

Enroll No

K.E.Society's
Rajarambapu Institute of Technology, Rajaramnagar
 (An Empowered Autonomous Institute, affiliated to SUK)
Unit Test - II (2025-26)

Q.P. Code
UT 3145

T.Y. B.Tech . - Department of Robotics and Automation
Course Code: RA311

Course Name: Wireless Sensors Networks for Robotics

Day & Date: Friday 19/09/2025

Time: 2:30 PM to 3:30

Max Marks- 25

- Instructions:**
- 1) All questions are compulsory.
 - 2) Figures in rounded () brackets within the question, indicate the scheme of marking for respective part of the question, whereas, figures in the first right column indicate total marks for that whole question.
 - 3) CO is the index number of the Course Outcome statement.
 - 4) The Bloom's taxonomy level (BL) for 1,2,3,4,5 and 6 is remember, understand, apply, analyze, evaluate and create respectively.
 - 5) Assume suitable data if necessary.
 - 6) Use of non-programmable calculators is allowed

			Marks	BT Level	COs
Q.1	A	Apply your understanding of the Physical Layer in Wireless Sensor Networks to illustrate (2) its functions with a neat diagram (2), and explain (2) how it supports reliable wireless communication	6	3	2
OR					
	B	Apply your understanding of the Network Layer in Wireless Sensor Networks to illustrate (2) its functions with a neat diagram (2), and explain (2) how it supports reliable wireless communication	6	3	2
	C	Analyze the working (2) of the LEACH protocol for clustering in robotic sensor networks. Demonstrate with a neat diagram (2) how cluster head selection and data aggregation improve energy efficiency (1).	7	3	2
Q.2	A	Apply your understanding of wireless communication technologies to compare Bluetooth, Wi-Fi, and ZigBee in the context of Wireless Sensor Networks (WSNs) (diagram 1 mark)	6	2	2
	B	Explain the key design considerations for a transceiver in a Wireless Sensor Network (WSN), including power efficiency, modulation schemes, receiver sensitivity, and cost,	6	2	2
OR					
	C	Explain the main security challenges in robotic networks such as data integrity, authentication	6	2	2

