

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024****Subject Code: 3171106****Date: 01-06-2024****Subject Name: Wireless Sensor Networks****Time: 02:30 PM TO 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.
4. Simple and non-programmable scientific calculators are allowed.

		Marks
Q.1	(a) Define sensor network. Also write its applications.	03
	(b) Compare Mobile Ad-hoc Networks (MANETs) and Wireless Sensor Networks.	04
	(c) Discuss issues and challenges in wireless sensor networks.	07
Q.2	(a) Why we need routing protocol in wireless sensor network (WSN). How routing protocols in WSN is different from traditional computer networks.	03
	(b) Briefly explain the hierarchical architecture of WSN.	04
	(c) List and explain the innovative mechanisms to realize the characteristic requirements of WSN.	07
	OR	
	(c) Classify WSNs. Explain issues and challenges of underwater WSN.	07
Q.3	(a) Differentiate between single and multiple hop transmission?	03
	(b) What is Hidden/Exposed Terminal Problem? Mention solution of this problem.	04
	(c) Write short note on S-MAC Protocol.	07
	OR	
Q.3	(a) Write important features of IEEE 802.15.4 standard.	03
	(b) Briefly explain ZigBee protocol.	04
	(c) Write short note on B-MAC protocol.	07
Q.4	(a) What is data fusion? Explain in brief.	03
	(b) Explain the concept of reverse path forwarding.	04
	(c) Discuss Low-energy adaptive clustering hierarchy (LEACH) protocol.	07
	OR	
Q.4	(a) List and explain the functions dissemination protocol in WSN.	03
	(b) Discuss QoS challenges in WSN.	04
	(c) Discuss data aggregation and data dissemination in WSN. Why it is important.	07
Q.5	(a) List hardware components required in WSN design. What are MEMS sensors?	03
	(b) Briefly explain the Hightrob Node Architecture.	04
	(c) Explain WSN to Internet communication and Internet to WSN communication.	07

OR

Q.5	(a)	Briefly explain design principles for WSNs.	03
	(b)	What is the need of gateway?	04
	(c)	Write short note on IMote Node Architecture.	07
