Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**M.E.- SEMESTER–II • EXAMINATION – WINTER 2013**

**Subject Code: 725307** **Date: 04-01-2014**

**Subject Name: Wireless Sensor Networks**

**Time: 10.30 To 13.00** **Total Marks: 70**

**Instructions:**

1. Attempt to question no.1 is compulsory and answer any five questions from the rest.
2. Make suitable assumptions wherever necessary.
3. Figures mentioned on the right hand side of each questions indicate marks.

**Q. No. 1** **[2 Marks X 10 = 20 Marks]**

a. What are hierarchical routing protocols?
b. What is greedy geometric forwarding?
c. What are advantages of multihop communication over single hop communication
d. Define different types of mobility in Wireless Sensor Network
e. What are the main functions of controller in sensor node?
f. Define drift rate and phase shift of clock
g. What is black hole and misdirection in the context of security in wireless sensor networks?
h. What is Denial-of-Service attack?
i. Explain flooding
j. Define hop stretch factor and energy stretch factor

**Q. No. 2**

**a.** Discuss the Enabling Technologies for Wireless Sensor Networks. **[5 Marks]**
b. Explain advantages of simultaneous transmissions over multiple paths **[5 Marks]**

**Q. No. 3**

**a.** Explain cross layer optimization in sensor network **[4 Marks]**
**b.** Explain any efficient mechanism for address assignment to nodes **[6 Marks]**

**Q. No. 4**

**a.** Differentiate between steiner tree and shortest path tree **[4 Marks]**
b. Explain the need for Gateway in sensor network with example **[6 Marks]**

**Q. No.5**

**a.** Explain any three routing protocols used for sensor Networks with suitable example **[10 Marks]**

**Q. No.6**

**a.** Explain various mechanisms used by localization algorithms for measuring distance between nodes. **[6 Marks]**
**b.** Why IEEE 802.11 and Bluetooth are not suitable for wireless sensor network? **[4 Marks]**

**Q. No. 7**

a. Explain Reference Broadcast Synchronization algorithm with an example **[6 Marks]**
**b.** Explain with example Cone-based topology control? **[4 Marks]**

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