

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024****Subject Code:3171106****Date:16-12-2024****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.

- Q.1** (a) Write short note on advantages of wireless sensor network. **03**
 (b) Write short note on fundamentals of MAC protocols. **04**
 (c) Describe gateway concept & why we need for gateway. **07**
- Q.2** (a) Describe the requirements of Wireless Sensor Networks. **03**
 (b) Discuss about issues and challenges in Wireless sensor network. **04**
 (c) Write short note on Operating Systems for Wireless Sensor Networks. **07**
- OR**
- (c) What is data gathering and data fusion. **07**
- Q.3** (a) Describe exposed node problem. **03**
 (b) Why does TCP shall not work well in ad hoc network? **04**
 (c) List different Operating systems available for WSN. Explain any one of them. **07**
- OR**
- Q.3** (a) Differentiate between active and passive sensors. **03**
 (b) Discuss about Real time traffic support and security protocols. **04**
 (c) List down all the Medium Access Control Protocol for wireless sensor network. Explain any three in detail. **07**
- Q.4** (a) In reference of S-MAC, define Access control and data exchange. **03**
 (b) Give explanation on background and history of wireless sensor networks technology used in recent industries. **04**
 (c) Explain software and hardware components of WSN with block diagram. **07**
- OR**
- Q.4** (a) Describe Geographical Routing. **03**
 (b) List all routing strategies used for wireless sensor networks and explain any two of them in detail. **04**
 (c) What is meant by Middleware in sensor networks? Explain general middleware architecture for WSNs. **07**
- Q.5** (a) Explain B-Mac protocol in detail. **03**
 (b) How secure routing is done on wireless channels? **04**
 (c) Write short note on the XYZ Node Architecture. **07**
- OR**
- Q.5** (a) What are the security issues in wireless sensor network. **03**
 (b) Discuss about enabling technologies for wireless sensor network. **04**
 (c) List all the Operating Systems used with WSNs. (i) Explain Tiny OS (ii) Explain Mate. **07**
 (ii) Explain SenOS. (iv) Explain IEEE802.15.4
