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Computer Engineering

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(1) A sensor is a device whose purpose is to detect changes in its environment and send it to the information to other electronics. A sensor is always used with other electronics eg.

(i) Pressure sensor

(ii) Light sensor

(iii) Temperature sensor.

(b) An ~~actuator~~ ^{actuator} is a component of a machine that is responsible for monitoring or controlling a mechanism or system. For example by opening a valve by simple terms it is a 'move'. An ~~actuator~~ ^{actuator} requires a source of energy examples are

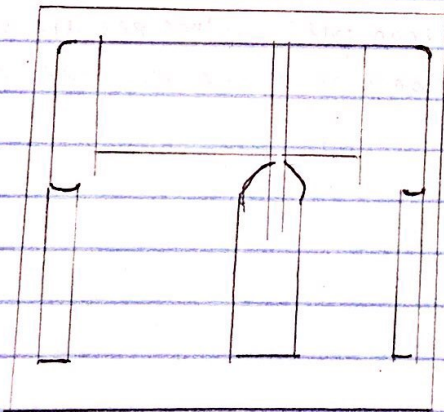
- Electric motor

- Hydraulic cylinder.

- Electroactive polymer.

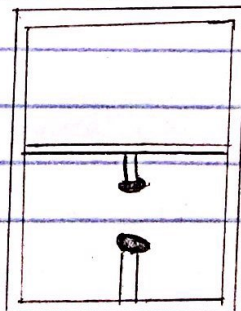
NO 2.

(i) Strain gauge - These consist of a very fine metallic ^{foil} ~~sheet~~ which is in a grid pattern and is bonded to a device used to measure the strain ~~of~~ of the device when weight or pressure is applied the resulting electrical output is proportional to the strain.



A Strain Gauge.

(ii) Tensile and Compression testing machine - Used to analyse the strength of the material. It is also used to evaluate the product breakdown.



- A testing machine.

NDS.

(a) Dialysis is the process of removing excess water solute from the blood whose kidneys can no longer perform their functions properly. This is referred to as renal replacement therapy. Dialysis may be inverted when there is sudden loss of kidney function which is known as acute kidney.

Principle:

Dialysis works on the principles of diffusion of solutes and ultrafiltration of fluid across a semi-permeable membrane. Diffusion is a property of substances in water.

• Passive diffusion occurs when a high to low concentration gradient is present between the patient's blood and dialysis.

• Ultrafiltration occurs across upward is derived from the body through the use of positive or negative pressure gradient moving fluid from a high to a low pressure region.

(b) An endoscope is an illuminated optical, typically slender and tubular instrument used to look deep into the body and used in ^{procedures} called endoscopy. Endoscopes use tubes which are only a few millimeters thick to transfer illumination in one direction and high resolution images in real time in the other direction resulting in minimally invasive surgeries.

Principle:

The endoscopy procedure uses an endoscope to examine the interior of a hollow organ. You may hear other many medical imaging techniques, endoscopes are inserted directly into the organ. A patient may be fully conscious or anaesthetized during the process.