





### 3.1) Sphygmomanometer

72 mechanical aneroid sphygmomanometers were calibrated using a standard manometer and the indication error, hysteresis, or leakage and rapid exhaust were determined; readings of these sphygmomanometers were compared to a properly calibrated and adjusted aneroid sphygmomanometer to carry out pressure measurements as those made during the hypertension diagnosis; the uncertainty of measurement associated with the sphygmomanometer calibrations

### 1) Stethoscopes

This is used by doctors, nurses and other medical and professional predominantly to perform checks on the heart and lungs functions. These checks are called "auscultation".

biomedical instruments, microsystems and lab-on-a-chip systems.

2 The instrument used for measuring the physical and electrical quantities is known as the measuring instrument.

The measuring instrument is categorized into three types

- 1) Electrical instrument
- 2) Electronic instrument
- 3) Mechanical instrument

The mechanical instrument is used for measuring the physical quantities. This instrument is suitable for measuring the static and stable condition because the instrument is unable to give response to the dynamic condition. The electronic instrument has quick response time. The instrument provides the quick response as compared to the electrical and mechanical instrument.

The electrical instrument is used for measuring electrical quantities like current, voltage, power, etc. The ammeter measures the current in amps; voltmeter measures voltage and wattmeter are used for measuring the power. The classification of the electrical instruments depends on the methods of representing the output reading.

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1. Describe briefly (with examples) Sensors and Actuators for Biomedical Applications.
  2. Describe, with sketches and examples, of the compounds of a basic necessary instrument
  3. Describe briefly cause ~~of~~ of the medical measurements instruments.

Answers

1. A variety of different sensors are applied for neural prosthetic structures for use in biomedical applications only have to operate over small temperature ranges; however, their requirements may be strict.

These biosensors facilitated the development of smart sensors because they can be miniaturized and implanted. Some present transducers with the concept of MEMS which are used for sensing applications such as detecting tumors, controlling blood glucose levels, and releasing therapeutic agents in response to biomolecular and physical stimuli to minimize medical care. Personal intervention Under the format of glucose monitoring smart sensors, commercial products are developed with biosensors, such as a wearable device that performs collection of reverse iontophoretic glucose with watch functions. However, one problem is the practical construction of which is possible due to its size and thickness.

Microsensors (MIS) are an example of those micro-optical elements usually integrated with optical systems for illumination and focusing. Additionally, MIS are an attractive alternative for applications where miniaturization, low cost and alignment simplicity are paramount. Examples of these applications include smart sensors.