

Enroll No

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

Q.P. Code
UT 2947

S.Y. B.Tech.- Robotics & Automation

Course Code:RA205

Course Name: Sensors & Instrumentation

Day & Date: Monday 11.08.2025

Time: 3.45-4.45 PM

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	Explain the essential elements of a measurement system (2). Describe the role of each element in achieving accurate and reliable measurement (1 mark each).	6	2	1
	B	Apply the classification of sensors diagram (1) into direct, complex, active, passive, absolute, and relative types to recommend suitable sensors (3). Justify your choices with proper explanation and examples (3)	7	3	1
	OR				
	C	Demonstrate the process of sensor calibration with a practical example (1). Apply calibration techniques such as one-point, two-point, and multipoint calibration using transfer functions to improve measurement accuracy in a real-time monitoring system (2 mark each calibration).	7	3	1
Q.2	A	Analyze the working principles of incremental and absolute encoders with the help of clearly labelled diagrams (4). Discuss how each type detects position, and explain their advantages and disadvantages in practical motion control systems (2).	6	3	2
	B	Illustrate the working principle (2) (diagram with graph) of an LVDT and explain its advantages (1) limitation (1)	6	3	2

