**ENGINEERING MEASUREMENT AND INSTRUMENTATIONS/CONTROL**

**FOR MECH & MECHTR**

**ASSIGNMENT-01**

**QUESTION 1:**
By using sketches describe the key principles of operation for common types of sensors used in engineering instrumentation, and how do these principles affect the choice of sensor for specific applications?

**QUESTION 2:**
Discuss the importance of calibration in engineering instrumentation and outline the typical steps involved in the calibration process for a measuring instrument.

**QUESTION 3:**
Explain the role of data acquisition systems in engineering instrumentation and discuss the challenges associated with data management and analysis in large-scale instrumentation projects.

**QUESTION 4:**
Describe how feedback control systems are utilized in engineering instrumentation. Discuss the components of a feedback control loop and the impact of feedback on system stability and performance.

**QUESTION 5:**
What are the ethical considerations in engineering instrumentation, particularly regarding data collection and privacy? Discuss how engineers can address these concerns in their practice.

**QUESTION 6:**
How does the concept of thermodynamic energy relate to the temperature of a medium, and what role does molecular movement play in this relationship?

**QUESTION 7:**
In what ways does temperature influence the physical properties of materials, and how can these changes be explained through the lens of molecular movement and thermodynamic energy?

**QUESTION 8:**
Discuss the implications of temperature measurement in various scientific and engineering applications, particularly in relation to the concept of thermodynamic energy and molecular motion.

**QUESTION 9:**

What considerations should be taken into account regarding the physical characteristics of temperature measurement devices, particularly in relation to their contact or non-contact nature, and how do these factors affect their application in various fields?

**QUESTION 10:**

How do the physical principles underlying different temperature measurement devices influence their selection based on accuracy requirements and application contexts, such as monitoring versus control?