

*MADHAV INSTITUE OF TECHNOLOGY AND SCIENCE, GWALIOR*

**SENSOR TECHNOLOGY**

ASSIGNMENT 8



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*Q1. What do you understand by signals? Express it in mathematical way.*

In signal processing, a signal is a **function that conveys information about a phenomenon**.

Mathematically:

A real discrete-time signal is defined as any time-ordered sequence of real numbers. Similarly, a complex discrete-time signal is any time-ordered sequence of complex numbers. Mathematically, we typically denote a signal as a real- or complex-valued function of an integer.

*Q2. What is data acquisition & signal conditioning?*

Data acquisition:

Data acquisition is the **process of sampling signals that measure real world physical conditions and converting** the resulting samples into digital numeric values that can be manipulated by a computer.

Signal conditioning:  **Signal conditioning** is an electronic circuit that manipulates a **signal** in a way that prepares it for the next stage of **processing**. Many data acquisition applications involve environmental or mechanical measurement from sensors, such as temperature and vibration. Signal conditioners protect personnel and equipment from dangerous voltages.

Signal conditioning can include amplification, filtering, converting, range matching, isolation and any other processes required to make sensor output suitable for processing after conditioning.