERSITY****ME – SEMESTER – I (New)– EXAMINATION – WINTER-2019****Subject Code: 3710217****Date: 09-01-2020****Subject Name: Wireless Sensor Networks****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Discuss Challenges and Constraints of WSN. **07**  
 (b) Explain Energy Consumption of Sensor Nodes. **07**
- Q.2** (a) What is Service Interfaces? Explain in detail. **07**  
 (b) What are the Physical layer and Transceiver design considerations in WSNs? Explain in detail. **07**
- OR**
- (b) i) Explain IEEE 802.15.4 MAC Protocol. **04**  
 ii) What is Framing? **03**
- Q.3** (a) Discuss advantages and disadvantages of Contention based protocols and Schedule based protocols. **07**  
 (b) i) Explain Time synchronization problem. **04**  
 ii) Explain Single Hop localization. **03**
- OR**
- Q.3** (a) Discuss Content based addressing and Geographic addressing in detail. **07**  
 (b) i) Explain Energy Efficient Unicast Routing. **04**  
 ii) Explain Geographic Routing. **03**
- Q.4** (a) Discuss Gossiping and agent-based unicast forwarding. **07**  
 (b) What is Data Aggregation? Explain in detail. **07**
- OR**
- Q.4** (a) Explain Data Centric Routing in detail. **07**  
 (b) List transport layer protocols designed for WSN. Explain any two of them in detail. **07**
- Q.5** (a) i) Explain QoS in Wireless Sensor Networks. **04**  
 ii) Explain Single Packet Delivery. **03**  
 (b) Discuss Security Protocols for Sensor Networks. **07**
- OR**
- Q.5** (a) i) Explain ZigBee Security. **04**  
 ii) What are the Challenges of Security? **03**  
 (b) Explain Congestion Control and Rate Control in detail. **07**

\*\*\*\*\*