Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER– V EXAMINATION – WINTER 2015

Subject Code: 2650007 **Date:08/12/ 2015**

Subject Name: Wireless Sensor Network Technology

Time:10.30 AM TO 01.00 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) (1) Explain Background of Wireless Sensor Network Technology. **03**

(2) Explain Sensor Network Architectural Elements. List down the Functionality for each of the elements. **04**

Q.1 (b) Define the Following: **07**

(1) Single hop vs. Multi hop (2) Reflection
(3) Scattering (4) Diffraction
(5) What is used of 802.11? (6) Microscopic
(7) Define: WSN

Q.2 (a) Explain Range of application for Wireless Sensor Network. Give at least Four applications for Category 2 application of Wireless Sensor network. **07**

(b) Explain Hardware and Software need of WSN with proper figure and all basic Hardware Subsystem in details. **07**

OR

(b) Explain Wireless Sensor Network Taxonomy and Trends in Details. **07**

Q.3 (a) List down all the Network Layer Protocol for wireless sensor network. Explain FLOODING and LEACH in details. **07**

(b) What is MAC Protocol? Differences Between Transport Control Protocol and Routing Control Protocol. **07**

OR

Q.3 (a) What are the principles of WSN Middleware? Explain AMF, DSWare, DFuse and CLMF Middle wares in detail. **07**

(b) Explain MIDDLEWARE Architecture and principles for Wireless Sensor Networks. **07**

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

(b) Discuss Transport Protocol design issues. List down the examples of Transport Layer Protocols. Also explain problems with Transport Control Protocol. **07**

OR

Q.4	**(a)**	What are the design issues with WSN operating systems? List different Operating systems available for WSN. Explain any one of them.	**07**
	(b)	List down all the existing Middleware. Explain Impala, MSM, DSS, Em and SensorWare in detail.	**07**
Q.5	**(a)**	Which are the Performance Metrics that are used for evaluating the Performance of WSN? Explain each of them briefly.	**07**
	(b)	List down all the wireless technologies. Explain WLAN and 3GPP in details.	**07**

OR

Q.5	**(a)**	Explain Performance Modeling of WSNs by taking proper performance metrics and basic models.	**07**
	(b)	List all the Operating Systems used with WSNs. **(i)** Explain Tiny OS (ii) Explain MANTIS. **(ii)** Explain SenOS. (iv) Explain EYES OS	**07**

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