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151ENG04107

Electrical Engineering

EEE 319 (Measurement and Instrumentation)

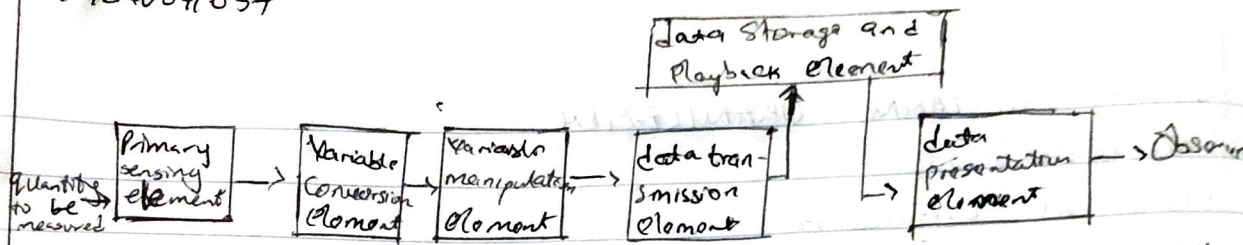
Sensors convert physical attribute to an electrical signal. While an actuator

There are two types of <sup>Physical</sup> sensors that regard to biomedical applications which are

**Electrocardiogram:** An electrical signal produced by the heart. This sensors detecting electrical phenomena in the body play a special role as a result of their diagnostic and therapeutic applications

**Optical sensor:** They use light to collect information and in the case fiber and optic sensor light is the signal transmission medium as well

2.



**Primary Sensing Element:** The quantity under measurement makes its first contact with primary sensing element of a measurement system

**Variable Conversion Element:** The output of the primary Sensing element is the electrical signal.

**Variable manipulation element:** The main function of variable manipulation element is to manipulate the signal presented to it preserving the original nature of the signal.

**Data presentation element:** The information about the quantity under measurement has to be conveyed to the person handling the instrument or system for control or analysis purposes.

### 3. Monitoring the Respiratory System

A preventive and continuous monitoring of the respiratory system proves necessary for many patients. A proposal to detect the sleep apnea hypopnea syndrome (SAHS) using the performance of an unobtrusive sleep monitoring system.

#### ii. Monitoring Heart Rate and Blood Pressure:

For many patients the daily monitoring of the heart rate (HR) and blood pressure (BP) could lead to reduced mortality risk.