

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**MCA - SEMESTER– V EXAMINATION – WINTER 2016**

**Subject Code: 2650007**

**Date: 24 / 11 / 2016**

**Subject Name: Wireless Sensor Network**

**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]** Defined the Following questions [07]  
(i) Define : WSN (ii) Null Spot  
(iii) Reflection (iv) ZigBee  
(v) What is used of 802.11? (vi) Microscopic  
(vii) Single hop vs. Multi hop

**Q. 1 [B]** (i) Difference between Traditional Network vs. Wireless Sensor Network [03]  
(ii) Write short notes on Background of Wireless Sensor Network Technology. [04]

**Q. 2 [A]** Explain Range of application for Wireless Sensor Network. Give at least four [07]  
applications for Category 1 application of Wireless Sensor network.

**Q. 2 [B]** List down all the Network Layer Protocol for wireless sensor network. Explain [07]  
FLOODING and LEACH in details.

**OR**

**Q. 2 [B]** Explain Hardware and Software need of WSN with proper figure and all basic [07]  
Hardware Subsystem in details.

**Q. 3 [A]** Explain Wireless Sensor Network Taxonomy and Trends in Details. [07]

**Q. 3 [B]** List down all the wireless technologies. Explain WLAN and 3GPP in details. [07]

**OR**

**Q. 3 [A]** Explain MIDDLEWARE Architecture and principles for Wireless Sensor [07]  
Networks.

**Q. 3 [B]** Explain SPIN protocol in detail. Also explain SPIN-PP and SPIN-BC. [07]

**Q. 4 [A]** List down all the Medium Access Control Protocol for wireless sensor Network. Explain any three in detail. [07]

**Q. 4 [B]** List down all the existing Middleware. Explain Impala, MSM, DSS, Em and Sensor Ware in detail. [07]

**OR**

**Q. 4 [A]** Explain WSN Design Issues for MAC protocols, Routing protocols and Transport protocols in detail. [07]

**Q. 4 [B]** What are the design issues with WSN operating systems? List different Operating systems available for WSN. Explain any one of them. [07]

**Q. 5 [A]** List all the Operating Systems used with WSNs [07]  
(i) Explain Tiny OS (ii) Explain MANTIS.  
(iii) Explain SenOS. (iv) Explain EYES OS

**Q. 5 [B]** Explain Performance Modeling of WSNs by taking proper performance metrics and basic models. [07]

**OR**

**Q. 5 [A]** List all the Transport Controls Protocol used with WSNs. [07]  
Explain CODA Explain ESRT  
Explain RMST. Explain GARUDA.

**Q. 5 [B]** What are the design issues with network management? Taking example of MANNA, explain network management architecture. [07]

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