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1) A sensor tends to convert a physical attribute to an electrical signal. Biomedical sensors are used to gain the information on body and pathology. which is a branch of Biomedical engineering. Biomedical sensors are classified into physical sensor, chemical sensor or biosensor. An actuator does the opposite: it changes an electrical signal to physical action. Actuators are used in manufacturing applications such as sorters, pumps, motors and valves.

Applications of sensors

- Hydrogel based sensor.
- fiber optic sensors.

Applications of actuators.

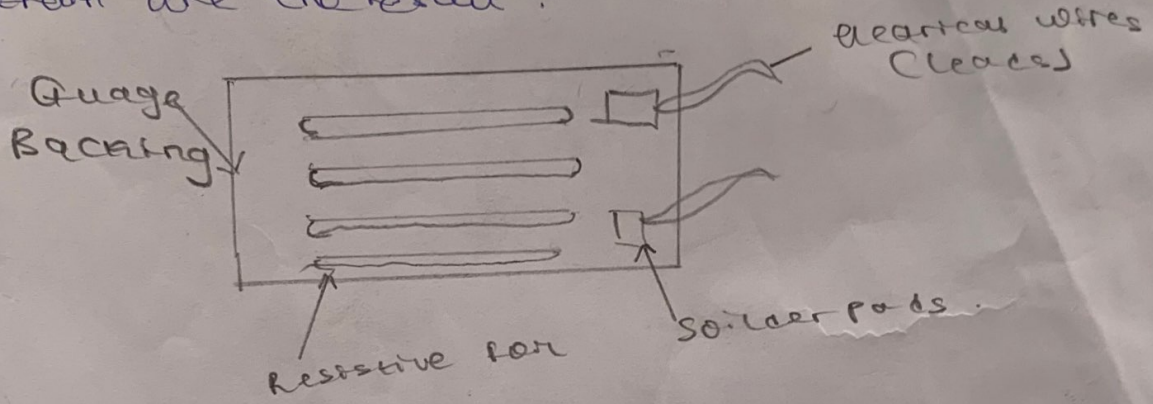
- electroactive smart polymers.
- super magnetic twist type actuators.

No2

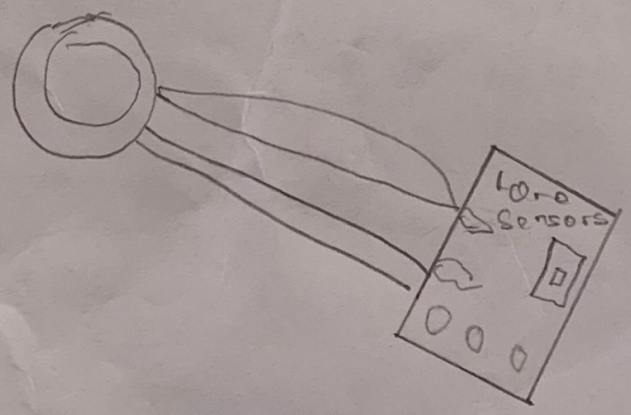
Describe with sketches and examples, of the components of a basic measuring instrument.

A:) Strain guage:-

A strain guage is a sensor whose resistance varies with applied force, it converts force, pressure, tension weight, etc. into a change in electrical resistance which can then be measured. When external forces are applied to a stationary object, stress and strain are the result.



b:) Force sensor:- force sensor load cells to weigh objects and prevent machinery from over loading. 3 main types- tensile, compression sensors



C:) Load cell:- Load cell is a force transducer. It converts a force such as tension, compression, pressure or torque into an electrical system can be measured and standardized.

CHECK-OFF | SKILLS: Examination for Pallor, Finger Clubbing

measure how much

3.) Describe case study of two medical measurement instruments.

i) A Digital stadiometer: A human has to stand erect while using a Stadiometer it could be measured in centimeter (metric system) (1, 2) and feet and inches (imperial system) [3-4]. On the average males are taller than females. Several places such as medical centres, screening centres, military offices etc

The concept of a stadiometer device is based on the measurement of distance with the use of an ultrasonic sensor device controlled by a microcontroller. The stadiometer device is to be placed at a fixed height. The microcontroller being received by an ultrasonic sensor device, the sensor emits ultrasound wave in a linear direction towards the obstacle (in the case, the plank on top of the head) and awaits the reception of echo the time t_1 between the pulse emission and echo reception is being derived by the microcontroller in the time module. the derived time (t_1) is further divided by (2) because the time needed is the time it takes the pulse to hit obstacle.

3) Hemoglobin calibration
5) Tongue pulse oximeter
1) Ophthalmoscope fundus
tol technological [illegible]
ophthalmoscope and otoscope tonometer
(EP)

counting
observation

2.) Scales for measurement:- Scales measure how much something weighs and they do it by measuring how much force, they give you measurement of mass in kilograms, grams, pounds or whatever. The can be a bit confusing but its acceptable because weight and mass are connected in a simple way and are often used interchangeably in everyday life. They are two types of scales in medical field Nominal scales and Ordinal scales.

Nominal scale is the lowest level of measurement, in which names or labels are assigned to objects can be put into categories. We use nominal scales in everyday life when we identify people as males, females.

Ordinal scales are similar to nominal scales in that the consist of mutually exclusive and exhaustive categories but unlike nominal scales, each category of scale expresses different we