



VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

REG.NO.: 23BCT0001

SLOT: D2

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2025-2026

Programme Name & Branch : B. Tech, BCT
Course Code and Course Name : BCSE311L - Sensors and Actuator Devices
Faculty Name(s) : Dr. M. Manimozhi, Dr. V. Bagyaveereswaran
Class Number(s) : 3467, 3466
Date of Examination : 30.01.26
Exam Duration : 90 minutes

Maximum Marks: 50

General instruction(s):

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes
 1. Classify different Sensors & Actuators based on various physical phenomena and differentiate their performance characteristics
 2. Analyze the working principles of thermal, optical & electric sensors and actuators to interpret their mathematical model

Q. No	Question	Module	Marks	CO	BL																
1.	Explain any five performance characteristics of sensors with diagrams and examples.	1	10	1	2																
2.	a) A Pressure sensor produces a output of 0-5 V for a input pressure range of 0-10 bar. Determine sensitivity and resolution (if the output is connected to 8 bit ADC).	1	5+5	1	3																
	b) A diaphragm type pressure measuring instrument is calibrated for absolute pressures of 6 to 760 mm of mercury. It has an accuracy of $\pm 1\%$ based upon scale span. Calculate the scale range, scale span and maximum static error.																				
3.	What are thermistors? Explain their different forms of construction. Draw their resistivity versus temperature characteristics and show that they have a very high sensitivity compared to other temperature sensors.	2	10	2	2																
4.	The following table gives the variation of resistance with temperature for a RTD. Find the linear and quadratic approximation of the above resistance temperature curve for temperature variations between 15°C and 33°C about a mean temperature of 24°C. <table><tr><th>Temperature °C</th><th>Resistance Ω</th></tr><tr><td>15</td><td>106.06</td></tr><tr><td>18</td><td>167.14</td></tr><tr><td>21</td><td>108.22</td></tr><tr><td>24</td><td>109.3</td></tr><tr><td>26.5</td><td>110.38</td></tr><tr><td>29.5</td><td>111.46</td></tr><tr><td>33</td><td>112.75</td></tr></table>	Temperature °C	Resistance Ω	15	106.06	18	167.14	21	108.22	24	109.3	26.5	110.38	29.5	111.46	33	112.75	2	10	2	3
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5.	Explain in detail construction and the working of a Solar Cell with necessary diagram. Also list the advantages and disadvantages of different types of solar cell.	3	10	2	2																