

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023****Subject Code:3171106****Date:19-12-2023****Subject Name: Wireless Sensor Networks****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.
4. Simple and non-programmable scientific calculators are allowed.

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|------------|-----|---|-----------|
| <b>Q.1</b> | (a) | Explain the components of WSN   | <b>03</b> |
|            | (b) | What are the advantages of Wireless Sensor Networks?                                | <b>04</b> |
|            | (c) | Explain the issues and challenges of WSN  | <b>07</b> |
| <b>Q.2</b> | (a) | What is mobile adhoc network?   | <b>03</b> |
|            | (b) | Explain the types wireless sensor networks.   | <b>04</b> |
|            | (c) | Explain the sensor node technology  | <b>07</b> |
| <b>OR</b>  |     |   |           |
|            | (c) | Explain the performance requirement of MAC protocols.                               | <b>07</b> |
| <b>Q.3</b> | (a) | Which are the major categories for the choice of MAC for determining factor in WSN. | <b>03</b> |
|            | (b) | Explain the demand assigned protocols in MAC  | <b>04</b> |
|            | (c) | Explain the Bluetooth protocol in detail.   | <b>07</b> |
| <b>OR</b>  |     |   |           |
| <b>Q.3</b> | (a) | What is Access control and data exchange in S-MAC protocol.                         | <b>03</b> |
|            | (b) | Explain the CSMA/CA in details.   | <b>04</b> |
|            | (c) | Explain the MAC layer in IEEE 802.15.4 LR-WLAN standard.                            | <b>07</b> |
| <b>Q.4</b> | (a) | List out the routing protocol for WSN.  | <b>03</b> |
|            | (b) | What is data dissemination and gathering in routing protocol for WSN?               | <b>04</b> |
|            | (c) | Discuss routing challenges and design issues in WSN.                                | <b>07</b> |
| <b>OR</b>  |     |   |           |
| <b>Q.4</b> | (a) | Explain the B-MAC protocol  | <b>03</b> |
|            | (b) | Explain routing strategies in WSN.  | <b>04</b> |
|            | (c) | Explain LEACH routing algorithm for WSN.  | <b>07</b> |
| <b>Q.5</b> | (a) | What is the need of gateway?  | <b>03</b> |
|            | (b) | Explain real time traffic support and security protocols.                           | <b>04</b> |
|            | (c) | Explain IMote Node architecture.  | <b>07</b> |
| <b>OR</b>  |     |   |           |
| <b>Q.5</b> | (a) | Explain the design constrain for single node architecture.                          | <b>03</b> |
|            | (b) | Explain the displacement sensors.   | <b>04</b> |
|            | (c) | Explain The Hogthrob Node Architecture  | <b>07</b> |

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