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18/eng02l06l
EEE 319 Assignment

1.)i) Biomedical Sensors:- They are the type of sensors that are capable of transducing biomedical signals into easily measurable electric signals. They are key components in various medical instruments

Examples

i) Heart Sound Sensors
ii) Blood Pressure Sensors
iii) Respiration Sensors
iv) Electrochemical Electrode
v) Blood flow Sensors

ii) Biomedical Actuators:- They are smart Actuators which are useful in biomedical applications when objects or their environment need to be controlled on a microscopic scale. They have the ability to integrate many microactuators as easily as only one which makes it feasible to produce complex microsystems capable of controlling many parameters or units

Examples

Micromanipulators
Surgical Microinstruments
Microfilters
Micropumps
Microneedles

2.a) Strain Gauge:- It is a sensor that converts force, tension, etc into a change in electrical resistance which then can be measured. They consist of fine and thin metallic foil etched in a grid pattern, which

is bonded to a device and is used to measure strain.

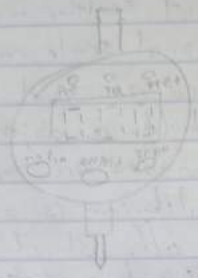
Strain Gauge

ii) Force Sensor :- They use load cells to weigh objects and prevent machinery from overloading

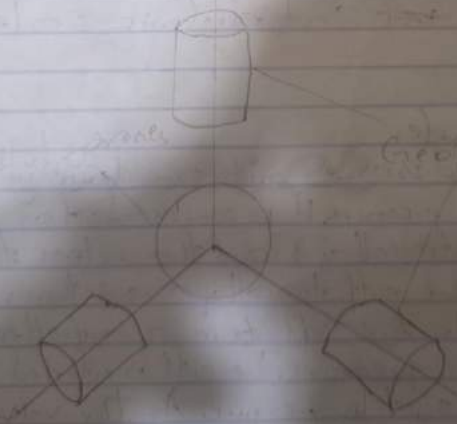
Force Sensor

iii) ~~Vector Sensor~~

(ii) Digital Indicators: They are used to view diverse parameters e.g. humidity, vibration, etc



iv) Vector Sensor: An underwater device that is used to detect sounds in water and convert it into acoustic energy.



3.) Weighing Scales

This is a beam balance which is a device used in measuring weight or mas. They are also known mass scales, weight scales, mass balances or simply scales. The traditional scale consists of two plates or bowls suspended at equal distance from a fulcrum. One plate holds an object of unknown mass while known masses are added to the other plate until static equilibrium is achieved and the plates are level off, which happens when the masses of the two plates are equal. The perfect scale rests at neutral. A spring scale will make use of a spring of known stiffness to determine weight. The oldest existence of weighing scales dates to 2400 - 1800BC in the Indus River valley. They are also classified into mechanical, and electronic scales

4.) Sphygmomanometer

This blood pressure monitor is a device used to measure blood pressure. It is composed of an inflatable cuff to collapse and then release the artery under the cuff to collapse and then release the artery under the cuff in a controlled manner to measure the pressure. The cuff is inflated to well above expected systolic pressure. As the valve is opened, cuff pressure (slowly) decreases when the cuff's pressure equals the arterial systolic pressure, blood begins to flow past the cuff, creating blood flow turbulence and audible sounds. Since high blood pressure has no symptoms, the only way to tell you that you have high b.p is to perform a quick