

EEE 319

Name: Akseadolu Moqbo

MAT NO: 181214041009

DEPT: Zlect / Zlect

Briefly discuss (with examples) sensors and Actuators for Biomedical Applications.

Soln

• APPLICATION OF AN ACTUATOR IN BIOMEDICAL ENGINEERING FIELD

An actuator is used in the field of biomedical research and applications are talked about and the action are performed by the actuator. An actuator in the biomedical field are based on piezo technology and an actuator has multiple applications in the biomedical field. e.g of where 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 biosensor and of is used for orthopedic stress and strain sensing 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 basic measuring instrument.

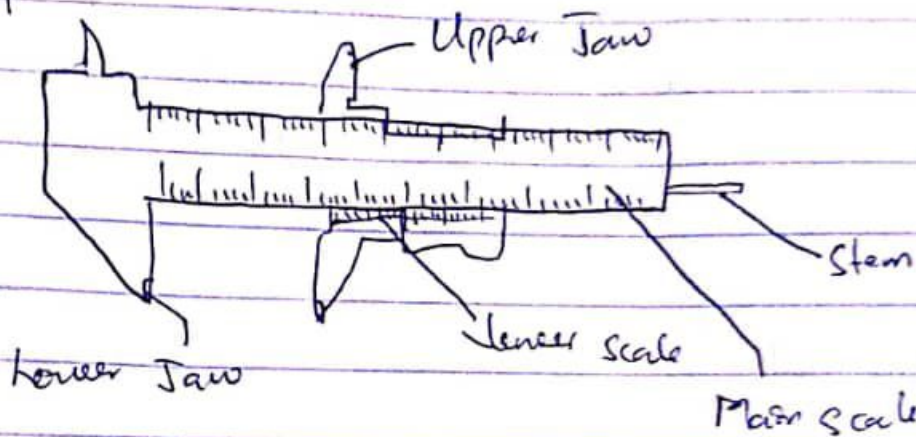
Soln



Meters Rule



Vernier Caliper



\* Upper Jaw: These are <sup>the</sup> 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 case studies of two medical measurement instruments  
Soln

- 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.