

EEE 319

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Dpt: Electrical/Electronics

1. Briefly discuss (with examples) sensor and Actuators for biomedical applications.

Soln

• APPLICATION OF AN ACTUATOR IN BIOMEDICAL ENGINEERING FIELD

An actuator is used in the field of biomedical engineering and applications are talked about and the actions are performed by the actuators. An actuator in the biomedical field are based on ~~new~~ technology and an actuator has multiple applications in the biomedical field. e.g of some actuators can be used in the biomedical field

- + Drug delivery
- + Cell culture
- + Analysis

• APPLICATION OF A SENSOR IN BIOMEDICAL FIELD

The sensors mostly used in the biomedical field is implantable sensor and it is used for orthopedic stress and strain monitoring and the examination of bone tumor. These sensors must be light in weight, small and separated. e.g of where the sensor can be used for

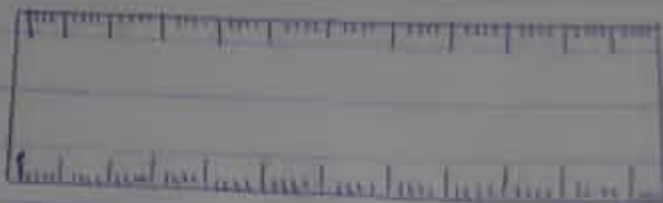
- + Orthopedic diseases
- + Heart failure monitoring
- + Blood glucose level

2. Describe with sketches and examples of the components of a breast monitoring instrument.

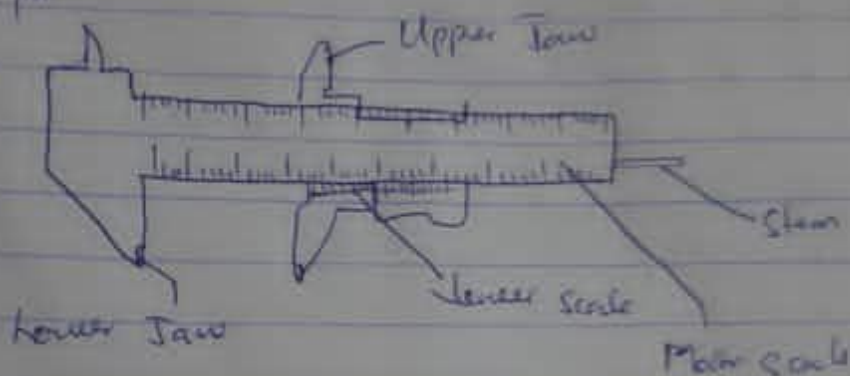
Soln



- Meters Rule



- Vernier Caliper



* Upper Jaw: These are ^{the} two smaller jaws of the vernier caliper and they are used to measure internal distance.

Lower Jaw: It is used to measure external dimensions of an object.

3. Discuss briefly the studies of two medical measurement instruments
Solve

• Thermometer: The thermometer is a device that measures temperature and it has 2 important elements which are the temperature sensor and a thermometer.

• Sphygmomanometer: This is a device used for the measurement of blood pressure consisting of an inflatable rubber which is applied to the arm and connected to a column of mercury next to a graduated scale enabling the determination of systolic and diastolic blood pressure by increasing and gradually decreasing the pressure on the cuff.