Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–V • EXAMINATION – WINTER 2013

Subject Code: 650007 **Date: 29-11-2013**

Subject Name: Wireless Sensor Network

Time: 02.30 pm - 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)** Define the following: **07**

1. Define WSN
2. Nanoscopic and Microscopic.
3. Diffraction and Scattering.
4. Chipless RFID tag
5. Inductive Coupling
6. EAS
7. Formula Threshold, T(n)

(b) (i) Differentiate between WSN and MANETs. **03**

(ii) List the applications of WSN in different fields. Explain any two in detail. **04**

Q.2 **(a)** (i) Differentiate between C1WSNs and C2WSNs. **03**

(ii) Explain Industrial Automation and Robots with WSNs. **04**

(b) Explain hardware and software need of WSN with proper figures. Explain basic software subsystems. Also explain Smart Dust and COTS motes sub systems. **07**

OR

(b) (i) Explain in detail Modulation in Wireless Sensor Networks. **04**

(ii) Give comparative overview of Wi-Fi and Mobile WiMax. **03**

Q.3 **(a)** Give IEEE 802.15.4 and ZigBee reference model. Also explain its importance in WSN. Give brief about ZigBee stack reference model. **07**

(b) (i) Write a note on LEACH. **04**

(ii) Draw the flow chart of Unslotted CSMA algorithm. **03**

OR

Q.3 **(a)** Explain the fields of general MAC frame, Beacon frame, Data and ACK frame, MAC command frame and Superframe structure as energy saver with proper figures. **07**

(b) (i) Explain access control and data exchange with respect to SMAC, also explain message passing in SMAC. **04**

(ii) Draw the flow chart of Slotted CSMA algorithm. **03**

Q.4 **(a)** Explain SPIN protocol in detail. Also explain SPIN-PP and SPIN-BC. **07**

(b) Explain CODA and ESRT. **07**

OR

Q.4 **(a)** Explain forwarding approaches with respect to geographical routing. Explain localized and globalized forwarding decision. How geographical routing forwarding strategies are are set. Explain Greedy algorithm forwarding progress failure. Also give the solution? **07**

(b) Explain RMST and PSFQ. **07**

Q.5 **(a)** Which are the basic models for performance evaluation of WSNs. Explain **07**

Energy model in detail.

	(b)	What are the design issues with network management? Taking example of MANNA, explain network management architecture.	**07**

OR

Q.5	**(a)**	Explain MiLAN, IrisNet, Impala, DFuse briefly.	**07**
	(b)	What are the design issues with WSN operating systems. List different operating systems available for WSN. Explain any one of them.	**07**

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